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Singapore – A Digitally Conscious Economy

- Launched the first National Technology Plan in 1991. Over the next 26 years, four more National Science and Technology plans were implemented.
- S\$19 billion being assigned for the latest Research, Innovation and Enterprise 2020 plan.
- Took pole position in World Economic Forum's 2016 Networked Readiness Index, which measures how well an economy is using technologies to boost competitiveness and well-being.
- Topped the 2017 IMD World Digital Competitiveness ranking. The win was largely attributed to the strong government commitment to the digital agenda.
- Has a dedicated Council, referred to as the **“Future Economy Council”**, chaired by the Hon'ble Finance Minister, whose objective is to drive growth & transformation of SG's economy in alignment with global economic transformation.



Focus Areas for the “Future Economy Council”

Future Corporate Capabilities & Innovation

- Develop strategies to enable companies and industry clusters to create innovative capacities, and use technology, new business models, partnerships; to create value.

Future Growth Industries and Markets

- Consider macroeconomic and technological trends, and Singapore’s comparative advantages in industries and markets that will drive the global economy of the future. It will identify priority clusters, and recommend strategies to grow them.

Future of Connectivity

- Will study how Singapore can remain well-connected as a competitive key hub in the future global economy, taking into account trends that will affect how the global economy is configured.

Future City

- Focus on enhancing SG’s infrastructure, overcoming resource constraints and ensuring a highly livable environment.

Future Jobs and Skills

- Examine the trends, including demographic and technological ones that will affect the landscape for jobs and the requirements for workers, and recommend ways to prepare Singaporean workers for the future.

Singapore ranked 3rd in Innovation Ranking



2018 Rank	2017 Rank	YoY Change	Economy	Total Score	R&D Intensity	Manufacturing Value-added	Productivity	High-tech Density	Tertiary Efficiency	Researcher Concentration	Patent Activity
1	1	0	S. Korea	89.28	2	2	21	4	3	4	1
2	2	0	Sweden	84.70	4	11	5	7	18	5	8
3	6	+3	Singapore	83.05	15	5	12	21	1	7	12
4	3	-1	Germany	82.53	9	4	17	3	28	19	7
5	4	-1	Switzerland	82.34	7	7	8	9	11	17	17
6	7	+1	Japan	81.91	3	6	24	8	34	10	3
7	5	-2	Finland	81.46	8	16	10	13	19	6	4
8	8	0	Denmark	81.28	6	15	11	15	26	2	10
9	11	+2	France	80.75	12	35	14	2	10	21	9
10	10	0	Israel	80.64	1	27	9	5	41	1	19

- SG ranked ahead of European countries like Germany and Switzerland in the Bloomberg 2018 Innovation Index.
- Position rose by three notches as compared to 2017, where it was ranked sixth globally.

The Industry Transformation Map (ITM) Initiative



- ITM is a strategic roadmap for a given industry to address issues within such industry and propel its transformation to the next level of growth and sustained competitiveness.
- ITMs are proposed to be formulated for 23 industries.

Manufacturing	Built Environment	Trade & Connectivity	Essential Domestic Services	Modern Services	Lifestyle
1. Precision Engineering	6. Construction	10. Wholesale Trade	15. Healthcare	17. Professional Services	20. Food Manufacturing
2. Energy & Chemicals	7. Real Estate	11. Land Transport	16. Education	18. Financial Services	21. Food Services
3. Marine & Offshore	8. Security	12. Sea Transport		19. ICT and Media	22. Hotels
4. Aerospace	9. Environment Services	13. Air Transport			23. Retail
5. Electronics		14. Logistics			

The Industry Transformation Map (ITM) Initiative – 4 Pillars

1. Productivity:

Strategies to support companies especially SMEs to move to higher value-added (VA) activities and raise operational efficiency.

2. Innovation:

Strategies to leverage R&D to develop new products and services.

3. Jobs & Skills:

Investing in people, to equip them with deep skills to support the shift to greater value creation.

4. Trade and Internationalization:

Supporting companies in expanding to overseas markets.

Rational for Industry Transformation Map (ITM)

1

Increasingly Industry Specific complex challenges will require cross-cutting solutions from multiple agencies and stakeholders working together within the industry.

2

To develop strategies that can upgrade a significant proportion of the industry, to move the productivity and innovation needle.

Maritime Industry Transformation Programme

- Digitalization identified as a key lever for Maritime and Port Authority of Singapore (MPA) to continue to enhance its value proposition.
- Aim to strengthen connectivity, building a vibrant innovation ecosystem, and developing a future-ready and skilled maritime workforce
- Government will provide support of up to S\$500 million for Maritime and Aviation programmes, with additional matching investments expected from industry partners.

Maritime Transformation Programme (MTP) aims to help the industry stay ahead of the pack by deepening Singapore's maritime R&D capabilities in four focus areas:

- a) Being an intelligent world-class, next-generation port (NGP);
- b) Operating smart autonomous vessels and maritime operations;
- c) Managing strategic sea space and maritime traffic; and
- d) Ensuring effective maritime safety and security.



The New Generation Sea Port (NGP) at Tuas

- From 2021, Singapore's NGP, now being developed in Tuas, will start operating in phases.
- PSA Singapore testing the facility's automated terminal operation systems, including automated guided vehicles and yard and quay cranes, with an eye on deploying such systems.
- MPA has extended funding to local start-up such as XjeraLabs, which has been working with Jurong Port to develop proof-of-concept for a system that uses video analytics to track container vehicles at the port.
- MPA will pump additional S\$100 million into the Maritime Cluster Fund (MCF) to help test and embrace new technologies, and groom talent for a digital, automated maritime future.
- MCF is expected to support about 30 new projects and benefit some 5,000 people annually. The injection of funds by the MPA will lift the total investment in the MCF since 2007 to S\$285 million.



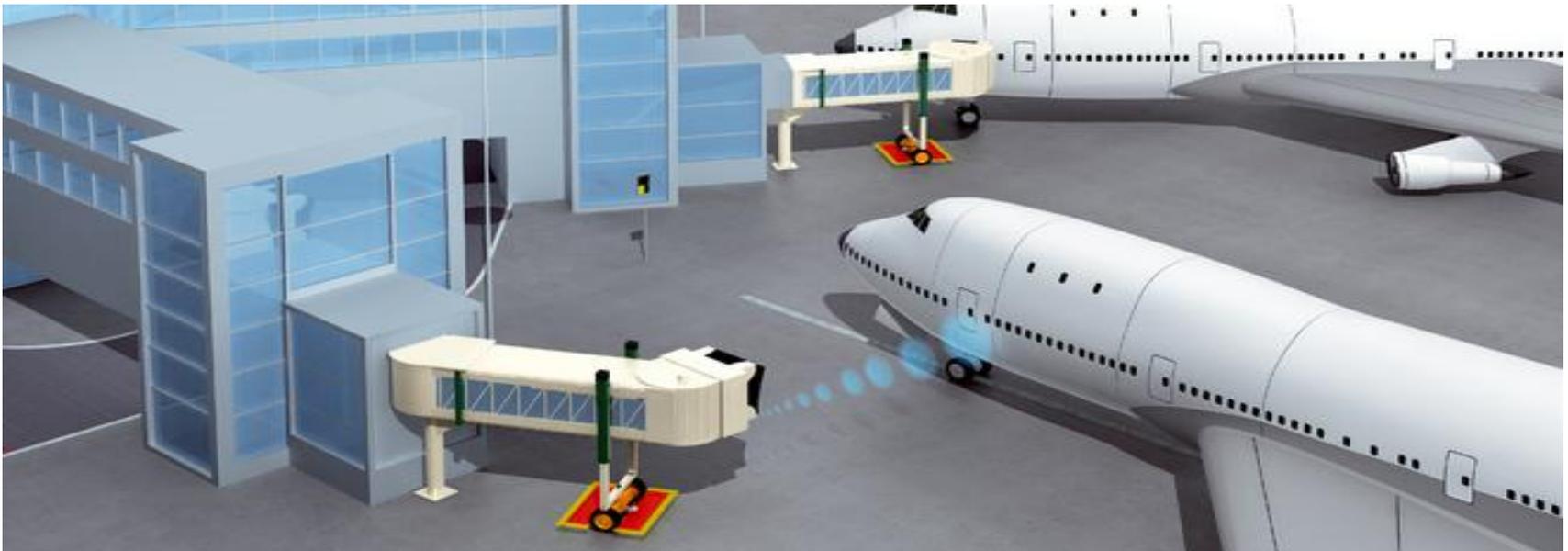
Aviation Industry Transformation Programme

- Intent is to redesign Changi as the “Smart Airport”.
- The ATP is meant to develop R&D to deal with challenges linked to increased air traffic and manpower constraints.
- ATP to address every aspect of the airport and airline business, from passenger services, to cargo handling, airside functions, airline operations and air traffic control.
- Up to 8,000 new jobs expected to be created or redesigned to enhance productivity by about 40 per cent over the next eight years.
- With the help of advanced technology and skills training, the aviation sector aims to grow real value-add from about S\$7 billion today by another S\$1 billion by 2020.



Some of the planned innovations under the ATP include:

- Automated Passenger Loading Bridge (PLB): World's first automated PLB that can autonomously dock with an aircraft door, designed to operate under harsh weather conditions.
- Smart Tower: For remote air traffic control operations, allowing air traffic controllers to manage live air traffic and enhance situational awareness and visibility.
- Space-based VHF Technology: To comprehensively cover the whole Singapore Flight Information Region (FIR) and overcome geographical limitations.
- 3D Printed Cabin Parts: Transforming aircraft maintenance, saving time needed for parts to be transported, storage space for spares, quicker turnaround of aircraft servicing and lower logistics cost.



Digital Transformation for SMEs

- SMEs are a significant part of the economy. They account for about half of the GDP growth and two-thirds of employment.
- To effect change and transformation in SG, SME will have to accept the reality, embrace the change and be change agents.
- A*Star's "Growing Enterprises through Technology Upgrade" initiative currently offers Operational and Technology Road mapping for SMEs.
- This guides SMEs in customizing long-term growth strategies for new products or services.
- It also provides them with business strategies to assess consumer demand, challenges, and potential markets.
- A*Star is now extending this to consortiums. Working with trade associations and chambers, it will develop technology roadmaps for groups of local firms in the same sub-sector.



SMEs Go Digital Programme



- SMEs Go Digital Programme which was in Budget 2017 was targeted at boosting SMEs' digital readiness.
- This programme provides SMEs with step-by-step advice on the digital technologies to use at each stage of their growth.

Industry Digital Guide:

- Understand where one stands on the digitalization roadmap

Pre-approved Digital Solutions/ Digital Advisory and Consultancy:

- Gain access to digital technology and advisory services

Project to uplift whole sectors:

- Enjoy new growth through partnering large companies and industry leaders

Skills Framework:

- Raise Employees' digital skills

Robust Tax and Legal Environment to nurture Transformation



Global Competitiveness Index 2017–2018 rankings and 2016–2017 comparisons

Economy	GCI 2017–2018		GCI 2016–2017	
	Rank (out of 137)	Score (1–7)	Rank (out of 138)	Score (1–7)
Switzerland	1	5.86	1	5.81
United States	2	5.85	3	5.70
Singapore	3	5.71	2	5.72
Netherlands	4	5.66	4	5.57
Germany	5	5.65	5	5.57
Hong Kong SAR	6	5.53	9	5.48
Sweden	7	5.52	6	5.53
United Kingdom	8	5.51	7	5.49
Japan	9	5.49	8	5.48
Finland	10	5.49	10	5.44

Source: World Economic Forum

- SG's intellectual property protection laws, ranked first in Asia for intellectual property protection in the World Economic Forum's Global Competitiveness Report.
- Tax regime designed to capture the entire value chain of the innovation process, from creation to commercialization of intellectual property.
- Offers enhanced R&D tax deductions and tax incentives to anchor R&D-intensive multinationals.
- Tax treaties facilitate the commercialization of intellectual property from SG.
- Tax benefits on licensing payment for use of IPs so as to promote innovative technologies and boost productivity locally.

Singapore Setting up a Cyber Security Start-up Hub

- Setting up its First Cyber Security Start-up incubation hub, with funding to be provided for new inventions in Cyber Security space.
- Called the “Innovation Cybersecurity Ecosystem @Block 71” (ICE71), the hub will open its doors to cyber security entrepreneurs from April 2018.
- Aims to hand-hold aspiring entrepreneurs to ensure their business ideas are sound, and to ensure they have the necessary financial and business know-how to take their ideas to the next step.
- Infocomm Media Development Authority (IMDA) and Singapore's Cyber Security Agency (CSA) are working with Singtel and the National University of Singapore (NUS) to launch ICE71.
- The Hub seeks to groom up to 100 entrepreneurs and 40 start-ups over the next two years.
- Areas of focus include forensics, authentication, Internet of Things and managed security services.



TechSkills Accelerator (TeSA)



TeSA offers various programmes to support current information and communications technology (ICT) professionals and non-ICT professionals to upgrade and acquire new skills and domain knowledge that are in demand, and to stay competitive and meet the challenges of a fast-moving digital landscape.

TeSA offers training opportunities through seven programmes:

1. Company-Led Training (CLT) Programme
 2. Critical Infocomm Technology Resource Programme Plus (CITREP+)
 3. National Infocomm Competency Framework (NICF)
 4. Professional Conversion Programme (PCP) for the ICT Sector
 5. SkillsFuture Earn and Learn Programme (ELP)
 6. SkillsFuture Study Award for the ICT Sector
 7. Tech Immersion and Placement Programme (TIPP)
- Since its inception in April 2016, TeSA has trained 27,000 professionals in new tech skills to prepare them for the digital economy.
 - Around S\$120 million has been spent to date.

Productivity Solutions Grant (PSG)

- Grant to help businesses buy and use new solutions, adoption of pre-scoped, of-the shelf technologies.
- PSG will provide funding support of up to 70 per cent of qualifying costs.
- An Initial S\$110 million will be set aside over the next three years for the new PSG.
- Grant will cover sector-specific solutions in retail, food, logistics, precision engineering, wholesale and landscaping industries.
- The grant will also support broad-based solutions that cut across industries, such as digital customer relationship management and human resource management systems.

PACT scheme to include tie-ups among SMEs

- Partnership among small and medium enterprises (SMEs) and start-ups will qualify for the integrated Pact programme from April 1, 2018, removing the existing requirement for such tie-ups to be between large organizations and SMEs.
- For this new Pact, the government has allocated S\$100 million over the next three years.
- It will support up to 70 per cent of qualifying costs for partnerships in capability development - including co-innovation and knowledge transfer - and business development, including business alliances and pooling resources.

Open Innovation Programme

- To help businesses find partners to co-create solutions, a virtual crowd-sourcing platform called the Open Innovation Platform will be piloted this year.
- This will be a platform for companies to list specific challenges that can be addressed by digital solutions. They will then be matched with info-communications and technology (ICT) firms and research institutes to co-develop solutions.
- OIP will be managed by the Info-communications Media Development Authority and launched in the second quarter of 2018.

Allowable Tax Deductions

- Tax deduction on licensing payments for the commercial use of intellectual property (IP) will be raised to 200 per cent, capped at S\$100,000 of licensing payments per year.
- Tax deduction for IP registrations fees will be doubled to 200 per cent. This will be capped at S\$100,000 of IP registration fees per year.
- The tax deduction for qualifying expenses incurred on research and development (R&D) done in Singapore will also be raised to 250 per cent, from 150 per cent. The change will take effect from YA2019 to YA2025.

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