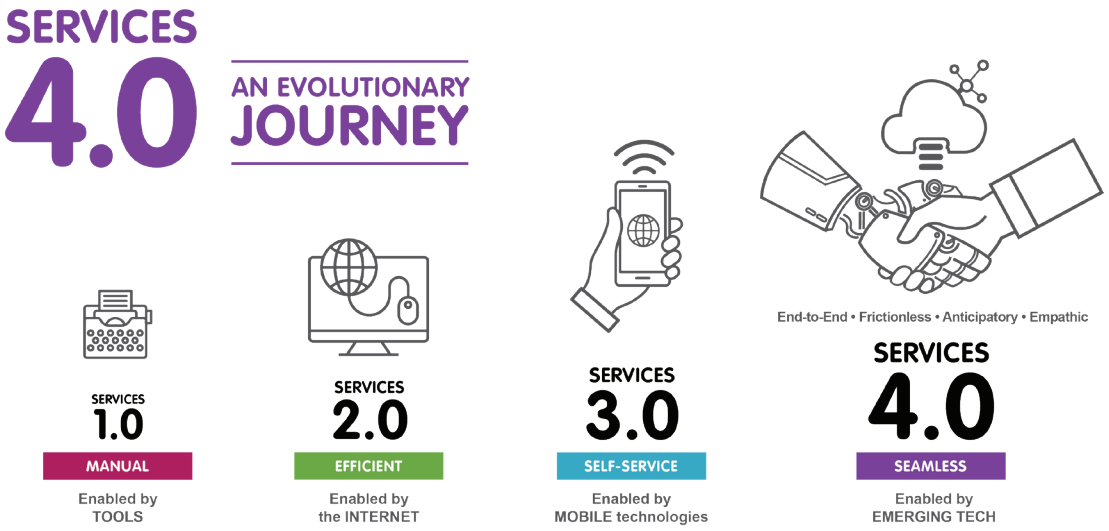
Executive Summary

The Technology Roadmap has identified nine key trends that will move the digital economy significantly over the next three to five years. They may be viewed either as challenges or opportunities. The biggest impact will be on the services sector as it forms the bulk of the global economy and Singapore's GDP[1].



Services 4.0 is the vision that will guide Singapore's response to capture opportunities for the economy.

With the services economy evolving from the era of manual services (Services 1.0) to the era of efficient, internet-enabled services (Services 2.0), then to self-services enabled by mobile, wireless and cloud technologies (Services 3.0), the next phase will be one of seamless services that are end-to-end, frictionless, empathic, and can anticipate customer needs using emerging technologies (Services 4.0).

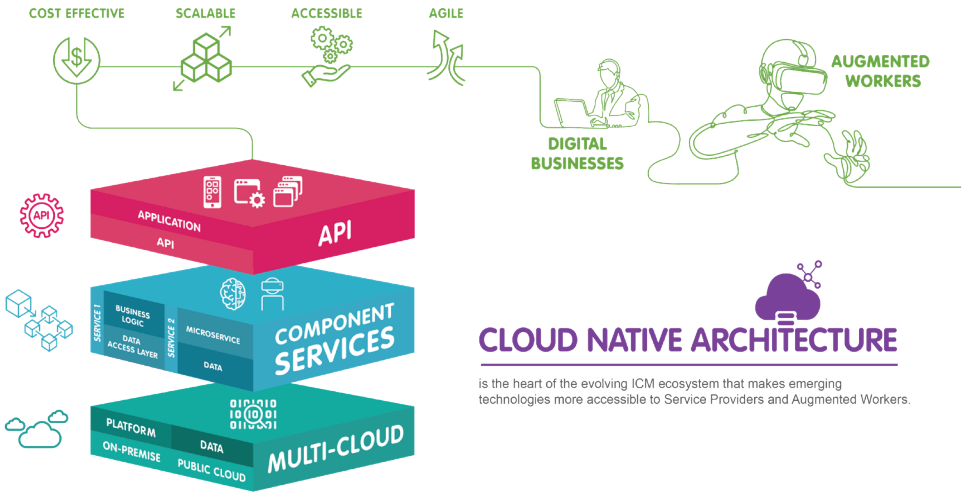
In Services 4.0, businesses will need to meet changing customer needs quickly, innovate and create new value in order to differentiate themselves from competitors. Emerging technologies will make it possible for businesses to automate repetitive tasks and achieve higher productivity. However, as customers still demand human interactions, businesses should unlock growth by offering human-centric services enabled by emerging technologies. Both worker augmentation and automation will ultimately lead to the creation of new and enhanced jobs.

To support Services 4.0, the Infocomm and Media (ICM) ecosystem will need to respond collectively to deliver solutions that are as follows:

- more cost effective
- scalable according to demand
- provide easier access to emerging technologies
- support the changing needs of service providers in an agile manner

[1] 74% of GDP in 2016 (Source: Singstat, MOM, World Bank, Monitor Deloitte).

Cloud Native Architecture[2] is at the heart of the evolving ICM ecosystem. Adopting this architecture will bring emerging technologies closer to service providers and workers, and help realise the aforementioned benefits.

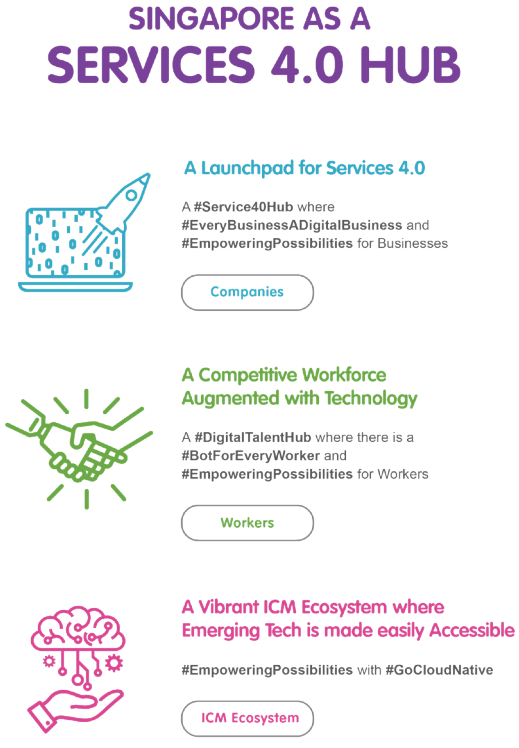


While 71% of global firms expressed that they would like to transition to Cloud Native, only 9% have succeeded[3]. It will be necessary to foster an inclusive ecosystem where all parties move in tandem. The Singapore Government has already made the move to migrate to Cloud Native Architecture by establishing the Singapore Government Technology Stack.

The Technology Roadmap committees believe that with the support of an inclusive Singapore ICM ecosystem, Singapore is well-positioned to become a Services 4.0 hub for key sectors.

This goal will encompass three ambitions. The first ambition is to make Singapore a launchpad for Services 4.0. The second is to build a competitive workforce in Singapore that is augmented by technology. The third is to establish a vibrant ICM ecosystem in Singapore that delivers Cloud Native solutions that will bring emerging technologies closer to service providers and workers. This will enable faster time to market from concepts to seamless services, and also spur innovation. The realisation of the third ambition is critical as it forms the foundation for the first two ambitions.

To help Singapore reach these three ambitions, a suite of recommendations has been proposed to guide the implementation of the three strategic priorities and four enablers under the Digital Economy Framework for Action, launched in May 2018.



[2] Cloud Native Architecture is envisioned based on three main tenets - Multi-Cloud, emerging technologies offered as component services and APIs.
[3] "Beyond Agile: Is It Time to Adopt Microservices?" LeanIX 2017.