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# FRAMING POLICIES FOR THE DIGITAL ECONOMY

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TOWARDS POLICY FRAMEWORKS  
IN THE ASIA-PACIFIC



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## FOREWORD

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*We hold these algorithms to be self-evident, that all Internet users are created equal, that they are endowed by their software with certain unalienable Rights, that among these are digital Life, e-Liberty and the pursuit of Internet Happiness.*

The fourth industrial revolution is sweeping the world by storm. A digital 'Declaration of Independence' is demanded to enable all humanity to benefit fairly from the coming upheaval. In this new digital economy, every country is faced with unprecedented opportunities and challenges which are fundamentally different from the previous revolution. Entire industries are being disrupted and transformed.

New platforms of collaboration and competition across the public, private and people sectors are presenting urgent imperatives for governments to innovate, to redesign services, and to rethink policies. The legitimacy of digital government will depend on fostering citizens' consent through a digital social contract that embraces e-equity and value creation.

Digital government policies must foster agility, innovation and value creation. Every public servant, industry professional and citizen must embrace digital transformation, and have access to learning opportunities to develop deep and holistic skills to thrive in this new era.

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## CHAPTER 1: Framing the Digital Economy

In September 2017, Alipay users can walk into any KFC (Kentucky Fried Chicken) in Hangzhou (China) and ‘smile to pay’ enabled by facial recognition technology – as part of a pilot programme by Alibaba’s Ant Financial.<sup>1</sup> By 2018, students at the tropical campus of the National University of Singapore will see drones carrying parcels as part of a trial by Airbus Helicopters and the Civil Aviation Authority of Singapore<sup>2</sup> - the same technology has already been tested to deliver medicine in rural Rwanda and New Zealand.<sup>3</sup>

These are just a few examples of the rapid changes over-taking economies and societies as they ‘go digital’. The emergence of the digital economy is transforming the world at an unprecedented scale, scope and complexity. Challengingly, the transformation is characterised by disruption across almost *all sectors* of industry and society leading to the emergence of new forms of production, management and governance.<sup>4</sup> The opportunities emerging for governments to reach and enable citizens with services are quite profound, but so too are ways in which the government must reappraise its role and approach. To begin to frame this dynamic, this chapter provides a broad definition of what the digital economy is, and an overview of the impact and potential of the new technologies underpinning and driving digital disruption. It then discusses the unique characteristics of the digital economy in terms of scale and scope and briefly introduces the effect of digital transformation on governments.

### What is a Digital Economy?

There is no universally accepted definition of the digital economy, but a most common, albeit somewhat narrow understanding is the share of GDP accounted for by the ICT sector.<sup>5</sup> (Identifying what this is and comparing across different economies raises its own set of problems.) This report relies on a much broader concept and defines the digital economy as “the entirety of sectors that

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<sup>1</sup> TechCrunch, Jon Russel (3 Sept 2017), Alibaba debuts ‘smile to pay’ facial recognition payments at KFC in China, <https://techcrunch.com/2017/09/03/alibaba-debuts-smile-to-pay/?ncid=mobilenavtrend>

<sup>2</sup> Today Weekend, Louisa Tang Qianrou (18 Feb 2016), NUS campus to trial parcel delivery by drones, <http://www.todayonline.com/singapore/drones-deliver-parcels-across-nus-campus>

<sup>3</sup> MIT Technology Review, Jonathan W. Rosen (8 June 2017), Zipline’s Ambitious Medical Drone Delivery in Africa, <https://www.technologyreview.com/s/608034/blood-from-the-sky-ziplines-ambitious-medical-drone-delivery-in-africa/>  
New Zealand: The Country (27 June 2017), Drones in trials to deliver medicine in rural Northland, [http://www2.nzherald.co.nz/the-country/news/article.cfm?c\\_id=16&objectid=11882592](http://www2.nzherald.co.nz/the-country/news/article.cfm?c_id=16&objectid=11882592)

<sup>4</sup> Note, the term ‘disruption’ is here used to denote the upsetting of existing businesses and/or business models, and as such, is part of a process of transformation; while the term ‘transformation’ implies a much broader change in economic and social parameters, for example, the demise of agriculture or heavy industry and the rise of the information society.

<sup>5</sup> OECD (2014), Measuring the Digital Economy: A New Perspective, <http://www.oecd.org/sti/ieconomy/9789264221796-sum-en.pdf>

operate using Internet Protocol (IP)-enabled communications and networks” irrespective of industry.<sup>6</sup>

Digital technologies have been deployed in different parts of national economies for decades, notably in communications networks, but it was the Internet and IP-enabled networks that created a universal platform to form the foundation of the digital economy for all sectors. The distinction between the Internet economy and the digital economy (though the terms are often used interchangeably) rests on the difference in sectoral impact: Internet economy “refers to the economic activities, inputs, outputs and employment directly associated with the use of the Internet.”<sup>7</sup> By contrast, the digital economy relies on enhanced interconnectivity of networks and the interoperability of digital platforms in all sectors of the economy and society to offer convergent services. For example, digital traffic can cross between telecommunications and banking networks – such as in the case of payments apps running on India’s Unified Payments Interface, which enable funds transfers among customers and merchants using various mobile network service providers and financial institutions.<sup>8</sup>

“Going digital”<sup>9</sup> is an all-encompassing shift beyond the economic sphere, which impacts society, culture, politics, and technological development. For this reason, governments and public bodies responsible for the welfare of citizens need to understand what “going digital” entails, and what challenges and opportunities it offers.

There have been numerous studies on the economic impact of the digital economy upon the GDP of countries. Such attempts at quantifying have thus far been somewhat problematic due to the lack of well-established measurement criteria, and thus the lack of reliable data. An oft-cited 2011 study by the McKinsey Global Institute estimated that the Internet accounts for 3.4% of overall GDP in the 13 nations studied.<sup>10</sup> In 2014, the OECD measured the digital economy, defined more widely as the ICT sector, as accounting “for 6% of total value added, 4% of employment and 12% of total fixed investment in the OECD area.”<sup>11</sup> These studies provide useful benchmarks and indicators of the extent of the impact, but they have proven less applicable as policy guides or models for governance. Studies focused on measuring the impact on a sectoral level (e.g. e-commerce) or on non-financial metrics (e.g. the rate of financial inclusion) offer more straightforward assessments,

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<sup>6</sup> ISOC (2015), Unleashing the Potential of the Internet for ASEAN Economies, [https://www.internetsociety.org/sites/default/files/ASEAN\\_ISOC\\_Digital\\_Economy\\_Report\\_Full\\_0.pdf](https://www.internetsociety.org/sites/default/files/ASEAN_ISOC_Digital_Economy_Report_Full_0.pdf), p. 5-6

<sup>7</sup> ISOC (2015), Unleashing the Potential of the Internet for ASEAN Economies, [https://www.internetsociety.org/sites/default/files/ASEAN\\_ISOC\\_Digital\\_Economy\\_Report\\_Full\\_0.pdf](https://www.internetsociety.org/sites/default/files/ASEAN_ISOC_Digital_Economy_Report_Full_0.pdf), p. 5-6

<sup>8</sup> National Payments Corporation India (2016), Unified Payments Interface (UPI), [http://www.npci.org.in/UPI\\_Background.aspx](http://www.npci.org.in/UPI_Background.aspx)

<sup>9</sup> The title of the landmark book by Nicolas Negroponte in 2000

<sup>10</sup> McKinsey Global Institute (2011), Internet Matters: The Net’s Sweeping Impact on Growth, Jobs and Prosperity, [http://www.mckinsey.com/features/sizing\\_the\\_internet\\_economy](http://www.mckinsey.com/features/sizing_the_internet_economy)

<sup>11</sup> OECD (2014), Measuring the Digital Economy: A New Perspective, <http://www.oecd.org/sti/ieconomy/9789264221796-sum-en.pdf>

but are also hard to evaluate as a comparative analysis is impossible in the absence of a methodology for consistent and extendable digital data collection. This is important because the choices required and the opportunity cost involved in assigning resources to the development of the digital economy can be significant and without a demonstrable case of impact, such resource diversion can be hard to justify and maintain.

## Digital Disruption

Digital disruption occurs in various ways:

1. *Product or service substitution*, such as the displacement of music cassettes and compact disks with streamed music online, or more starkly, the displacement of printed motorway maps by GPS systems in smartphones which are now widely used to navigate drivers
2. *By-pass*, whereby for example, payment no longer goes through the existing gatekeeper thereby eliminating demand for its services, as in the case of P2P funds transfer offered by TransferWise, which by-passes banks or online insurance sales platforms, which eliminate the need for an agent network;
3. *Technological paradigm shift*, such as cloud computing, which represents a fundamental change in how consumers procure, access and use IT infrastructure while offering lower costs and rapid scalability.

Cloud computing, blockchain or the Internet are what economists call a General Purpose Technology (GPT), meaning they bring a significant impacting shift *across all sectors* of an economy and society as a result of the technology's introduction. GPTs' rate of adoption may vary from sector to sector, but as economies become increasingly interconnected they become embedded and ubiquitous. Classic examples of a GPT include electricity or the combustion engine.

The table below describes the impact of such "game changing" technologies, which have been or will be most likely disrupting the economy and society. The impact potential of most of these GPTs is yet

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