

Interoperable, agile, and balanced

Rethinking technology policy and governance for the 21st century

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Abstract

Emerging technologies are shifting market power and introducing a range of risks that can only be managed through regulation. Unfortunately, current approaches to governing technology are insufficient, fragmented, and lack the focus towards actionable goals. This paper proposes three tools that can be leveraged to support fit-for-purpose technology regulation for the 21st century: First, a transparent and holistic policymaking levers that clearly communicate goals and identify trade-offs at the national and international levels; second, revamped efforts to collaborate across jurisdictions, particularly through standard-setting and evidence gathering of critical incidents across jurisdictions; and third, a shift towards agile governance, whether acquired through the system, design, or both.

1. Forward-looking governance for newly powerful economic sectors

The outperformance of the tech sector in stock markets around the world during the COVID-19 pandemic shows that companies founded around digital-first practices and business models are now among the most *valuable*—from a market cap perspective—firms globally. They are also among the most important players in the economy from a *structural* sense.¹ Meanwhile, they are among the most controversial players as well, exercising pressure on markets without implicit or organic distributive forms of value.

This structural importance is not confined to economic power. The innovative firms' ability to harness the power and scalability of digital distribution, advanced analytics, and lean, automated production methods in a world of expanding mobile devices has delivered social and political influence alongside rising share prices. For some, revenue, profits, and free cash flow allow for further growth through acquisitions, creating a reinforcing relationship between economic, political, and social power.

The prominence of this structural importance has become geopolitically relevant to the point in which a new and durable set of global power relationships seems to be emerging. In 2020, Bloomberg reported² that the market cap of Tesla—an engineering innovation company focused on sustainable energy—had exceeded that of ExxonMobile. A series of similar announcements since reveal a systemic shift of market composition and capital fluency towards digital platforms, which challenge the sovereignty of nations.

The rise of digital platforms and artificial intelligence (AI)-first firms as powerhouses of value-creation and delivery is not necessarily a bad thing. The fact that emerging technologies enable the creation and growth of new industries and can transform existing value chains in ways that ultimately deliver greater value to consumers is a testament to the

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¹ If a sector is structurally important, it means that an economy is in some sense reliant upon it. For example, a set of firms may provide core infrastructure for other forms of commerce. They might be at the centre or end of critical value chains, thereby supporting myriad other firms who provide inputs or see their outputs as essential. They might generate outsized profits, and thus contribute significantly to government tax receipts. Or they might represent a significant chunk of employment. All of these means that citizens have a collective interest in the success of the sector as a whole.

² <https://www.bloomberg.com/news/articles/2020-06-30/tesla-overtakes-exxon-s-market-value-in-symbolic-energy-shift>

power of innovation to improve people's lives. It is also a renowned mechanism of economic renewal.³

However, as this paper points out, this new trend and structural shifts in the sources and wielders of economic, social, and political power suggest a need for new forms of regulation and governance that ensure the survival and growth of shared societal values.⁴

Jurisdictions around the world are addressing this issue in different ways. Over the past five years, the European Union (EU) has adopted a proactive stance, which was fuelled by concerns that it lacked the tools to influence a technology landscape dominated by foreign firms.⁵ They also recognized that the existing regulatory instruments failed to fully express how fundamental individual rights might be protected under the new digital era.

China has taken a more thoughtful and bold approach. Domestically, it is combining ambitious targets and generous state support for technology development with increased controls on cybersecurity, competition policy, and algorithms use to influence consumer choices.⁶ China has also laid out a blueprint for how it plans to influence global standards around technology,⁷ and has expanded its footprint within institutions such as the International Telecommunication Union (ITU).⁸

In fact, various countries around the world are beginning to develop a more robust technology policy. Before 2020, only six Asian countries had comprehensive data privacy laws. Between 2010 and 2020, 20 jurisdictions enacted new data privacy laws and seven undertook amendments.⁹ While they share similar data protection elements, they all differ from one another in important ways.

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³ Regardless of the premise, be it any antecedent industrial revolutions to the one we experience today, technology's primary purpose is the creation of new value over the obsolescence of industrial processes that cannot survive the essence of time.

⁴ Here, we use ethicist Simon Longstaff's definition of values as concepts or ideas that an individual, group or organization believes are 'good' and hence worth pursuing. By identifying what is of most value, they guide actions, activities, and behaviors. The World Economic Forum's Global Agenda Council on Values argues that three values in particular constitute shared human aspirations: The dignity and equity of human beings; the importance of a common good that transcends individual interests; and the need for stewardship of assets for future generations. See Simon Longstaff (2017). *Everyday Ethics*. Sydney: Ventura Press; [World Economic Forum \(2016\), *Values and the Fourth Industrial Revolution Connecting the Dots Between Value, Values, Profit and Purpose*](#).

⁵ Komaitis and Sherman (2021). US and EU tech strategy aren't as aligned as you think. Brookings, May 11, 2021. <https://www.brookings.edu/techstream/us-and-eu-tech-strategy-arent-as-aligned-as-you-think/>

⁶ See for example AlJazeera (2021). China's new draft rules to further tighten control on tech sector. 17 August 2021. <https://www.aljazeera.com/economy/2021/8/17/chinas-new-draft-rules-to-further-tighten-control-on-tech-sector>

⁷ Xinhua News Agency (2021). The Central Committee of the Communist Party of China and the State Council issued the "Outline for the Development of National Standardization". 10 October 2021. 中共中央 国务院印发《国家标准化发展纲要》 http://www.gov.cn/zhengce/2021-10/10/content_5641727.htm

⁸ Seema Sirohi (2020). China's footprint is growing within the United Nations. Observer Research Foundation. April 6, 2020. <https://www.orfonline.org/expert-speak/chinas-footprint-is-growing-within-the-united-nations-64177/>

⁹ Morrison Foerster (2021). Transformation of the Privacy Landscape in Asia. 4 Jan 2021.

<https://www.mofo.com/resources/insights/210104-transformation-privacy-landscape-asia.html>

By contrast, the United States (U.S.) has stepped back from its traditional leadership role on digital governance at the global and national levels.¹⁰ The Trump administration did relatively little to promote internet freedom internationally, failing in diplomatic efforts to reach consensus on security issues related to 5G equipment, and undermined U.N. proposals to protect freedom of speech online.¹¹ While bills related to supporting technologies that help the country compete with China have been well-received domestically,¹² efforts to create a new regulatory regime focused on digital platforms have so far fallen short.¹³

The varying approach to technology regulation globally and the inconsistent progress within countries suggest that the current policy efforts in this area are inadequate. This paper touches on four key areas to help address this challenge: We begin by highlighting the gaps that exist between current regulatory approaches and needs that are created by emerging technologies and novel business models. We then examine a range of systemic challenges facing policy reform and regulatory efforts related to technology. Finally, we propose a new approach centered around the principles of collaborative and agile policy making. We also discuss the trade-offs and system-wide impacts of supporting a thoughtful—as opposed to reactionary—regulation.

¹⁰ Komaitis and Sherman (2021). US and EU tech strategy aren't as aligned as you think. Brookings, May 11, 2021. <https://www.brookings.edu/techstream/us-and-eu-tech-strategy-arent-as-aligned-as-you-think/>

¹¹ See for example Justin Sherman (2020). Trump's Un-American Failure to Protect Internet Freedom. Wired, 22 October 2020. <https://www.wired.com/story/trumps-un-american-failure-to-protect-internet-freedom/>

¹² For example, in a rare bipartisan vote in June 2021 the US Senate adopted the US Innovation and Competition Act to address China's rising technological power. <https://www.washingtonpost.com/politics/2021/06/09/technology-202-senate-approved-massive-investment-us-tech-competitiveness/>

¹³ In June 2021, no fewer than five antitrust-related bills were introduced to US Congress under the title "A Stronger Online Economy: Opportunity, Innovation, Choice". A number of provisions in these are patently unworkable – such as an effective blanket ban on digital platforms making acquisitions. <https://cicilline.house.gov/press-release/house-lawmakers-release-anti-monopoly-agenda-stronger-online-economy-opportunity>

2. Why do we need new forms of technology regulation?

There is currently a prevalence of national and sub-national policies that support the growth of technology firms as sources of innovation as these firms are assumed to create economic value and jobs. As Mariana Mazzucato and others have pointed out, a wide range of public policies have focused on subsidizing private companies willing to invest in developing or deploying new technologies in the hope that their growth leads to higher tax receipts, high-wage employment, and other economic benefits.¹⁴

It is not a secret that many of world's largest and best-known tech firms have been supported by public money. The algorithm that led to Google's success was funded by the National Science Foundation—a public sector grant.¹⁵ Tesla received a \$465 million loan from the U.S. Department of Energy in 2010.¹⁶ In 2011, Baidu and other firms received tens of millions of dollars in grants as a result of their success developing cloud computing standards and technologies.¹⁷ In 2019, Palantir had at least 29 active contracts with the U.S. federal government worth an estimated \$1.5 billion in revenue.¹⁸ And Amazon was able to borrow \$2 billion from the U.S. government with an interest rate of 0.1 percent over 2 years.¹⁹

These examples illustrate the systematic use of industrial policy aimed at increasing the aggregate supply of sophisticated products and services while improving the balance of trade and ensuring the domestic availability of technological capabilities that are strategically relevant. Since at least 2018, China's President Xi Jinping has publicly emphasized the importance of the perceived relationship between emerging technologies, industrial progress, and balance of power among sovereign states,²⁰ while Russia's

¹⁴ Mariana Mazzucato (2013), *The entrepreneurial state: debunking public v private sector myths*, New York: Anthem Press

¹⁵ J Batelle (2005). *The Search*. New York: Penguin

¹⁶ Tesla Project Summary. US Department of Energy. <https://www.energy.gov/lpo/tesla>

¹⁷ "Baidu receives the highest incentive for cloud computing from the National Development and Reform Commission: followed by Tencent and Ali [百度获发改委云计算专项最高激励: 腾讯阿里其次]. 19 October, 2011. TechWeb.com.cn. <http://www.techweb.com.cn/internet/2011-10-19/1107973.shtml>

¹⁸ Mijente (2019). *The War Against Immigrants: Trump's Tech Tools Powered by Palantir*. August 2019.

https://mijente.net/wp-content/uploads/2019/08/Mijente-The-War-Against-Immigrants_-Trumps-Tech-Tools-Powered-by-Palantir_.pdf

¹⁹ <https://www.ft.com/content/83107255-d3f2-416b-aba9-37a8cadb0296>

²⁰ "Xi Jinping: Follow the trend of the times and achieve common development [习近平: 顺应时代潮流 实现共同发展]." People's Daily [人民日报], July 26, 2018. <http://cpc.people.com.cn/n1/2018/0726/c64094-30170246.html>.

President Vladimir Putin opined that “Whoever becomes the leader in [artificial intelligence] will become the ruler of the world.”²¹

However, as we have witnessed throughout recent history, new technologies—and the economic and social power they grant the firms and organizations that control and deploy them—also have the capacity to adversely impact the wellbeing of many people.²² For example, following 9/11, the Patriot Act was introduced in the U.S., which enabled technology firms to legitimately spy on citizens on behalf of a national security mandate. Such measures impact individuals and could create new social risks.

Beyond the impact on individual liberties, new technologies also exacerbate discontent and inequality by further widening the digital divide; tech-driven growth and dependency may drive economic and social transitions that unjustly increase inequality by excluding individuals or communities. Meanwhile, there is evidence that the structural dominance of digital firms—and their use and misuse by an ever-growing number of users that number in the billions for the largest platforms—are creating risks for societies that range from fomenting extremism in Syria²³ to increasing media market competition in Australia,²⁴ shifting democratic participation in Kenya,²⁵ inciting genocidal violence in Myanmar,²⁶ and efficiently spreading misinformation around health.²⁷

Industrial revolutions of any kind have legitimate and severe implications for economic development, national security, social cohesion, and human rights. But the one we are experiencing now—termed the “Fourth Industrial Revolution” (4IR) by the World Economic Forum—poses greater risks due to the speed and scale by which digital applications and systems can be deployed across traditional borders.²⁸

In the past, it has taken decades for regulatory efforts to catch up with the harms caused by new technologies and the business models that support them. For example, it took over 50 years from the time child labor issues were formally raised for the British government to pass an enforceable bill limiting the exploitation of young people to a mere 10 hours a day,

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²¹ “Whoever leads in AI will rule the world”: Putin to Russian children on Knowledge Day.” RT. 1 Sep, 2017.

<https://www.rt.com/news/401731-ai-rule-world-putin/>

²² As one example, a 1965 US National Safety Council report estimated that automobile accidents were responsible for 49,000 deaths in a single year in the United States. Efforts to manage this impact via a range of federal regulatory proposals, including traffic safety bills HR 13228 and S3005 were opposed by the US auto industry. It is notable that, in 1965, General Motors was the largest company in the country by revenue, and Ford ranked third.

https://archive.fortune.com/magazines/fortune/fortune500_archive/full/1965/

²³ Awan, I. (2017). Cyber-Extremism: Isis and the Power of Social Media. *Soc* 54, 138–149 (2017).

<https://doi.org/10.1007/s12115-017-0114-0>

²⁴ Australian Competition & Consumer Commission. (2019). Digital platforms inquiry: final report.

²⁵ Nanjala Nyabola (2018). *Digital Democracy, Analogue Politics: How the Internet Era is Transforming Politics in Kenya*. Zed Books.

²⁶ Paul Mozur (2018), A Genocide Incited on Facebook, With Posts From Myanmar’s Military, *New York Times*, Oct 15, 2018.

²⁷ Wang, Y., McKee, M., Torbica, A., & Stuckler, D. (2019). Systematic literature review on the spread of health-related misinformation on social media. *Social science & medicine*, 240, 112552.

²⁸ Schwab and Davis (2018), *Shaping the Future of the Fourth Industrial Revolution*.

and even then, only in textile factories.²⁹ A similar time period passed after the mass adoption of the automobile: Following public pressure and skyrocketing fatality rates, the U.S. Congress passed a legislation in 1966 to authorize the federal government to set standards for motor vehicles and highways; this measure saved an estimated 600,000 lives between 1960 and 2012.³⁰ The World Economic Forum and others have referred to this as “the pacing problem.”³¹

Countries and communities should not—and cannot afford to—wait a similar period of time to effectively manage the regulatory challenges of the 4IR. The externalities created by a rapid and widespread shift towards digital commerce and social dynamics are urgent and require immediate focus. Unfortunately for most countries, policies and institutions designed to manage risks related to previous industrial revolutions are not well adapted to the opportunities and challenges created by the current shift in power. As former U.S. Secretary of State Madeline Albright described, “citizens are speaking to their governments using 21st century technologies, governments are listening on 20th century technology and providing 19th century solutions.”

The fact that 19th and 20th century policies are proving insufficient for managing the social, political, and economic implications of emerging technologies—and the private sector that controls their use—does not just mean that societies are more exposed to the risks of digital systems. By delaying the development and implementation of thoughtful and appropriate policy, regulators are increasing the concentration of power in digital platforms. This can further exacerbate the spread of misinformation, undermine political systems, create social division, pose critical security concerns, and raise economic inequality.

It is indeed not surprising that what used to be more extreme political views have now become mainstream both in the U.S. and elsewhere. It is important to note that this phenomenon is not unique to advanced economies. While public debates on technology regulation are most visible in the U.S., Europe, and Australia, efforts to manage the development and deployment of the technologies of the 4IR are happening around the world. There is, however, differences in approaches between countries that are developing technology-focused strategies and infrastructures and those that are still at the exploratory stage (e.g., technology being still assessed rather than implemented). This is likely to continue in the years to come unless some form of institutional convergence occurs.

Regulatory efforts range from Thailand’s six digital bills introduced in 2019 to the passing and subsequent repeal of Malaysia’s “Anti-Fake News Act”, India’s Aadhaar Act of 2016 regulating the country’s national digital identity scheme, and Russia’s 2019 mandate

²⁹ Price, L. “Cooke-Taylor, R. W., The Factory System and the Factory Acts (Book Review).” 1 Jan. 1894: 673–. Print.

³⁰ Bureau of Transportation Statistics. (2016, September 9) *A Half Century of Highway Safety Innovations – 1966 to 2016*. https://www.bts.gov/archive/publications/passenger_travel_2016/tables/half

³¹ Signe and Almond (2021), A blueprint for technology governance in the post-pandemic world. Brookings. February 17, 2021. <https://www.brookings.edu/research/a-blueprint-for-technology-governance-in-the-post-pandemic-world/>

requiring certain consumer devices to come with pre-installed Russian software from January 1, 2021.³²

In fact, the vast majority of internet users and technology devices are found outside of developed economies: There are more than 2.5 billion internet users in Asia, while China and India combined have five times more smartphones than the U.S.³³

The combination of failing or absent regulatory mechanisms and the globalization of technology means that new approaches are needed to govern the ways in which technology impacts our societies. Such approaches must possess three characteristics that have been less important in previous eras: They must be interoperable, agile, and balanced. Furthermore, embedding such new approaches requires overcoming a range of challenges related to policy making in the 21st century, which tend to slow or stymie efforts to address the risks posed by structurally-embedded firms that control and exploit a range of digital technologies.

³² See for example Economist Intelligence Unit (2019). Digital dampener: Thailand's sweep of technology legislation. <http://country.eiu.com/article.aspx?articleid=1447695528&Country=Thailand&topic=Economy>, The Straits Times (2019), Malaysia Parliament passes law to scrap anti-fake news Bill again, abolishing it within the year, October 10, 2019. <https://www.straitstimes.com/asia/se-asia/malaysia-parliament-passes-law-to-scrap-anti-fake-news-law-again-abolishing-it-end-of>, The Gazette of India (2016), The Aadhaar (Targeted Delivery of Financial And Other Subsidies, Benefits And Services) Act, 2016. 25 March 2016; Reuters (2021), Russian law requires smart devices to come pre-installed with domestic software, April 1, 2021. <https://www.reuters.com/business/russian-law-requires-smart-devices-come-pre-installed-with-domestic-software-2021-04-01/>

³³ Statista (2021), Number of worldwide internet users in 2021, by region. <https://www.statista.com/statistics/249562/number-of-worldwide-internet-users-by-region/> Ben Evans, Summer update: Tech and the new normal, slide 54.

3. The challenge of regulating technology in the 4IR

What exactly should technology policy seek to govern?

The diversity of policy efforts across the world, and the intricate nature of the legal principles they draw on, can give the impression that technology policy affects every aspect of modern governance. However, focusing on the highest, most relevant levels of policy concern reveals that there are five major technology-focused areas that policymakers are most concerned with today:

1. **National security.** Ensure the physical safety of citizens, as well as the integrity of critical infrastructure, communication networks, and policing efforts. It includes cybersecurity, access to devices, networks, and data to combat terrorism and serious crimes, and other uses of technologies by law enforcement and the military.
2. **Economic development within the economic agenda of governments.** Safeguard national economic income, output, and conditions under which it is produced. It encompasses taxation, employment rights, competition policy, intellectual property regimes, and market power; it is primarily concerned with the interests around productivity and its enhancement.
3. **Infrastructure.** Ensure that national infrastructure—particularly digital infrastructure—is effectively developed and maintained to meet the needs of citizens and the economy. It covers telecommunications systems, cloud computing services, sensor networks, and geospatial infrastructure and in the case of emerging economies, it equally centers on trade routes and access to market.
4. **Privacy and data management.** Define and create safeguards and exceptions to privacy as it relates to digital networks and the flow of data. It covers privacy rights and regulations, data storage and transfer guidelines, and open data initiatives, among other things. It regulates the conversations on data and the strategies that need to ensue to support its protection.
5. **Social cohesion and cultural diversity.** Guide the behavior of individuals through supporting or restricting activities or speech that is enabled by digital networks and emerging technologies. It includes limits on extremist content, censorship of content that is viewed as immoral or counter to national interests, managing

misinformation, combating threats to democracy, and limiting hate speech. In some countries, social cohesion addresses itself to minorities and vulnerable groups as well as the conversation of the population’s mental health.

Mapping technology policy to these five areas reveals the extent to which emerging technologies are influencing the building blocks of modern life—our security, prosperity, infrastructure, individual and community rights, and social cohesion. We should not be surprised then that confining technology regulation to incentivize the development and diffusion of new approaches or limiting the role of regulation to technical questions could result in a series of unintended consequences, market distortions, or abuse of power. This could lead to more harm than originally intended.

The five specific areas covered above encompass the most important technology policy domains for the coming decade. Although they are far from being exhaustive, they cover areas that share applicability across geographies and industries. There are, however, key challenges to achieving success in this space; they are fragmentation, lack of evidence, and shrinking policy space.

Multi-level fragmentation

The process and outcomes of government-led technology regulation are highly fragmented. This is particularly true within countries—with sub-national and sector-specific regulation often in conflict and across nations.³⁴

On a domestic level, the broad scope of today’s digital and emerging capabilities means that technology regulation is interlinked with almost all parts of government, creating what the OECD calls “transversal challenges”.³⁵ A policy intervention by one department will almost inevitably affect the goal and work of others. Without cross-departmental coordination, transversal challenges can undermine, slow, or halt technology policy efforts altogether. While the notion of “technology tragedy of the commons” may sound alarming, it depicts the nature of systemic risk that stems from interdependent systems. For example, efforts to improve citizen privacy can have serious impacts on national security, economic development, telecommunications infrastructure, consumer protection, and even transport. Given that government departments tend to be specialized and siloed, the design and enforcement of technology policies must be balanced and negotiated across a range of complex public bodies—something that is difficult to achieve.

For federally structured or highly devolved political systems, the complexity only increases. States, provinces, or powerful cities with their own interests and regulatory powers—not to

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³⁴ Hogan Lovells (2019). A Turning Point for Tech: Global survey on digital regulation. https://www.hoganlovells.com/-/media/hogan-lovells/pdf/2019/2019_10_30_tmt-final_05319-tmt-study-09-tw-digital.pdf

³⁵ OECD (2019), Regulatory effectiveness in the era of digitalisation. June 2019. <https://www.oecd.org/gov/regulatory-policy/Regulatory-effectiveness-in-the-era-of-digitalisation.pdf>

mention their own specialized departments—need to be involved. All of this coordination requires an investment of time, staff attention, and expertise.

On a cross-border level, inconsistent regulations make it more difficult for businesses that serve global customers. For example, one of the most globally-influential and well-anticipated technology policies—the EU’s General Data Protection Regulation (GDPR)—prevented large U.S. media firms such as the Los Angeles Times from serving European customers for months.³⁶

Fragmented regulation has proven costly in other sectors. Regulatory divergence around the world is estimated to cost financial institutions between five and 10 percent of annual revenue, amounting to at least \$780 billion each year.³⁷

In addition to creating compliance costs, fragmented approaches to governance may increase the very risks they seek to address, simply by creating complexity and confusion through conflicting measures.³⁸ Extraterritorial regulations, such as those emanating from the U.S., EU, and China, can undermine local markets and regulations, while the inconsistent implementation of standards can distort markets and create negative consequences for end users. It is unhelpful when the economic complexity on trade and the nascent needs around transparency and disclosure of non-financial performance require a converging system, not a devolved one.

Addressing existing regulatory fragmentation is difficult and unsolvable at this juncture. Therefore, current efforts should be dedicated to ensuring future policies consider issues such as interoperability.

Lack of shared evidence

While calls for more innovation in regulatory approaches abound, there is insufficient evidence and knowledge sharing between jurisdictions around what works, both in terms of specific policy interventions and the methods by which policies are constructed and tested. This shortfall partly stems from the existing evidence around the impact of emerging technologies. In healthcare, the use of evidence-based techniques such as randomized controlled trials and cost-effectiveness studies has allowed the comparison of different medical procedures and technologies, providing useful information to policymakers in

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³⁶ Jeff South (2018). More than 1,000 U.S. news sites are still unavailable in Europe, two months after GDPR took effect. NiemanLab, August 7, 2018. <https://www.niemanlab.org/2018/08/more-than-1000-u-s-news-sites-are-still-unavailable-in-europe-two-months-after-gdpr-took-effect/>

³⁷ Fazezul Choudhury (2018). Global Regulatory Fragmentation An Impediment To Economic Growth. International Banker, July 9, 2018.

³⁸ See for example Vazquez and Boer (2018), Addressing Regulatory Fragmentation To Support A Cyber-Resilient Global Financial Services Industry. Institute of International Finance. April 2018.

regard to whether and how they should be approved, adopted, and subsidized.³⁹ By comparison and unlike the healthcare model, the economic and social impact of other emerging technologies—not to mention the business models that employ them—is more complicated. Take, for example, the phenomenon of ride-sharing, which relies on mobile devices, GPS technology, and advanced analytics to match independent drivers and vehicles to passengers. There have been diverging views over whether or not ride-sharing represents a valuable new source of income for workers:⁴⁰ Does it expand transportation opportunities for disabled communities⁴¹ while contributing to the development of social capital?⁴² Is it an exploitative,⁴³ environmentally-costly,⁴⁴ and congestion-creating business model?⁴⁵ Is it little more than a “side hustle” that gets more attention than it deserves?⁴⁶

In order to answer these questions, policymakers, academics, and communities must have access to a wide variety of data that allow for better modelling of economic and social impacts. In particular, by sharing this data across jurisdictions and contexts, researchers can make better use of so-called natural experiments, whereby exposure to emerging technology varies across different populations in ways that allows causal effects to be inferred.⁴⁷

Contributing to this challenge is the fact that much of the useful data related to the impact of technologies is held by the companies that develop and control them. The argument for data-driven evidence is in itself controversial, given that sharing underlying data or related algorithms are rightly viewed by digitally-driven companies as confidential sources of competitive advantage. As there are few other protections beyond confidentiality in most jurisdictions,⁴⁸ disclosing algorithms to regulators or other third-party auditors is perceived

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³⁹ Gelijns et al (2005). Evidence, Politics, And Technological Change. *Health Affairs*, Vol 24, No. 1. January/February 2005. <https://doi.org/10.1377/hlthaff.24.1.29>

⁴⁰ Hahn and Metfalfe (2017). The Ridesharing Revolution: Economic Survey and Synthesis. In Oxford University Press Volume IV: More Equal by Design: Economic design responses to inequality. Eds. Scott Duke Kominers and Alex Teytelboym.

⁴¹ A Tirachini (2020) Ride-hailing, travel behaviour and sustainable mobility: an international review. *Transportation* 47, 2011–2047 (2020). <https://doi.org/10.1007/s11116-019-10070-2>

⁴² Kameswaran, V., Cameron, L., & Dillahunt, T. R. (2018, April). Support for social and cultural capital development in real-time ridesharing services. In Proceedings of the 2018 CHI conference on human factors in computing systems (pp. 1-12)

⁴³ James Farrar (2019). Tyranny of the algorithm: how Uber replaced one exploitative boss with another. *The New Statesman*. 17 January 2019.

⁴⁴ Anair et al (2020), Ride-Hailing's Climate Risks. Union of Concerned Scientists. <https://www.ucsusa.org/resources/ride-hailing-climate-risks>

⁴⁵ Andrew K. Hawkins (2019). Uber and Lyft finally admit they're making traffic congestion worse in cities. *The Verge*. August 6, 2019. <https://www.theverge.com/2019/8/6/20756945/uber-lyft-tnc-vmt-traffic-congestion-study-fehr-peers>

⁴⁶ Lawrence Mishel (2018). Uber and the labor market. Economic Policy Institute. May 15, 2018. <https://www.epi.org/publication/uber-and-the-labor-market-uber-drivers-compensation-wages-and-the-scale-of-uber-and-the-gig-economy/>

⁴⁷ Peter Craig, Srinivasa Vittal Katikireddi, Alastair Leyland, and Frank Popham (2017), Natural Experiments: An Overview of Methods, Approaches, and Contributions to Public Health Intervention Research. *Annual Review of Public Health* 2017 38:1, 39-56. <https://doi.org/10.1146/annurev-publhealth-031816-044327>

⁴⁸ See for example Katarina Foss-Solbrekk, (2021). Three routes to protecting AI systems and their algorithms under IP law: The good, the bad and the ugly, *Journal of Intellectual Property Law & Practice*, Volume 16, Issue 3, March 2021, Pages 247–258, <https://doi.org/10.1093/jiplp/jpab033>

as a significant commercial risk, as the disclosure would enable the replication or gaming of such systems.⁴⁹

However, in the absence of an independent, trusted regulator that can observe the workings of algorithms in real time—without compromising the intellectual property and competitive positioning of a firm—it is difficult to assess potential risks *ex ante* or hold companies accountable *ex post*.⁵⁰ Furthermore, even if such a regulatory capacity could be granted—where ongoing monitoring is warranted and automated so as to run at scale—in theory, a lack of capable, coherent, and internationally-aligned institutional frameworks could add to the problem of investigation and enforcement across jurisdictions.

Corporate influence and shrinking policy space

An issue that needs further attention is the way in which technology policy is influenced by the technology firms themselves. By collecting data from customers around the world, these firms gain insight into consumer preferences and behaviors. The pervasiveness of data analytics—when directed towards incentives for consumption through predictive modelling—is a problem that is affecting millions of consumers around the world who feel, overtly or covertly, manipulated.

This data is used to enhance innovations (e.g., developing AI capabilities) as predictions from machine learning goes into the development of even more accurate models of productivity, which in turn benefit the technology firms. This does not only pose a problem for consumer-facing organizations, it creates issues in terms of equity of access and political gains as the firms' vested interests expand. Data can also be used to influence and push consumers to oppose regulations that could adversely impact a firms' market power or profits. An interesting example of this is the ballot measure known as "Prop 22" in California during the November 3, 2020 elections. In 2019, California passed Assembly Bill 5, which expanded labor protection to employees, imposed a stricter set of tests as to whether workers are independent contractors or employees, and placed the burden of proof to distinguish between these categories on employers. Worried that they would potentially incur greater operational costs and future liabilities, gig-economy firms such as Uber, Lyft, DoorDash, Instacart, and Postmates poured more than \$200 million into the "yes" campaign

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⁴⁹ Ryan, Meghan J. (2020) Secret Algorithms, IP Rights, and the Public Interest. Nevada Law Journal, Vol. 21, No. 1, pp. 61-116, 2020, SMU Dedman School of Law Legal Studies Research Paper No. 484, Available at SSRN: <https://ssrn.com/abstract=3691765>

⁵⁰ An illustrative example of this is the recent case *Australian Competition and Consumer Commission v Trivago N.V.* [2020] FCA 16. A decision by Australia's Federal Court, later upheld on appeal, found that hotel aggregator Trivago had misled consumers by using an algorithm to present hotel rooms as the 'best price' when in fact it was privileging the value to Trivago in terms of the bid made by the listing entity (the "Cost per Click" rate). The outcome was that two-thirds of 'Top Position' listings were not in fact the cheapest price for consumers. It is instructive that Trivago did not disclose to the court the weights of factors used by the algorithm, nor did it admit evidence by employees describing how the algorithm worked. Instead, two expert witnesses used test data to infer the impact of the algorithm. See Leonard (2020), [The Deceptive Algorithm in Court](#), SCL, 31 January, 2020

of Proposition 22, known as the “App-Based Drivers as Contractors and Labor Policies Initiative”.⁵¹

Having been approved by voters, Proposition 22 does more than merely leverage public opinion to override many of the new protections enshrined in Assembly Bill 5, which was supported by California Governor Gavin Newsom. It creates future hurdles for state legislators to amend it, requiring the legislature to pass any amendments by an unheard of seven-eighths majority in both California chambers. In response, AI scholars Meredith Whittaker and Veena Dubal have argued that “To get Prop 22 passed, gig companies—which have yet to turn a profit—spent a historic \$205 million on their campaign, effectively creating a political template for future anti-democratic, corporate law-making.”⁵²

This type of power imbalance between corporations and regulatory systems is particularly concerning in developing economies. For example, the Africa continent offers tech companies diverse datasets in a context where only 50 percent of African countries have data protection regulations in place.⁵³

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⁵¹ Suhauna Hussain (2020). What Prop. 22’s defeat would mean for Uber and Lyft – and drivers. Los Angeles Times. October 19, 2020.

⁵² Meredith Whittaker and Veena Dubal (2020). ‘Those in Power Won’t Give Up Willingly’: Veena Dubal and Meredith Whittaker on the Future of Organizing Under Prop 22. Medium, Nov 6, 2020. <https://onezero.medium.com/prop-22-where-do-gig-workers-go-from-here-e6eaa3ee2324>

⁵³ Nima Elmi (2020). Is Big Tech Setting Africa Back? Foreign Policy. November 11, 2020. <https://foreignpolicy.com/2020/11/11/is-big-tech-setting-africa-back/>

4. Rethinking technology policy

To address the challenges around fragmentation, lack of evidence, and corporate influence, policymakers need to be equipped with three new tools:

1. **Transparent and holistic policymaking approaches** that clearly communicate goals and identify trade-offs at the national and international levels;
2. **Renewed efforts to collaborate across jurisdictions**, particularly through standard setting and by gathering and sharing the evidence of effectiveness or failure of diverse technology policy approaches across jurisdictions; and
3. **A shift towards agile governance**, whether through system, design, or hybrid approaches.

Recognizing and minimizing common trade-offs in technology policy

Globally-integrated markets, transversal challenges, and non-traditional technology business models all mean that any given policy proposal will create trade-offs for governments and citizens that need to be managed across policymaking units at the regional, national, and sub-national levels.

Trade-offs come in multiple forms, a number of which are illustrated in Table 1 in the Annex. While there is ample understanding in the literature about why trade-offs are functional, if not essential to the fluidity of policy, trade-offs related to technology policies promise to be more dynamic and consequential. Technology-related trade-offs are rarely binary options, but involve a series of direct, indirect, and induced implications whose impact can be perceived only over time and at scale. The causality of the trade-offs outgrows the immediacy of the causation with ripple effects that may impact the socio-economic fabric of a given society for years to come.

The most obvious policy trade off—and one that is common to almost all policy efforts—relates to deciding how to allocate scarce resources between multiple policy objectives: Time, attention, and public funding assigned to one area are not available to others. Another case is when two policy objectives seem to be more-or-less directly opposed to one another given current assumptions around capabilities and options. For example, national security-related bills that seek to allow law enforcement to access encrypted communications may, by necessity, undermine privacy protections by creating a new class of exceptions to the right to privacy. Furthermore, allowing some groups privileged access to data so that others are unable to misuse such access may in itself compromise cybersecurity efforts.

A third common set of trade-offs involves the speed and timing of regulation. Moving rapidly to design and implement new rules can reduce losses or harm that are emerging from incomplete markets or bad behavior. It can also make the most of moments of political power or momentum, which may be fleeting in a volatile environment. But hasty policy efforts often exclude stakeholders whose input is required for well-designed policy instruments. On the other hand, lax regulatory processes might not just prolong the costs of inadequate regulation. The rapid diffusion and uptake of today's technologies could lead to bad behavior or harmful practices becoming the norm, with commercial ecosystems and individual users becoming reliant on business models in ways that make it more costly politically, socially, or economically to intervene. This is well-described in the "Collingridge Dilemma" notion.

A fourth category of trade-offs emerges when a particular policy affects stakeholders in different ways. It is well recognized that new regulations often involve compliance costs that can be easily absorbed by large firms but create significant financial burden on Micro, Small and Medium Enterprises (MSMEs). A less obvious manifestation of this is when disadvantaged groups are less able to access public services due to their material conditions, or when differential administrative costs or bureaucratic hurdles are applied to groups that are less well-off.

Searching for trade-offs is a contextually-specific process. But the following questions can be helpful in identifying interactions that might reduce the effectiveness of a proposed policy or impose off-setting costs that make it unsustainable or of net detriment to the economy or society:

- How does the expected return on investment of policy options compare to other policymaking efforts that are ongoing?
- If this policy option proves successful, what other areas of government will be affected?
- Relative to the urgency and cost of inaction, what are costs and benefits of gathering pertinent data on the impacts of different policy options?
- Will disadvantaged communities or individuals be affected in different ways by this policy option when compared to those who are better off?
- Will organizations of a particular size, in particular geographies, serving particular customers, or operating in particular sectors incur higher costs as a result of this policy option when compared to other organizations?
- What trade-offs are created for other jurisdictions with interest in this domain?

Trade-offs are more important in the field of technology policy because technology is much more of a disruptor today than a mere disruption, and an active foundational role can pertain to several technologies that are changing the processes of value creation. Designing the right set of technology policies can enable an economic infrastructure to emerge and dominate normative processes in the long term. Missing the opportunity to appropriately

regulate does not only represent a loss of options for the future, it could lead to a lack of understanding on how a system ought to develop over time.

Collaborative approaches to policymaking

Once trade-offs have been identified within and across stakeholders and jurisdictions, the next step is to convene key actors who will either influence or be impacted by changes in the relevant policy domain.

While public consultation is often seen as a way of legitimizing policy that has already been set by government,⁵⁴ the goal of normative dialogue across traditional institutional boundaries is threefold: First, to recognize and validate trade-offs across stakeholders as to better appreciate their impact and potential offsetting interventions; second, to generate feedback on existing policy options and, where possible, generate new options that better manage trade-offs; and third, to establish operating principles that may be generally applicable, and therefore lead to the institutionalization of cross-jurisdictional standards.

The third goal is particularly important. Standards underpin regulation in industries ranging from pharmaceutical, consumer goods, food, and drugs as well as financial services, and form a critical part of the physical technologies relied upon by technology-driven firms. Yet, process-based standards for digitally-driven organizations are far rarer.

Such a cross-border approach should not negate local and territorial application of a policy, but rather aim at generating and incentivizing adherence to standards, inspired by international examples.

Agile and proactive governance

The concept of “agile governance” seeks to promote nimbler, more fluid, and adaptive approaches to governance: The rules, incentives, and institutions that guide the behavior of individuals and organizations. It draws inspiration from agile software development, epitomized by the principles contained in “The Agile Manifesto”.⁵⁵

Agile governance does not prioritize the speed of regulatory design or implementation, as excessive speed may threaten the inclusiveness of policy processes or outcomes. Rather, the idea of agile governance suggests that more proactive, inclusive, and iterative approaches to policy design can create rigorous systems, which are both more effective and representative than traditional processes, even within compressed time periods.

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⁵⁴ Helena Catt & Michael Murphy (2003) What voice for the people? categorising methods of public consultation, Australian Journal of Political Science, 38:3, 407-421, DOI: 10.1080/1036114032000133967

⁵⁵ Kent Beck et al (2001), « The Agile Manifesto », <https://agilemanifesto.org/iso/en/manifesto.html>

Central to the idea of agile governance is that policymaking should be both outcome-driven and evidence-based, while recognizing that contexts and needs will change throughout a policy project. This requires ongoing collaboration between a wide range of stakeholders to ensure that knowledge flows into policies in an effective and inclusive fashion, which then enjoy greater legitimacy.⁵⁶

Agile governance also explicitly recognizes that the architectures and rules that guide our behavior—particularly in the world of technology—extend far beyond the incentives, regulations, and laws created in the public sector. Business models, corporate policies, software and product design, and technological infrastructure can all influence user behavior and outcomes for citizens to a greater extent than public policy. As a result, new models of collaborative governance across sectors are required to meet the challenges and opportunities of the 21st century.

The World Economic Forum has identified eight different approaches and more than 100 examples of agile governance from around the world.⁵⁷ Beyond the policy labs, sandboxes, and crowdsourcing efforts being trialed by a number of governments, they include novel forms of industry-led self-regulation, concept of super regulators, shared ethical principles, new approaches to standards creation, and enforcement and the creation of collaborative governance ecosystems across jurisdictions.

One area of expertise linked to agile governance and essential for making appropriate policy around emerging technologies is scenario planning. Scenarios are often associated with military exercises. Yet, they are also used widely in the civilian sector as a structured methodology to explore uncertainties, anticipate shifts in the external environment, and generate options that can strengthen the resilience of organizations today.

The strength of scenarios as a methodology supporting agile governance flows from their ability to engage diverse stakeholders (across and outside of government) in participatory, deliberative ways, identify issues and trade-offs that are otherwise overlooked, create space in which to explore the second- and third-order consequences of both current trends and low-probability events, and consider both desired and undesired futures. As David Wright et al have pointed out, these are all important aspects of constructive policymaking where uncertainty is a critical factor, making scenarios a useful tool for technology policy.

In support of the discussion around collaborative policymaking, agile governance puts particular pressure on governments to innovate in the way they engage with a wider range of affected and interested stakeholders. For most public sector institutions and agencies, it

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⁵⁶ Maritje Schaake and Lisa Witter (2019), How leaders can use 'agile governance' to drive tech and win trust, *Forum Agenda*, <https://www.weforum.org/agenda/2019/01/agile-governance-drive-new-tech-public-trust/>

⁵⁷ World Economic Forum (2018), Agile Governance: Reimagining Policy-making in the Fourth Industrial Revolution, http://www3.weforum.org/docs/WEF_Agile_Governance_Reimagining_Policy-making_4IR_report.pdf

will require an investment in skills and resources related to cross-sector collaboration, as well as in knowledge management and systems and design thinking.⁵⁸

Agile governance versus hasty policymaking—the example of online safety

Recent polls⁵⁹ indicate that public support for regulation of technology platforms is both significant and rising around the world. This energy can be harnessed in positive ways to engage members of the public in the policymaking process. But, in the absence of appropriate approaches to policymaking that address the challenges described in this section, governments may end up hastily designing and enacting policies that are not fit for purpose. Governments sometimes leverage dramatic events, popular movements, or political opportunism to adopt policies at speed but with a lack of thoughtfulness as to the potential outcomes. This is often either to show that “something is being done” or to capitalize on brief windows of public or party support for action. An example of this phenomenon was Australia’s extremely rapid passage of the Criminal Code Amendment (Sharing of Abhorrent Violent Material) Bill 2019, which introduced new offenses for providers of digital hosting services who fail to report or remove violent material. The bill was introduced and passed just a few weeks after the horrific events of the Christchurch terrorism attack in March 2019.

As a result of this speed—and concomitant lack of consultation and thoughtfulness—the policy measure was widely criticised for being ineffective in practice, lacking clear definitions, and proving challenging to apply to digital hosting services outside of Australia.

This pattern can be seen in other legislations when the federal government passed new laws related to encryption, online safety, and competition in the media sector without broad consultation, international alignment, or the built-in protections against unforeseen—or even predictable—consequences that stakeholders have requested.⁶⁰

Similar rushed policies can be seen in technology policy efforts made in other countries. For example, in 2020 the U.S. House Judiciary Committee’s Antitrust Subcommittee released a report that fell short in terms of its accuracy on a number of claims.⁶¹ The UK’s Online

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⁵⁸ Ibid.

⁵⁹ See for example Amnesty International (2019). New poll reveals 7 in 10 people want governments to regulate Big Tech over personal data fears. <https://www.amnesty.org/en/latest/press-release/2019/12/big-tech-privacy-poll-shows-people-worried/>; John D. McKinnon (2021). Voters Want to Curb the Influence of Big Tech Companies, New Poll Shows. The Wall Street Journal. <https://www.wsj.com/articles/voters-want-to-curb-the-influence-of-big-tech-companies-new-poll-shows-11632405601>; Emily A. Vogels (2021). 56% of Americans support more regulation of major technology companies. Pew Research Center. <https://www.pewresearch.org/fact-tank/2021/07/20/56-of-americans-support-more-regulation-of-major-technology-companies/>

⁶⁰ See for example Sam Bocetta (2019). Australia’s New Anti-Encryption Law Is Unprecedented and Undermines Global Privacy. FEE, February 14, 2019. <https://fee.org/articles/australia-s-unprecedented-encryption-law-is-a-threat-to-global-privacy/>

⁶¹ Ben Evans (2021). Antitrust posturing. <https://www.ben-evans.com/benedictevans/2021/6/15/antitrust>

Safety Bill, published as a draft in May 2021, has been criticized in the same way as Australia’s efforts to manage online content by making platforms responsible for what they host. In particular, a lack of specificity around the definition of what amounts to “harmful” material would make it difficult for companies seeking to comply with the policy and incentivize platforms to reduce their risk by limiting freedom of expression.

However, the bill—along with the EU’s Digital Services Act, which contains similar provisions—cannot be said to have been rushed. Preceding versions of the U.K. policy include a green paper published in 2017⁶² and a white paper released in 2019,⁶³ both of which engaged stakeholders in public consultation processes. Furthermore, the government conducted an impact assessment of the bill, which compared high level policy options and estimated the costs of affected groups complying with the regulations.⁶⁴

Nevertheless, a number of requirements, such as mandatory age verification, remain problematic given that consent-based pop-ups seldom lead to changed user behavior. Age verification requires an identity check that could potentially expose users to significant security risks and could result in significant parts of the currently open internet being walled off behind verification gateways.⁶⁵

More importantly, based on the principles of agile governance espoused by the World Economic Forum and others, the U.K. Online Safety Bill currently falls short in terms of the evidence base as well as how the bill might be prototyped and trialed before applying to all of the UK’s digital environment.

Experimenting with new approaches in technology policy

The approaches mentioned in this brief are not meant to be comprehensive given the complexities around a fragmented and nonexistent governance system. The multiple layers and dimensions of a regulatory framework are challenged by the growth and expansion of technology. This is not only exclusive to technology and its readiness, but more so about a broader digital ecosystem and its proliferation on a global scale, which serve global clients across industries and citizens across countries.

Our proposed approach aims to tackle some of these complexities by addressing the policy *context*, at times the *content* of a required policy, and often the *process* in place to help

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⁶² U.K. Government (2017). Internet Safety Strategy green paper.

<https://www.gov.uk/government/consultations/internet-safety-strategy-green-paper>

⁶³ U.K. Government (2019). Online Harms White Paper. <https://www.gov.uk/government/consultations/online-harms-white-paper>

⁶⁴ U.K. Government (2021). Impact Assessment: The Online Safety Bill, RPC-DCMS-4347(2). 26 April 2021.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/985283/Draft_Online_Safety_Bill_-_Impact_Assessment_Web_Accessible.pdf

⁶⁵ Heather Burns (2021). Age Verification In The Online Safety Bill. Open Rights Group.

<https://www.openrightsgroup.org/blog/age-verification-in-the-online-safety-bill/>

formulate policy options. It is these three aspects—context, content, and process—that need to be regulated accordingly, across geographies and legal systems.

At first, we believe that a set of *policy levers suggested in this brief can help identify the trade-offs* and the allocation of costs in given choices. This is a matter of context first, which unleashes the right breadth of content. This is where policymakers can assess the urgency of the policy and engage in a more system-oriented view, capturing, where possible, second and third order effects that are exemplified in the idea of ramifications and their respective trade-offs. An illustrative chart on the nature of trade-offs helps to detect the most appropriate domain of application as well as identify possible unintended consequences. Secondly, we propose *the initiation of collaboration through normative dialogue across jurisdictions as well as with industry-specific stakeholders*. The third and last approach is specific to the governance of technology and its intrinsic trait: *Agility*. We believe that a wider representation of stakeholders' interests and a thoughtful balance between exploration and evidence-based decisions may lead to more proactive and entrepreneurial governance. The validation of the policy occurs as an outcome-oriented approach, rather than a prescriptive a priori approach. The ability to rapidly adapt policy to the context enables both the content and the process to become future proof and future fit.

The regulatory landscape of the years to come will not be linear, and it will exercise enormous pressure on the current approach to policymaking and to the order of tradition that ruled the legal practice for decades. That said, the opportunity to reform governance into a successful instrument towards new and ambitious objectives may render this decade of policy governance into one of the most successful pilots. If done thoughtfully, it can lead to a coordinated system of values where innovators and regulators work alongside as partners rather than opponents.

Appendix

Table 1: Policymaking trade-offs to manage in technology contexts

Type of trade off	Reason for trade off	Example	Responses
<p><u>Allocating scarce public resources across multiple policy objectives:</u> In the context of limited policy maker time and attention, political support, public budgets, and population mindshare, focusing on one objective will undermine another.</p>	<p>Financial, temporal, and psychological resources are inherently limited, particularly in the short term. Policies come with varying levels of internal regulatory costs, ranging from information-gathering and lobbying costs, to monitoring and enforcement implications.</p>	<p>Increasing public spending on education or families with young children, might imply cutbacks in pensions and unemployment benefits.</p>	<ol style="list-style-type: none"> 1. Prioritization 2. Partnering and coalition building to expand resources 3. Leveraging templates and experiences from other jurisdictions 4. Shifting thinking towards investment
<p><u>Oppositional objectives:</u> Two or more policy objectives seem to conflict because a success in one risks undermining the other. The most obvious policy intervention for achieving one goal may compromise achieving another.</p>	<p>Because economic and socio-technological systems are complex, policy interventions rarely have a single effect. Shifting incentives or setting limits for one purpose will shift behavior in ways that creates other, potentially undesirable, effects.</p>	<p>When setting speed limits for a highway or region, policy makers face trade-offs between fuel efficiency, travel time, accident rates, and trucking productivity.</p> <p>The monetary policy trilemma in economics holds that it is impossible for a country to simultaneously have a fixed foreign exchange rate, free capital movement, and an independent monetary policy.</p>	<ol style="list-style-type: none"> 1. Prioritization 2. Collaborative policy problem solving 3. Search for creative solutions

<p><u>Speed and timing-related trade-offs:</u> Rapid decision-making and early intervention to a policy related to emerging technology can signal responsiveness and manage costs.</p>	<p>Moving rapidly reduces the amount of time available for engagement and consultation. Moving slowly implies higher costs and risks losing political momentum.</p> <p>Intervening early reduces the amount of data on potential impacts. Intervening later risks suboptimal behaviour or business models becoming the norm, and raises the costs of shifting to alternative models.</p>		<ol style="list-style-type: none"> 1. Sunset clauses 2. Built-in policy reviews 3. Policy prototyping and regulatory sandboxes
<p><u>Differential costs or impacts for private citizens and businesses:</u> Adapting to the policy implies costs that will be experienced in different ways by different stakeholders. This is what Bozeman (2000) calls “external red tape”.</p>			<ol style="list-style-type: none"> 1. Progressive regulatory regimes 2. Policy design to minimize implementation costs

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