Digital tech is the future, but new report shows Australia risks being left in the past

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Digital technologies are now at the heart of our everyday lives, as anyone who has swapped their office for a videoconferencing screen, or downloaded a contact-tracing app, knows only too well.

This trend is set to continue even in a post-COVID world. Australia is at a crossroads in developing a strong digital economy to meet this

changing world head-on.

In the words of the computing pioneer Alan Kay, "the best way to predict the future is to create it." Australia too needs to grab the opportunity to leverage its research and development strengths in emerging digital technologies, and create a "digital future" by amplifying the opportunities for growth in this important sector and strengthen our sovereign capabilities. But Australia is lagging behind many other nations in shaping this digital future.

In a new report released today, the Australian Academy of Science and the Australian Academy of Technology and Engineering have jointly issued an urgent call to action, asking the government and industry to recognize the importance of emerging digital technologies.

The report makes several key recommendations:

1. elevate emerging digital technologies as a national science and innovation priority
2. include research and innovation in emerging digital technologies in the 2021 Research Infrastructure Roadmap
3. recognize emerging digital technologies as an independent growth sector.

What technologies should be encouraged?

The report focuses on emerging digital technologies such as artificial intelligence (AI), the internet of things (IoT), augmented and virtual reality, blockchain and 5G networks.

These innovations are already starting to transform industries such as manufacturing, agriculture, waste management, transport, finance, education and health. But they are still considered "emerging

technologies" because they have not yet realized their full commercial potential, unlike more established technologies such as 3D printing, mobile computing or GPS.

The next wave of emerging digital technologies, such as self-driving vehicles, smart microgrids, 6G networks and quantum computing, will further disrupt and transform many sectors of the economy.

Of course, it is hard to predict exactly what innovations will arise in the future. But by ensuring a strong national focus on fundamental science and engineering in this fast-evolving area, Australia can ensure it stays ahead of the curve, no matter what the future brings.

What are other nations doing?

The problem is that Australia is currently doing the opposite. It is falling behind countries such as the United States, United Kingdom, France, Canada and China, all of which are prioritizing digital technologies as a strategy to bolster their global competitiveness.

Digital innovation accounts for only 7.4% of Australia's gross domestic product (GDP), compared with an OECD average of 11.2%.

The applications of emerging digital technologies will continue to diversify and grow. Research and innovation in emerging digital technologies should not be artificially bound to specific application areas nor overly focus on today's needs, as doing so limits innovation potential that could otherwise create entirely new industries and jobs.

At the same time, emerging digital technologies continue to outpace social expectations and regulatory frameworks. Australia's digital divide continues to widen, and individuals with lower income, employment and education continue to fall behind. This challenge is likely to compound

our looming shortage of digitally skilled workers and widen existing inequalities.

Achieving digital literacy and inclusion through education and workforce development are essential for Australia to meet its commitments to the United Nations' Sustainable Development Goals, and to ensure the development of a digitally literate, highly skilled workforce.

Australians are early adopters and avid users of technology—a trend that has been accelerated by the COVID pandemic. And the federal government's Digital Economy Strategy is already putting A$1.2 billion into key digital capabilities such as artificial intelligence and drone technologies.

This investment is welcome, but the government must also clearly recognize the importance of building scientific and engineering capabilities in ways that underpin the entire digital economy, not just particular technologies.

Elevating emerging digital technologies as a national science priority will lift their importance, both in investment and in narrative, develop research and development strengths, deliver critical research infrastructure, and be a catalyst for creating new tech businesses and supporting existing businesses through enhanced linkages between research and industry. Through recognition of a growth sector, it can help to attract talent and address future skill needs of the nation.

A highly digitized society will demand world-class leadership in developing digital technologies, and reduce our reliance on overseas technology and expertise. Coordinated and strategic support of this crucial sector of our economy will help create a digital future for Australia that is aligned with our social and economic aspirations.