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ASEAN IVO FORUM 2025

TURNING CHALLENGES INTO INNOVATION WITH ICT
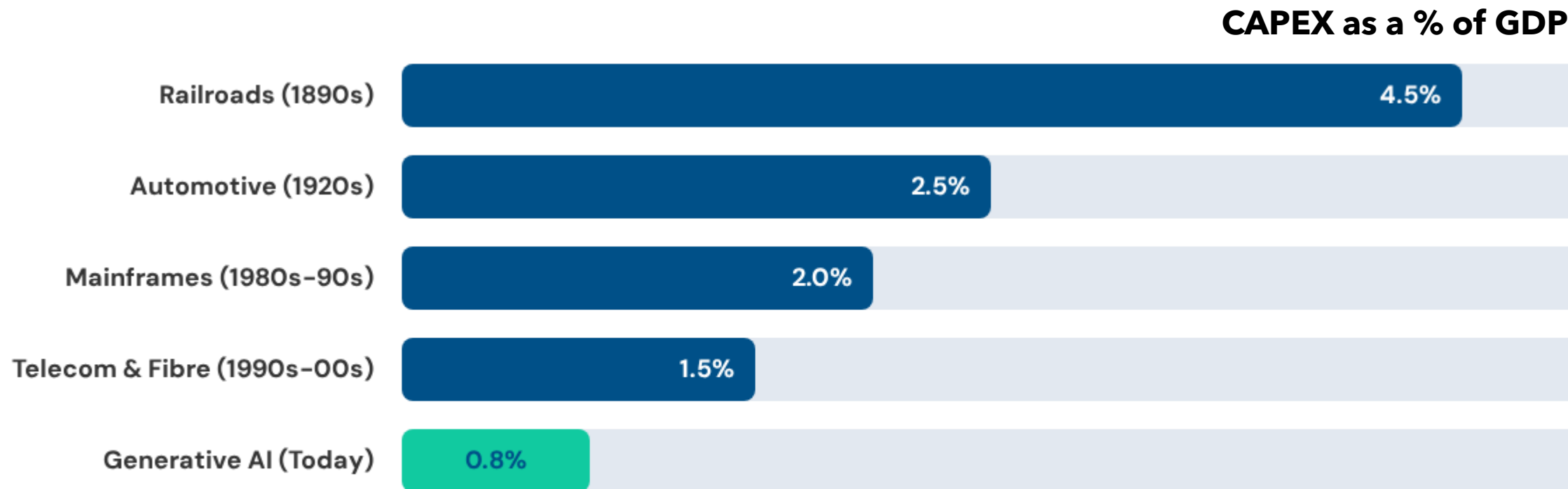
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I I M
INFOCOMM
MEDIA
DEVELOPMENT
AUTHORITY

" A smooth sea never made a skilled sailor. "

- Franklin D. Roosevelt

General purpose tech built on top of infra investment

CAPEX as a % of GDP

Railroads (1890s)	4.5%
Automotive (1920s)	2.5%
Mainframes (1980s–90s)	2.0%
Telecom & Fibre (1990s–00s)	1.5%
Generative AI (Today)	0.8%

We are still early in the overall development cycle of AI

The Safety Disparity in AI

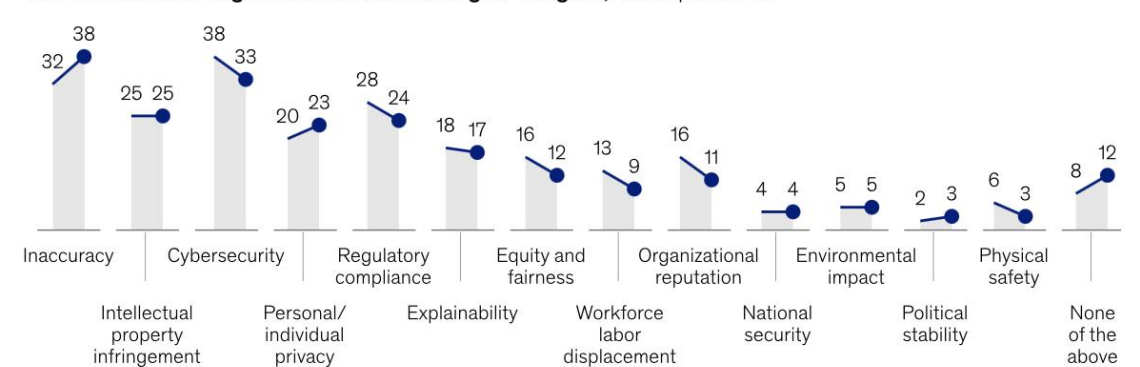## Investment | researchers

AI build **9:1** AI safety

McKinsey & Company's State of AI in 2024:

% of organisations that are working to mitigate Gen AI risks *(right, below)* was generally <u>lower</u> than % of organisations that consider Gen AI risks relevant *(right, above)*.

Gen AI risks that organizations consider relevant,[1] % of respondents

2023 ●— 2024

	Inaccuracy	Cybersecurity	Regulatory compliance	Equity and fairness	Organizational reputation	Environmental impact	Physical safety	None of the above
2023	56	53	39	39	29	14	11	1
2024	63	51	42	40	24	13	8	1

	Intellectual property infringement	Personal/ individual privacy	Explainability	Workforce labor displacement	National security	Political stability
2023	46	43	45	31	34	11	10
2024	52	43	45	30	27	13	12

Gen AI risks that organizations are working to mitigate,[1] % respondents

	Inaccuracy	Cybersecurity	Regulatory compliance	Equity and fairness	Organizational reputation	Environmental impact	Physical safety	None of the above
2023	32	38	20	18	16	4	6	8
2024	38	33	23	17	11	4	3	12

	Intellectual property infringement	Personal/ individual privacy	Explainability	Workforce labor displacement	National security	Political stability
2023	25	28	16	13	5	2
2024	25	24	12	9	5	3

[1]Question was asked only of respondents whose organizations have adopted AI in at least 1 function. Respondents who said "don't know/not applicable" are not shown. In 2023, n = 913. In 2024, n = 1,052.
Source: McKinsey Global Survey on AI, 1,363 participants at all levels of the organization, Feb 22–Mar 5, 2024

McKinsey & Company

Systemic AI risks can undermine progress towards the SDGs

Systemic AI risk	SDGs most exposed	How AI risk impacts SDGs
Labor-market displacement	No Poverty (1), Decent Work and Economic Growth (8), Reduced Inequalities (10)	Rapid automation could cut income and jobs faster than social-protection and reskilling schemes can expand.
Algorithmic bias and discrimination	Reduced Inequalities (10), Peace, Justice and Strong Institutions (16)	Model-based decisions replicate structural bias, affecting marginalized groups in hiring, public services, and criminal justice.
Misinformation and disinformation	Peace, Justice and Strong Institutions (16)	Synthetic media and automated cyberattacks erode trust, destabilize elections, and endanger public safety.
Concentration of market power	Industry, Innovation and Infrastructure (9), Reduced Inequalities (10)	A few firms controlling data, compute, and frontier models limits equitable access and stifles inclusive innovation.

Systemic AI risk	SDGs most exposed	How AI risk impacts SDGs
Privacy erosion and mass surveillance	Peace, Justice and Strong Institutions (16)	Ubiquitous face recognition chills free assembly and deters civic participation.
Environmental footprint of AI compute	Affordable and Clean Energy (7), Responsible Consumption and Production (12), Climate Action (13)	Scaling models drives high energy use and e-waste, increasing emissions and resource depletion.
Autonomous weapons and escalation	Peace, Justice and Strong Institutions (16), Partnerships for the Goals (17)	Lowering the barrier to lethal force undermines arms-control regimes and raises conflict-escalation risk.
Safety and control failures ("misalignment")	Cross-cutting (all SDGs)	Unpredictable model behavior in finance, infrastructure, or security can trigger cascading systemic shocks.

Source: "AI safety and security can enable innovation in Global Majority countries", Brookings Institute, 22 September 2025

Balancing innovation and risks: Singapore's practical AI governance approach

Guidelines to help organisations implement trustworthy AI

- Model AI Governance Framework
- Model AI Governance Framework for Gen AI
- ASEAN Guide on AI Governance & Ethics

AI testing tools for organisations to *demonstrate* trustworthy AI

- AI Verify Testing Framework & Toolkit
- Project Moonshot

Open sourced to harness the collective power of the global community

R&D to develop trust technologies, including AI Safety, and foster international collaboration with other AI safety institutes

Cultural bias in the output of generative AI

Inglehart-Welzel world cultural map with 107 countries and the GPT-family.
On the x-axis, negative values represent survival values and positive values represent self-expression values. On the y-axis, negative values represent traditional values and positive values represent secular values.

Without cultural prompting, the GPT models' (red) cultural values are most aligned with the cultural values of countries in the Anglosphere and Protestant Europe.

Southeast Asian countries marked on the map are highlighted in green.
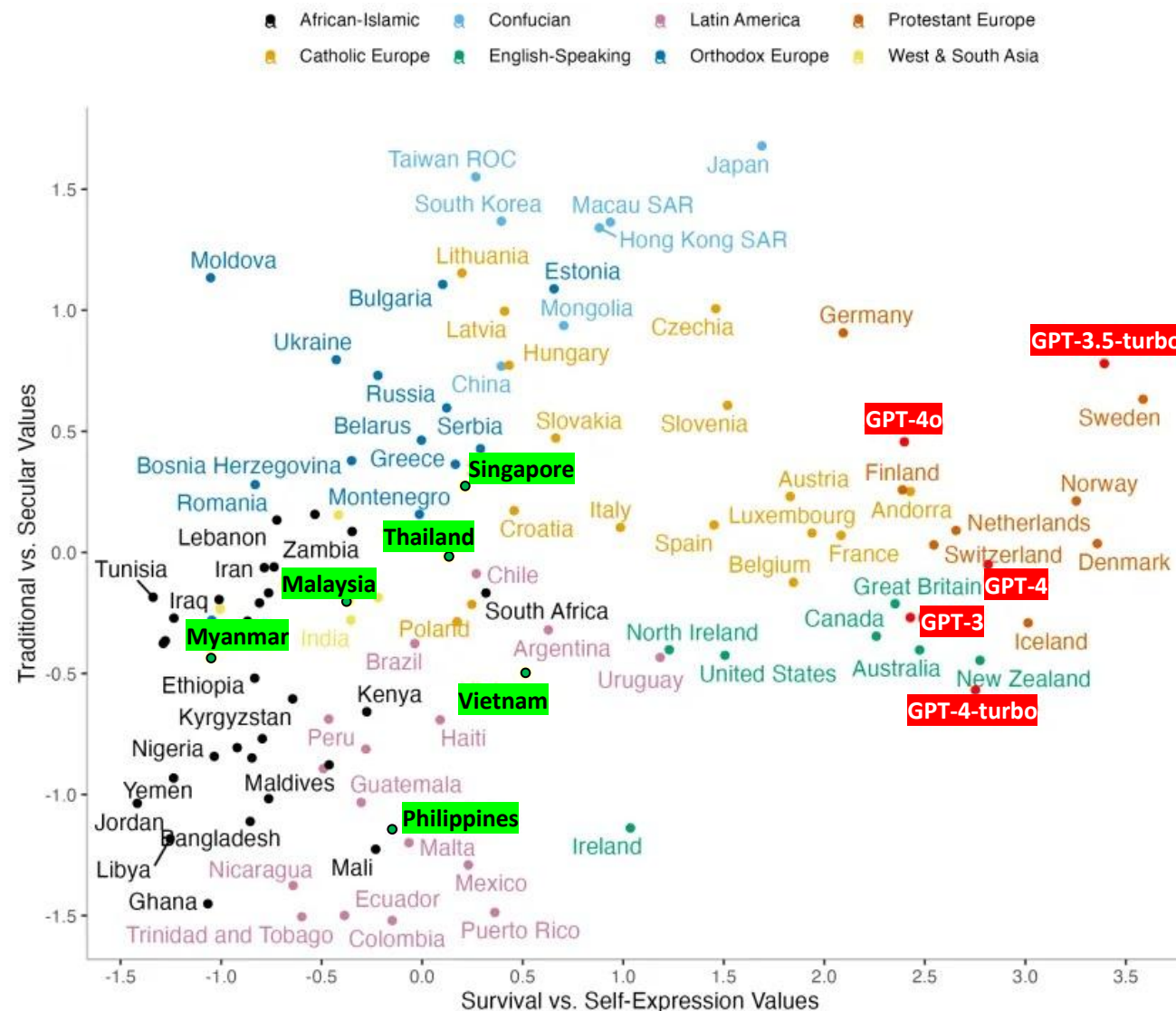
Advancing inclusive AI:
National Multimodal LLM Programme (NMLP)

Supported by

SEA-LION and MERaLiON:
Catalysing innovation to real-world deployment

Customised to tackle the unique linguistic and cultural challenges of Thai, e.g., remove NSFW and gambling content, detect Thai script more precisely; topped Thai LLM leaderboard at launch.

Operates across five Indonesian languages *(Bahasa Indonesia, Javanese, Sudanese, Balinese and Bataknese)*; powers Goto's GoPay app, which is used by millions in Indonesia

Break language barriers to provide vital protection and legal assistance to migrant workers and trafficking victims across Southeast Asia

SEA-LION and MERaLiON:
Catalysing innovation to real-world deployment
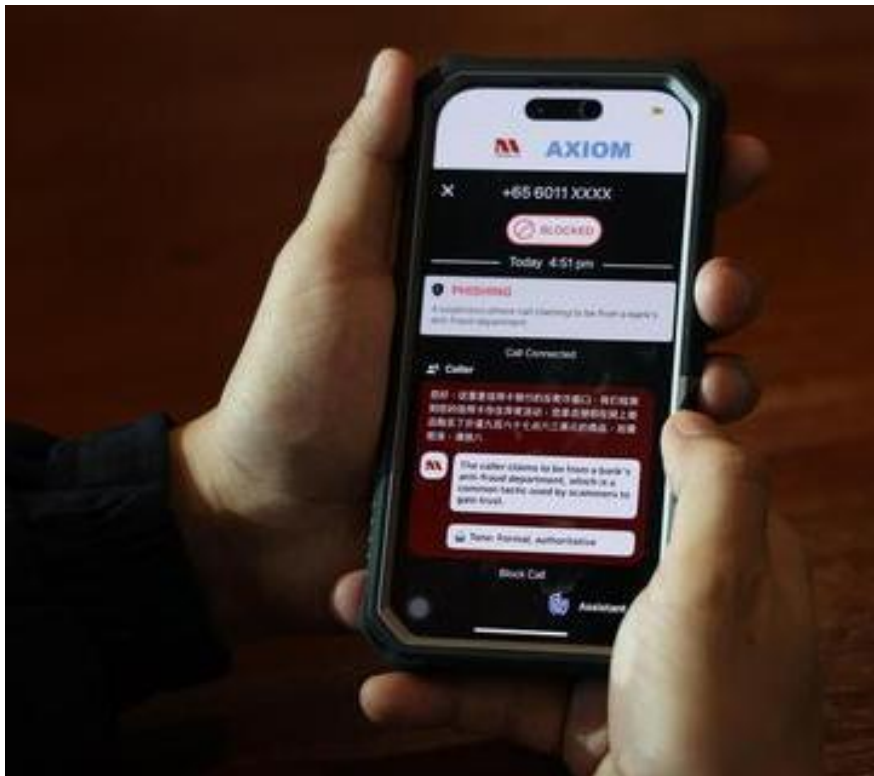
Used in Axiom's AI-driven elderly-care solution to provide multilingual and emotion-aware support for seniors.
(photo: Lianhe Zaobao)
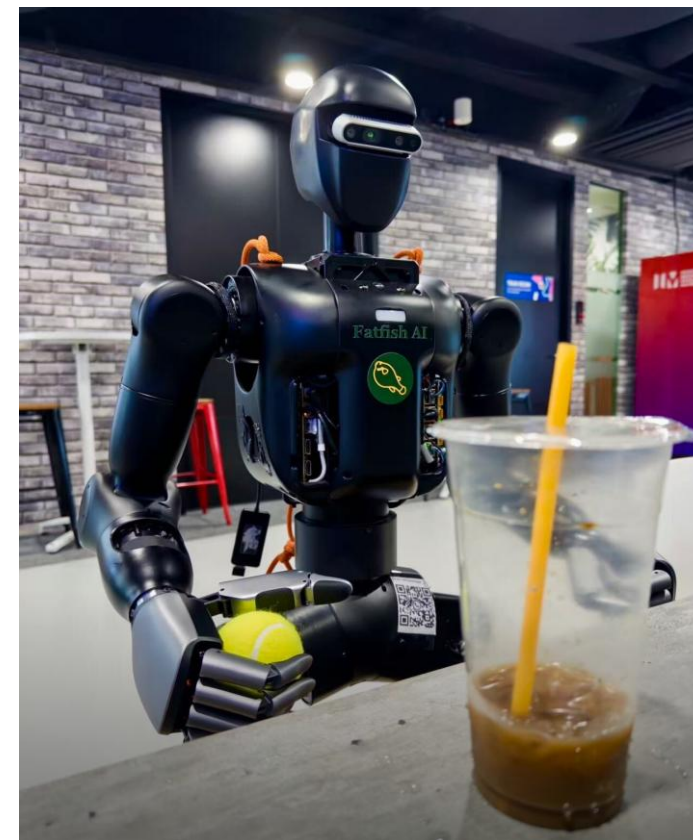
Powers dialogue in Fatfish's humanoid robots; enables edge AI robots to deliver empathetic, natural-language care services.
(photo: Fatfish Technology LinkedIn page)

Next gen connectivity: Enabling the future

Invested ahead with Nationwide Broadband Network

1st Gen NBN in 2006

- $1bn govt investment

- 85% of residential homes on at least 1Gbps

- Competitive pricing: $30/month

2nd Gen NBN in 2024

- $100m govt investment

- >500k expected to upgrade to 10Gbps by 2028

Amongst the first in the world to roll out 5G SA networks in 2020

5G coverage with good user experience from 2022 onwards

End–2022	Nationwide by End–2025
50%	95%
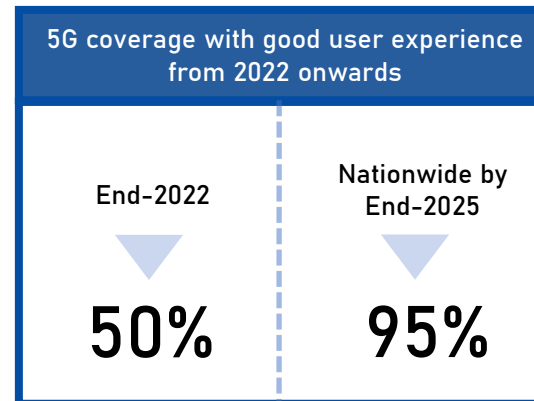
3.5 GHz , 2.1 GHz – Wide area coverage

mmWave – Localised coverage

Supporting trials to commercialisation

Tranche 1: 8 5G Trial Projects (Completed)
Tranche 2: 15 Projects Awarded (Closed)
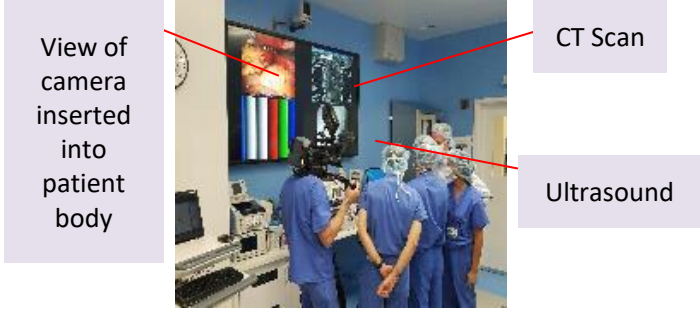
$70m funding

- Tranche 1 (2019) technical trials

- Tranche 2 (2021) accelerate commercial adoption of 5G

PSA – Leveraging 5G to facilitates AGV operations, meeting PSA's business ambition of an unmanned port

	Today	**Future**	**Key insights**

Today

AGVs

Future

More AGVs

aECH

aRTG/RMG

Mobile Surveillance

Container tracking

Key insights

- PSA is scaling in size and moving towards becoming a fully unmanned automated port.
- New automated and connected devices will eventually be deployed at the port, each with unique bandwidth and latency profiles.
- A secure, reliable network with dedicated capacity is required to sustain the growing number of connected devices.

# of AGVs deployed	300 AGVs → Increase 6x → 2,000 AGVs (on 5G)

As such, 5G is key to provide:

1. Increased bandwidth to support growth in connected devices.
2. Network slicing to ensure efficient and secure management of diverse device profiles.
3. Network resilience to support the 24x7 critical business operations.

Types of devices deployed on 5G

AGVs (Automated Guided Vehicles) →

AGVs (Automated Guided Vehicles)
aPM (autonomous Prime Mover)
aECH (automated Empty Container Handler)
aRTG (automated Rubber Tyred Gantry)
Mobile surveillance
Container tracking systems

NUHS: Leveraging 5G facilitates to guide surgeries in real-time to meet NUHS's ambition of a smart hospital

	BAU	With 5G (Mixed Reality)
	View of camera inserted into patient body · CT Scan · Ultrasound *Disparate sources of surgical information used during surgery*	*Surgeons utilising Mixed Reality (MR) during thoracic surgery*
Surgical information	Multiple disparate sources of information (video feeds, CT scans, and ultrasound) →	Consolidated information from multiple sources (CT scans, ultrasound)
Viewing of surgical information	2D Information viewed across multiple screens and disjointed from patient →	Information is unified and overlayed onto the patient with exact representation in 3D
Surgical procedures	Pre-surgery, camera inserted into patient's body to pinpoint the diseased area →	Not required

Key insights

- Current practice only provides an approximate location of diseased areas, requiring invasive procedures (e.g. camera inserted into patient)
- MR technology enables precise identification of diseased area, which is highly valuable to junior surgeons, offering enhanced guidance during complex procedures.

5G as a key enabler for MR

- 5G's low latency (with MEC) enables real time rendering of realistic 3D objects in concert with movements of users MR headset, to reduce the likelihood of motion sickness.

QuikBot: Leveraging 5G for Autonomous Mobile Robots (AMR) in dense urban areas

	BAU	With 5G
	Interruption of AMR navigation in complex situations / *AMR require onsite operator for exception handling*	**Cloud Processing** / *Cloud processing to enhance AMR navigation* / *Command centre for remote Teleoperations*
AMR processing infrastructure	Limited AMR On board processing →	Cloud-based to supplement AMR onboard processing for enhanced intelligence
Navigation abilities	Limited ability to process complex environments, leading to interruptions during navigation (Stop-Go-Stop) →	Enhanced ability to detect scenes and objects (with cloud processing), AMR can detect and navigate complex environments
Intervention for exception handling	Onsite intervention required to pilot AMR out when stuck →	Remote Teleoperations (via command centre) to pilot AMR out
Task completion	Prolonged due to continuous interruptions and manual intervention →	Reduced due to enhanced navigation and remote Teleoperations
Manpower required	1 operator to 1 building cluster (increased manpower overhead) →	1 operator to 6 building clusters (reduced manpower overhead)

Key insights

- Due to AMR price points, most have limited intelligence for effective autonomous navigation capability. As such we often see interruptions to AMR operations in complex environments or manual interventions, when it gets stuck.
- Augmenting AMR with cloud processing enables effective navigation, reducing operational manpower and enabling higher delivery completion rates.

5G as a key enabler for AMRs to operate effectively

- Independent navigation: Quicker 2-way communications (video/image feeds from AMR to cloud)
- Remote teleops: Access near real-time displays and controls AMR remotely for quick response in exception situations

" In this era of rapid digitalization, it is essential that we shape digital transformation in an inclusive and sustainable manner. "

- ASEAN Secretary-General
- Kao Kim Hourn