

## MEDIA FACTSHEET

### **BUILDING THE FOUNDATIONS FOR OUR DIGITAL FUTURE: NEXT-GENERATION DIGITAL INFRASTRUCTURE AND RESEARCH & INNOVATION**

1 A longstanding priority of the Ministry of Communications and Information (MCI) is to ensure Singapore maintains a strong foundation to enable our people and businesses to seize opportunities brought about by digital developments. As technology and digitalisation needs evolve, we are enhancing the underlying digital infrastructure that powers digital services and applications, and building up a strong research and innovation ecosystem to continuously uncover the value of emerging technologies.

#### **Digital Connectivity Blueprint: Planning and investing in future-ready digital infrastructure**

2 MCI is developing a Digital Connectivity Blueprint to outline the way forward for Singapore's connectivity infrastructure. This includes our broadband, mobile, and WiFi networks that provide domestic connectivity, as well as subsea cables that provide international connectivity. The Blueprint will also identify synergies with other digital infrastructure components that complement this connectivity layer, like data centres and digital utilities. The Blueprint is slated to be launched later this year.

3 The future-oriented approach which the Blueprint will be premised on is consistent with how the Government and our industry partners have approached digital infrastructure investments over the years. One example is our investment in the nationwide fibre broadband network back in the mid-2000s, which now enables services like online collaboration, e-learning, and High-Definition entertainment. More recently, Singapore's 5G standalone networks are bearing early fruit in the form of use cases in sectors such as manufacturing. Refer to **Annex B-1** for details on these newly awarded 5G use cases.

#### **Advisory Panel on Digital Infrastructure**

4 To support and advise on the Digital Connectivity Blueprint, MCI has formed an **Advisory Panel on Digital Infrastructure** comprising business and industry leaders. The Panel will be co-chaired by Senior Minister of State for Communications and Information Dr Janil Puthuchery, and Executive Vice President of Global Operations at Western Digital Mr Irving Tan. The members of the panel are listed in the table below:

Name	Current Designation
Janil Puthucheary (Co-Chair)	Senior Minister of State for Communications and Information
Irving Tan (Co-Chair)	Executive Vice President, Global Operations, Western Digital
Amit Midha	President, APAC & Japan and Global Digital Cities, Dell Technologies
Keat Chuan Yeoh	Chief Executive Officer, TEMUS
Maya Hari	Chief Executive Officer, Terrascope
Raymond Choong	Venture Partner, Focustech Ventures
Soon Ghee Chua	Senior Partner, Kearney
Wai Meng Wong	Chief Executive Officer, Keppel Data Centres; Chairman, SGTech

5 MCI will seek the panel's insights on:

- a. Plans to develop Singapore's digital infrastructure, including from the angles of business and technical viability and international competitiveness.
- b. Global and domestic trends and developments that could affect future business and consumer demand for digital infrastructure, and could hence factor into plans for infrastructure and use case development.

### Enhancing capabilities in Research and Innovation to advance Singapore's digital edge

6 Research, Innovation and Enterprise (RIE) remains a cornerstone of Singapore's development into a knowledge-based, innovation-driven economy and society. The RIE 2025 plan builds on the progress of previous RIE investments, as science and technology (S&T) continues to be key to Singapore's ability to address national needs, prepare for future challenges, and generate new opportunities for growth. Under the RIE 2025 plan, the Smart Nation and Digital Economy (SNDE) domain seeks to develop technology leadership to drive our Smart Nation ambition and anchor Singapore's position as a trusted digital innovation hub.

7 For example, in Artificial Intelligence, Singapore has internationally recognised research strengths. Singapore is ranked among the top 10 in the world in AI for Natural Language Processing and Computer Vision publications, based on SciVal publication data (2012-2021). AI Singapore's AI Speech Lab has achieved significant improvements such as being able to more accurately understand Singapore's spoken colloquial languages and in noisy environments. The research outcomes have been applied in the Singapore Civil Defence Force's helpline call centre and the Ministry of Social and Family Development's telephone services.

8 Upcoming or recent initiatives to enhance local capabilities and build new partnerships include:

- a. The Smart Nation and Digital Government Office (SNDGO) and National Research Foundation (NRF) will launch dedicated calls for AI Investigatorships in the coming months. The investigatorships are targeted at top-tier AI researchers who, in the course of their research, can also mentor and groom other promising talent.
- b. AI Singapore runs the Open Theme Technology Challenge to support the application of AI to address economic or societal needs. To encourage collaborations with industry and build up industry R&D capabilities, AI Singapore will enhance the scheme to allow co-funding of R&D activities in industry. The latest call launched in end February.

- c. The Future Communications Connectivity Lab (FCCLab) at the Singapore University of Technology and Design was launched in Sep 2022. The FCCLab, which seeks to accelerate cutting-edge research of future communications technologies such as 6G, is part of the S\$70 million Future Communications R&D Programme (FCP) supported by NRF and IMDA.
- d. Companies are encouraged to develop innovative solutions to address specific challenges, such as in the field of cybersecurity. Under CSA's Cybersecurity Industry Call for Innovation (aka CyberCall)<sup>1</sup>, local company MicroSec developed a solution to secure low-powered IoT devices, and deployed this to around 16,000 home devices such as smart sockets in the HDB Punggol Northshore Project.
- e. Internationally, Singapore and South Korea signed a Memorandum of Understanding (MOU) on AI in Dec 2022, facilitating bilateral AI research and information exchange, and experiences in promoting the responsible use of AI. The National Quantum Office also signed a MOU with three research entities in Finland in Aug 2022 to explore R&D collaborations in quantum technologies.

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<sup>1</sup> CSA's Cybersecurity Industry Call for Innovation (aka CyberCall) invites companies to develop innovative solutions to address cybersecurity challenge statements.

**IMDA awards three new 5G use-cases:  
Creating new businesses opportunities, enhancing safety, and redesigning jobs**

## Background

1. The Singapore Government has set aside S\$70 million since 2019 to drive the development of Singapore's 5G Innovation ecosystem. First tranche of funding support was introduced in 2019 and six 5G use-cases were trialled:

- a. IMDA, PSA, Singtel, M1: 5G enabled Automated Guided Vehicles and Automated Rubber Tyred Rubber Tyred Gantry Cranes.
- b. IMDA, Airbus, M1: *Urban Air Mobility Operations for Maritime Operations*
- c. IMDA, IBM, Samsung: *Singapore's first Industry 4.0 5G trial*
- d. IMDA, Razer, SingTel: *Singapore's first 5G Cloud Gaming Trial*
- e. IMDA, Continental, M1: *Autonomous transport systems for Autonomous Mobile Robots*
- f. IMDA, Capitaland, Navinfo, TPG: *Singapore's largest 5G smart estate trial*

2. Under the second tranche of support, IMDA launched the S\$30million 5G Innovation Programme<sup>2</sup> in 2021 to accelerate the adoption and commercialisation of enterprise 5G solutions. To date, IMDA has awarded seven 5G projects:

- a. IMDA, Keppel Offshore & Marine: *Southeast Asia's first maritime 5G AR/VR Smart Glasses Solution*
- b. IMDA, Infinite Studios: *First outdoor mass 5G-enabled cinematic quality AR experience in the region*
- c. IMDA, National University Health System: *Asia Pacific's first 5G mobile edge computing for Mixed Reality and Holomedicine capabilities in health tech*
- d. IMDA, Gammon: *5G-enabled Mixed Reality for Construction*
- e. IMDA, Hyundai: *World's first 5G-enabled Built-To-Order Electric Vehicle factory*
- f. IMDA, Weston: *ASEAN's first 5G-enabled electric unmanned surface vessel for river cleaning and inspection*
- g. IMDA, Mind PointEye: *Reskilling Security Guards with 5G and AI*

3. Last year, IMDA partnered the Maritime and Port Authority of Singapore (MPA) to extend public 5G standalone coverage to sea for maritime operations making Singapore the first country in the world<sup>3</sup> to do so. Singapore will achieve full 5G standalone (SA) coverage over our anchorages, fairways, terminals, and boarding grounds by mid-2025.

<sup>2</sup> <https://www.imda.gov.sg/Content-and-News/Press-Releases-and-Speeches/Press-Releases/2021/Singapore-accelerates-5G-adoption-and-commercialisation-with-new-30m-fund>

<sup>3</sup> <https://www.imda.gov.sg/Content-and-News/Press-Releases-and-Speeches/Press-Releases/2022/Singapore-the-first-country-to-extend-public-5G-standalone-coverage-to-sea-for-maritime-operations>

## The World's First 5G-enabled Built-To-Order (BTO) Electric Vehicle factory

4. IMDA is partnering Hyundai to deploy over 100 5G-enabled robots across the factory floor of the Hyundai Motor Group Innovation Centre in Singapore (HMGICS) to simultaneously transport material required for vehicle manufacturing to the manufacturing cells. HMGICS will feature the Hyundai Motor Group's first deployment of a 5G network in vehicle manufacturing, leveraging 5G for a cloud-based centralized mobile robot management solution through enhanced quality control in manufacturing operations, presenting a vision of the human-centered intelligent manufacturing.

5. 5G will allow for real-time data transmission between the automated control system and the automated guided vehicles. The new concept of manufacturing will reduce labour-intensive activity for workers, enhance their safety, and allow them to take on higher value roles. The more agile manufacturing process also will allow Hyundai to develop Singapore's very own Built-To-Order Electric Vehicles. More details to be shared during the launch of HMGICS later this year.

## ASEAN's First 5G-enabled Electric Unmanned Surface Vessel for River Cleaning and Inspection



(Photo credit: Weston Robot Pte Ltd)

6. River cleaning services are currently done by gasoline-fuelled boat that can produce as much as 20 tonnes of carbon per year<sup>4</sup>. Each gasoline boat also requires high yearly maintenance cost that

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<sup>4</sup> A typical passenger vehicle emits about 4.6 metric tons of carbon dioxide per year according to the [US Environmental Protection Agency](#)

ranges from S\$6,000 to S\$12,000 per annum. Cleaning up our rivers are labour intensive and done manually. 5G-enabled Unmanned Surface Vessel (eUSV) will enable the following:

- **Improved safety and Transforming Job Roles:** Reduce the risk of man overboard and laboriously long hours under the sun. Will transform the nature of the job scope as a single operator stationed at the command centre can now pilot multiple eUSVs. The vessels will be able run autonomously using video analytics to detect and clean rubbish outside of its pre-programmed path.
- **Eco-Friendly:** eUSVs are electric and will reduce current carbon emission of each gasoline boat by 80%.

7. This partnership with Weston will look to propel the usage of electric vessels and video analytics technology for rubbish detection in Singapore and around the region. The project will commence in 2023 and eUSVs will also help cleaning services companies to alleviate manpower crunch in this sector.

### Transforming and Reskilling Security Guards with 5G and AI



(Photo credit: Mind PointEye Pte Ltd)

8. IMDA has awarded to Mind PointEye to develop and commercialise a 5G AI-enabled security surveillance solution with sentry robots and patrolling vehicles for indoor and outdoor environments. Currently, security guarding surveillance requires laborious manual patrolling. Absence of a security personnel at specific locations makes it difficult to deal with security breaches. Today's security guarding surveillance also relies heavily on fixed cameras that requires wired connectivity which leads to a costly cabling infrastructure.

9. Tapping on emerging technologies, this 5G AI-enabled will enable the following:

- **Job Redesign and upskilling:** Allows security guarding personnel's job to be transformed from one that is manually laborious to one that is tech-driven. Security guarding personnel can now monitor locations remotely using an AI-powered video analytics providing real-time push notifications for threat detection once anomalies are detected. Robots and

patrolling vehicles can also be controlled remotely by personnel for enhanced security event handling.

- **Enhanced efficiency through automation and remote teleoperations:** Sentry robots and patrolling vehicles with built-in cameras and hybrid video analytics platform will leverage on high-bandwidth, reliable and low latency of 5G connectivity to power video analytics (AI) and remote teleoperations. When potential security threat is detected through video analytics, security personnel can remotely control (via an application) a sentry robot/patrolling car that is in close proximity to move to the impacted location for closer inspection and anomaly detection through remote live video stream and video analytics.

10. The project will commence in 2023.