

Fact Sheet

Annex A

SERVICES & DIGITAL ECONOMY TECHNOLOGY ROADMAP AND SERVICES 4.0

Background

A confluence of emerging technologies has disrupted entire industries, business models and jobs. At the same time, these shifts have opened up new possibilities, enabling Singapore to shake off its conventional economic constraints such as its small domestic market and geography. A better understanding of major technology trends and its implications, will enable Singapore to respond decisively.

The Services and Digital Economy Technology Roadmap (SDE TRM)

IMDA developed the SDE TRM to refresh the previous Technology Roadmap to provide a scan on the digital technology landscape over the next 3 to 5 years. The roadmap is an important component of the Digital Economy Framework for Action¹ that was launched in May 2018, to guide IMDA's industry development plans and regulatory approaches for the Infocomm and Media (ICM) sector. SDE TRM has identified nine key technology trends:

- 1) The adoption of AI will be more pervasive
- 2) AI will become sophisticated, with more context and common sense awareness, and with more empathic and affective behaviour
- 3) Man-machine interactions and collaborations will rapidly expand in many new ways
- 4) Technology interfaces are getting more natural
- 5) More deployment of codeless development tools
- 6) Digital platforms and Everything-as-a-service architecture enable seamless services
- 7) Cloud deployment matures with hybrid and multi-cloud
- 8) Blockchain helps to decentralise trust
- 9) API economy takes off

¹ Digital Economy Framework for Action - <http://www.imda.gov.sg/digital>

The SDE TRM identifies the advancement of key technologies that businesses could focus on by adoption, innovation and investment. It will guide and speed up the development of the strategic priorities and the enablers as described in the Digital Economy Framework for Action, and will steer ICM solution companies and services providers to deliver the five objectives to realise Singapore's three ambitions to become a Services 4.0 hub for key sectors.

Services 4.0

Services 4.0 is Singapore's response to socioeconomic shifts accelerated by emerging technology identified in the SDE TRM, to enable Singapore businesses to capture the new opportunities made possible by services to customers that are end-to-end, frictionless, anticipatory and empathic. In Services 4.0, service delivery is automated for repetitive and mundane tasks, and workers are augmented with emerging technology for creativity, analytical thinking, emotional intelligence and innovation. Services 4.0 is the vision to capture the opportunities of the Future of Services.

Cloud Native Architecture

To realise the Services 4.0 vision, the ICM ecosystem will need to respond collectively to deliver solutions that are (a) more cost-effective, (b) provide easier access to emerging technologies, (c) scale with the growth of the demand and (d) support the changing needs of service providers in an agile manner. To help companies do this, a Cloud Native Architecture² enabled by the ICM ecosystem is one way to bring emerging technologies closer to service providers and workers.

² A Cloud Native Architecture is envisioned based on three main tenets - multi-cloud, emerging tech offered as component services and APIs.

Singapore's Three Ambitions Towards Becoming a Services 4.0 Hub for Key Sectors

A. Companies – A Launchpad for Services 4.0

As a *Services 4.0 Hub*, the ambition of Singapore is to be a Launchpad for service providers who wish to design, deliver or operate seamless services aligned to the Services 4.0 vision. Service providers will find Singapore a conducive environment where they will find their ecosystem partners adopting “everything-as-a-service” paradigm. This will allow service providers to put together seamless services which are end-to-end, frictionless, anticipatory and empathic, while at the same time cost-effective and go to market faster.

B. Workers – A Competitive Workforce Augmented with Technology

In the Services 4.0 paradigm, Singapore should develop a competitive workforce where every worker is augmented by technology. The workplace is already being transformed by technologies, where workers use tools such as online collaboration platforms to collaborate, communicate and connect. Services 4.0 will further transform the digital workplace. For example, bots could be made accessible to workers, customisable by workers to help them in their jobs.

Singapore aims to be a digital talent hub, providing a successful case study for a human-machine integrated workforce and a destination of choice for companies looking for competitive workforce and digital talent.

C. ICM ecosystem – A Vibrant ICM Ecosystem where Emerging Technologies are made easily Accessible

More and more businesses realise the need to adopt emerging technologies and innovate across business functions and workers. Singapore aims to build a ICM ecosystem that is Cloud Native, with emerging technologies accessible to all businesses. Within the ecosystem, API-driven component services can enhance the agile way of deploying new technologies.



Furthermore, the Cloud Native Architecture will reinforce and empower possibilities as it will build an inclusive ecosystem that provides the environment to imagine new possibilities and realise them by the application of emerging technologies.

About Infocomm Media Development Authority (IMDA)

The Infocomm Media Development Authority (IMDA) leads Singapore's digital transformation with infocomm media. To do this, IMDA will develop a dynamic digital economy and a cohesive digital society, driven by an exceptional infocomm media (ICM) ecosystem – by developing talent, strengthening business capabilities, and enhancing Singapore's ICM infrastructure. IMDA also regulates the telecommunications and media sectors to safeguard consumer interests while fostering a pro-business environment, and enhances Singapore's data protection regime through the Personal Data Protection Commission.

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