INDIA, SINGAPORE AND THE GLOBAL PARTNERSHIP ON ARTIFICIAL INTELLIGENCE

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ISAS-Ananta Panel Discussion
India, Singapore and the Global Partnership on Artificial Intelligence
30 September 2020
Authored by Karthik Nachiappan and Nishant Rajeev

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India, Singapore and the Global Partnership on Artificial Intelligence

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Executive Summary

Artificial Intelligence (AI) driven technologies are percolating across society from smartphone applications to social media and are being deployed to address gaps in areas like healthcare, education, energy and transportation. To channel and streamline these efforts into a cohesive approach, several governments across the globe are launching national strategies for widespread AI adoption.

In India, the National Institute for the Transformation of India (NITI Aayog) launched a national AI initiative called 'AI for All' in 2018. This initiative, along with several others, looks to target several sectors like agriculture, education, taxation, judiciary, transport and employment. To this end, the Indian government is facilitating the digitisation of data generated from several government programmes.

In India, the National Institute for the Transformation of India (NITI Aayog) launched a national AI initiative called 'AI for All' in 2018.

The Singapore government has also launched a strategy to harness the potential of AI titled 'National Artificial Intelligence Strategy'. The island state's approach has been based on a collaborative approach between the government and industry. This approach tests governance models iteratively with a feedback loop to identify gaps and improve previous versions. Despite the existence of these national-level strategies, challenges continue to persist in both countries.

As India and Singapore are looking to mobilise and leverage AI to meet their social, economic and broader national objectives, the strategies of both countries need to address some basic questions. For instance, how will AI be deployed and used, and for what purposes? What kind of data architectures will facilitate its development and use in both countries, and how will innovations in AI be leveraged to target and tackle salient problems like the COVID-19 pandemic? To answer these and similar questions, the Ananta Centre, New Delhi, and the Institute of South Asian Studies (ISAS) at the National University of Singapore jointly organised a roundtable on the theme of 'India, Singapore and the Global Partnership on Artificial Intelligence'. This report is the outcome of the roundtable discussion.

Introduction

Technology appears to be driving geopolitical tensions between the United States (US) and China.

Geopolitics has become digital. Technology appears to be driving geopolitical tensions between the United States (US) and China. The prospect of the Internet – generally thought of as a global, seamless, borderless domain – becoming splintered is a challenge that all nations, including India and Singapore, could face. Coalitions and partnerships are emerging to manage this growing split as countries align around shared visions of how technology should be developed and used. The Global Partnership on Artificial Intelligence (GPAI) is one such partnership where both India and Singapore are participants. The GPAI seeks to craft global rules to help countries govern AI domestically.

AI can be defined as "that activity devoted to making machines intelligent, and intelligence is that quality that enables an entity to function appropriately and with foresight in its environment."[1] The field of AI had emerged in the 1940s when the first computational machines were introduced.[2] It has, however, evolved significantly since its inception. AI driven technologies are percolating across society from smartphone applications to social media and are being deployed to address gaps in areas like healthcare, education, energy and transportation. For instance, in healthcare, AI can be deployed to analyse the health data of patients to improve diagnostics. However, as industry and governments look to harness the power of AI, the benefits of these technologies need to be weighed against their societal implications.

1 Nils J Nilsson, *The Quest for Artificial Intelligence: A History of Ideas and Achievements* (Cambridge, UK: Cambridge University Press, 2010), p. 13, http://ai.stanford.edu/~nilsson/QAI/qai.pdf.

2 Michael Mayer, "Artificial Intelligence and Cyber Power from a Strategic Perspective", *IFS Insights*, April 2018, https://fhs.brage.unit.no/fhs-xmlui/bitstream/handle/11250/2497514/IFS%20Insights_4_2018_Mayer.pdf?sequence=1&isAllowed=y.

First, there is a need to focus on AI's disruptive potentials. AI adoption could generate significant unemployment and significantly impact a citizen's right to work. Furthermore, with the infusion of AI in several aspects of daily life, several new lines of work requiring new skill sets will need to be created. For this, countries will have to train future workforces accordingly. If not done in a structured and methodical approach, widespread AI adoption can exacerbate existing income inequality issues. Second, if AI tools are deployed without sufficient rules, fundamental rights could be infringed. For instance, insufficient or inaccurate data sets can lead to discrimination; AI-based facial recognition models have been known to display signs of racial bias.[3] Free speech protections can be threatened when AI tools perform tasks like automated content removal on social media platforms. When data is accumulated and accessed without consent, it can divulge important personal information. Corporations and governments can also use such data for activities like micro-targetted marketing or surveillance. It is, therefore, necessary to erect adequate frameworks to protect civil rights before developing and utilising technologies like AI. These frameworks should address issues on access to data and personal data protection, government and private sector uses of AI, and research and development into its future as well as its potential for interference in the lives of citizens.

When data is accumulated and accessed without consent, it can divulge important personal information. Corporations and governments can also use such data for activities like micro-targetted marketing or surveillance.

As India and Singapore digitise their economies, both countries are looking to mobilise and leverage AI to meet their social, economic and broader national objectives. The objective of this roundtable jointly organised by the Ananta Centre and ISAS was to identify the positions of India and Singapore on AI and outline the priorities and interests of both countries as they discuss norms and rules through the GPAI. Furthermore, through this discussion, we hope to identify synergies and avenues of cooperation vis-a-vis AI between the two countries. This roundtable had two panel discussions on AI

3 "A US government study confirms most face recognition systems are racist", *MIT Technology Review*, 20 December 2019, https://www.technologyreview.com/2019/12/20/79/ai-face-recognition-racist-us-government-nist-study/; and Steve Lohr, "Facial Recognition Is Accurate, if You're a White Guy", *The New York Times*, 9 February 2018, https://www.nytimes.com/2018/02/09/technology/facial-recognition-race-artificial-intelligence.html.

governance, with participants from India and Singapore representing government, academia and business. Specifically, the roundtable, which was split across two panels – 'Data Governance for AI' and 'AI Commercialisation' – addressed the following questions:

1. What AI governance frameworks exist in India and Singapore?
2. What kinds of data policies facilitate AI development?
3. How can India and Singapore incentivise AI innovation?
4. What are policy areas where AI can be deployed?
5. What are the challenges that inhibit AI use and adoption?

Data Governance for AI

AI relies on data. This makes policies for governing data crucial for developing and deploying its potential benefits. There are several factors that influence the process of developing a data governance framework. The first is the nature of the public-private partnership in deploying AI solutions and the division of the roles and responsibilities between the government and the private sector. The second is the adequacy of existing data infrastructures and the availability and accessibility of standardised data sets in each country. The third is the approach to balancing competing regulatory demands between data availability and privacy. Both India and Singapore have adopted collaborative approaches between government, industry and academia to adopt and promote AI. In their respective national roadmaps, India and Singapore have identified specific sectors to deploy AI solutions as the government and industry lead the development of AI solutions in various sectors. However, differences in the existing data infrastructures, and markedly distinct data policies, have led both countries to adopt different AI approaches.

Both India and Singapore have adopted collaborative approaches between government, industry and academia to adopt and promote AI.

India

In India, the government has been driving various AI initiatives to harness its potential for growth and development. Through NITI Aayog, it launched an AI initiative called 'AI for All' in 2018.[4] Under this initiative, the Ministry of Electronics and Information Technology launched several programmes at the central and state levels to deploy AI technologies. Delhi has supported the development of several Centres of Research Excellence (CoREs) on emerging technologies like AI, blockchain, data analytics and Industry 4.0.[5] These CoREs are spearheading rapid interventions in the manufacturing and start-up ecosystems. Furthermore, there are 44 mission mode projects being implemented by the Indian government that focus

4 Government of India, India's AI for ALL. https://indiaai.gov.in.

5 AI Strategy, COREs, https://indiaai.gov.in/news/niti-aayog-s-national-ai-strategy-proposes-two-tier-structure-research-and-prototype-development.

on e-governance.[6] These projects focus on digitising certain aspects of the service delivery process like data storage and stakeholder interface to improve service delivery in their respective sectors. They are implemented across sectors like agriculture, education, taxation, judiciary, transport, employment and others. While adopting an e-governance model, these projects have generated huge amounts of data concerning various aspects of service delivery. The Indian government is looking to use AI to analyse this data and gain insights on enhancing e-governance.

On privacy, new data governance frameworks will have to address potential issues relating to the possible re-identification of anonymised data.

The government has also sought to develop data sets and make them available to relevant stakeholders. However, much of the data generated exists in a regulatory vacuum. As a regulatory framework with clear rules and procedures is developed in India around data, issues of data pooling and accessibility will be addressed. Data is currently governed under provisions of the 2000 Information Technology (IT) Act.[7] However, the government is looking to bring a new Personal Data Protection Bill which will comprehensively cover issues under personal data protection.[8] In addition, it is drafting a bill to manage non-personal data. These two policies will serve as the overarching framework through which India will regulate and govern data. However, these legislative frameworks must work and interact with other policy frameworks governing privacy and market competition, including the 2000 IT Act. On privacy, new data governance frameworks will have to address potential issues relating to the possible re-identification of anonymised data. Privacy became a key issue after the Supreme Court of India, through the Puttaswamy judgment of 2017, recognised a very expansive interpretation of the right to privacy in the Indian Constitution framework.[9] As data

6 Mission Mode Projects, Ministry of Electronics and Information Technology, https://www.meity.gov.in/ content/mission-mode-projects.

7 Government of India, Information Technology Act 2000, https://www.indiacode.nic.in/bitstream/12345 6789/1999/3/A2000-21.pdf.

8 Personal Data Protection Bill, 2018. Government of India, Ministry of Electronics and Information and Technology, https://www.meity.gov.in/writereaddata/files/Personal_Data_Protection_Bill, 2018.pdf.

9 For a good overview of this case, see Justice K S Puttaswamy (Retd.) and Anr. vs Union of India and Ors, https://globalfreedomofexpression.columbia.edu/cases/puttaswamy-v-india/.

increasingly becomes a source of market power, there could be changes in the antitrust and competition frameworks.

In India, structured, annotated and clean data does not exist in large quantities. While India is a data-rich country, it is unfortunately not a 'data intelligent' country. Thus, while large amounts of data are created through publicly funded initiatives, this data is not publicly accessible. As a result, the impetus in India should be to create open data platforms where data such as the type generated through government initiatives can be easily accessed and leveraged. New Delhi has been attempting to create open data sets. Initiatives like National Data Sharing and Accessibility Policy encourage public sector units to make government data publicly available.[10] Large sector-specific data sets, for instance, on cancer patients in the healthcare sector, have not been created in India, even though such data exists. There is an increasing need to create relevant data infrastructures and data sets through public-private collaboration so that data can be used to develop AI solutions. Companies like Google and universities like Stanford have made large investments in developing large data sets in healthcare, computer visions and image processing. The ability to provide access to large sets of usable data by relevant stakeholders is one of India's main challenges.

The ability to provide access to large sets of usable data by relevant stakeholders is one of India's main challenges.

A second area where challenges exist is accessing private sector data. Although a non-personal data protection bill could provide a regulatory framework to access private sector data, especially annotated data, India can imbibe aspects of governance structures in other countries.[11] Norway, for example, has developed some sector-specific data governance structures; in fact, the Norwegian Centre for Research Data, a government owned company that manages research data, has developed specific data sets, classifying them based on politics, regions, etc. India could develop a robust policy framework to regulate sector-specific data sets.[12] A related challenge for India is the

10 Government of India, National Data Sharing and Accessibility Policy-2012, https://geoportal.mp.gov.in/ geoportal/Content/Policies/NDSAP_2012.pdf.

11 Norway Centre for Research Data, https://www.nsd.no/en/.

12 Ibid., https://www.nsd.no/en/about-nsd-norwegian-centre-for-research-data/.

Currently, there is a healthy tension between calling for regulations as opposed to having frameworks that can accommodate technological innovations.

creation of relevant AI marketplaces where data sets can be priced. It is necessary for Indian start-ups to raise venture capital (VC) funds to sustain businesses. The inability to quantify the costs of procuring a specific data set to deploy AI solutions can be a hindrance to raising VC funding and creating new business models centered on data. Hence, price discovery of data sets in AI marketplaces is necessary.[13] The lack of a structured price discovery mechanism may lead start-ups to acquire data through "unsophisticated" means. Acquiring data through "unsophisticated" means can create anamolies in the calculation of the actual price of the data set. Subsequently, this governance gap can create and entangle start-ups in legal disputes regarding the price of data sets they have acquired. A final challenge is ethics. Currently, there is a healthy tension between calling for regulations as opposed to having frameworks that can accommodate technological innovations. While the Personal Data Protection Bill is an important regulatory framework, AI ethics will have to go beyond personal data, creating new rules which ensure no harm occurs while accessing and sharing data. Here, companies will need to develop and use their own frameworks and practices. Indian firms lack governance structures to make this happen.

Singapore

Like India, Singapore has launched a national strategy to tap and use AI under its 'Smart Nation Initiative'. This strategy, titled 'National Artificial Intelligence Strategy', is based on leveraging AI to overcome challenges and implement solutions in five sectors – healthcare, logistics, security, education and municipal services.[14] To support AI adoption, the Singapore government is developing a trusted data governance mechanism. Singapore is not looking to build a hard regulatory framework but rather to have industry self-adopt

13 "Price discovery is the overall process, whether explicit or inferred, of setting the spot price or the proper price of an asset, security, commodity, or currency. The process of price discovery looks at a number of tangible and intangible factors, including supply and demand, investor risk attitudes, and the overall economic and geopolitical environment." For more details see James Chen, "Price Discovery," *Investopedia,* 12 December 2020, https://www.investopedia.com/terms/p/pricediscovery.asp.

14 Government of Singapore, National AI Strategy, https://www.smartnation.gov.sg/why-Smart-Nation/NationalAIStrategy.

responsible AI standards with guidance from the government to fuel innovation. The government provides guidance on responsible frameworks by articulating items or components which companies need to consider while developing, adopting and leveraging AI.

Government officials advise on issues like internal governance, risk management and bias mitigation mechanisms that should ideally be included in industry frameworks for AI. To this end, the Singapore Personal Data Protection Commission published the second edition of the *Model Artificial Intelligence Governance Framework* in January 2020.[15] The government has supplemented this document by publishing the *Companion to the Model AI Governance Framework – Implementation and Self-Assessment Guide for Organisations*. These frameworks provide detailed guidance to address gaps in the governance mechanisms identified after the initial deployment of AI solutions by the industry.

Government officials advise on issues like internal governance, risk management and bias mitigation mechanisms that should ideally be included in industry frameworks for AI.

For example, the implementation of the self-assessment guide takes companies through a step-by-step checklist on how to develop and what to consider while adopting an AI governance framework. Another way in which the government has chosen to augment self-adoption of AI governance frameworks is to highlight successful use cases of governance models adopted by other companies. This compendium of use cases of model AI governance frameworks serves as a guide to companies in Singapore that are developing their own internal AI governance frameworks. Hence, the overall approach is consultative between industry, government and consumers with the government playing a steering role.

Unlike India, the Singapore government and industry also collaborate in developing and sharing common data sets. These data sets help feed the government policy framework and improve service delivery to citizens. For the industry in Singapore, these data sets can help spur research and innovation and enhance service delivery from a trusted and verified source of data. However, the government can

15 Government of Singapore, "Model AI Governance Framework", https://ai.bsa.org/wp-content/uploads/ 2019/09/Model-AI-Framework-First-Edition.pdf.

transfer personal data to the private sector only through a citizen consent mechanism. This collaborative approach to AI adoption involves industry representatives participating in high-level dialogues at the national and international levels. This collaborative approach ensures requisite feedback to improve AI governance. The approach essentially ensures governance models are tested iteratively with a feedback loop to identify gaps and improve previous versions. Through this approach, Singapore has created a safe and responsive ecosystem for firms and consumers to harness data.

AI Commercialisation and Innovation

The second issue during the discussions was AI commercialisation. Sustaining AI innovation and making it commercially viable are difficult tasks for several reasons. First, it is generally hard to quantify a return on investments in AI technologies. Second, developing standard protocols so that clean standardised data is openly accessible takes time. Third, creating a framework that allows cross-border data flows enabling data generated from different parts of the world to be shared has proven tough. Finally, norms and rules are required to ensure privacy without compromising the ability of data to be harnessed by corporations to create new services and applications.

India

The Indian government is adopting a hands-off approach to AI innovation. So far, the government has relied on two approaches to spur AI innovation: the ecosystem approach and architecture approach. With 500 million Internet users, India generates large swathes of data and will continue to do so for the foreseeable future. In the ecosystem approach, the government has been looking to collect and pool data into centralised platforms. This approach would allow the data to be presented in a more structured manner. An important part of this method is developing standardised data sets with established protocols to store, archive and retrieve data. Through the 'Open Data' policy, the government has been collecting relevant data from various government departments and making it available on the 'opendata.gov' platform.

With 500 million Internet users, India generates large swathes of data and will continue to do so for the foreseeable future.

The government is also moving from individual systems to more integrated systems that function across departments. One example is the National Digital Health Mission, which is looking to integrate various initiatives under the Ministry of Health and Family Welfare.[16] The idea is to collect data on issues like mother and child tracking,

16 Government of India, "National Digital Health Mission", http://nhp.gov.in/national-digital-health-mission-(ndhm)_pg.

immunisations and vaccinations, and export them onto a single digital platform. The main challenge, as expected, involves collating such data. Data custodians in various departments are not identified, which stymies data collection and collation. That said, the government is trying to create provisions for a chief data officer within government departments and agencies from whom data can be collected. In the architecture approach, the government is looking to make data available to the relevant stakeholders within and outside the public sector. This approach envisions the development of a digital highway for seamless data transfer; it also involves the development of standardised databases and open Application Programming Exchange platforms so data can be transferred and accessed by the appropriate party through a unified database.[17]

New Delhi is looking at skilling and reskilling the workforce to fuel AI deployment.

However, to successfully adopt AI, India must move beyond developing AI applications and related digital infrastructures and help cultivate technical skills to foster innovation. New Delhi is looking at skilling and reskilling the workforce to fuel AI deployment. The government is also collaborating with academia to fund and drive research in foundational technologies, especially at the doctoral level. Finally, incubation centres are being established to catalyse collaboration between academia and industry. These 44 Centres for Transformational AI look to develop deployable AI solutions. Since AI, by its very nature, is a general-purpose technology, it is necessary to avoid adopting a 'one size fits all' type of framework to foster innovation. For example, an AI system used for sentiment analysis can be used by a company for sentiment analysis of its product. However, the same tool can be used by law enforcement agencies to conduct investigations. Hence, a tool built for sentiment analysis can have very different implications when used in different settings or for different purposes. Therefore, Indian officials could consider creating sector-specific regulators depending on AI applications.

17 Under the overarching vision of Digital India, the Indian government aims to make all government services digitally accessible to citizens through multiple channels, such as web, mobile and common service delivery outlets. The initiatives on 'Open Government' focus on Open Application Programming Interfaces (APIs) to easily access the information collected by government organisations. Given the advantages in this regard, the government has come up with a policy for public sector organisations to provide APIs.

Singapore

The Singapore government has launched various initiatives to foster the development of requisite skill sets to develop AI. One example is the 100 Experiments (100E) initiative to develop and deploy 100 AI projects.[18] One key challenge pertains to the difficulty in attracting the necessary talent to drive these projects. Due to a scarcity of AI professionals, it is difficult for a government programme to compete with the private sector, in terms of pay, and attract experienced AI professionals. To overcome this, Singapore launched the AI apprenticeship programme that aims to attract individuals with an interest and desire to enhance their AI skills. The programme allows these individuals to hone and structure self-taught skills through a nine-month apprenticeship. Another initiative is an outreach programme that looks to quell fears regarding some of the misconceptions about AI. Through outreach lectures, the government seeks to demystify AI, which could foster AI adoption. It is also important to note that while data is important, there should be a focus on AI applications that do not require data and use techniques like reinforcement learning and rule-based systems. Such AI techniques also have potential.

Due to a scarcity of AI professionals, it is difficult for a government programme to compete with the private sector, in terms of pay, and attract experienced AI professionals.

One challenge to AI commercialisation, globally, is to generate a necessary return on investment that could spur further AI research and development. As a result, initiatives cannot simply be about AI experimentation but need to focus on identifying commercial benefits of a particular AI solution. For instance, the banking sector seeks to understand how AI can advance financial inclusion and not simply where AI can service or simplify banking operations. To that end, the 100E project identifies projects that can offer significant returns on investments. Projects should be assessed and adopted on technical and financial merits.

18 AI Singapore, 100 Experiments Initiative, https://www.aisingapore.org/industryinnovation/100e/.

For industry, accessing cross-border data flows, especially across countries, is essential to improve the quality of data sets. Firms have been working with governments to highlight the cost of data localisation, advising why cross-border data flows are necessary. For instance, multinational banks have been working with India's financial sector regulator, the Reserve Bank of India, to address risks associated with cross-border data flows. However, there is a growing consensus that a measure of localisation will remain, and companies should utilise cloud platforms to access overseas data. Finally, companies are looking at new technologies like secret computing and differential privacy to maintain the essence of cross-border integration without having to do so physically.

Conclusion

The adoption of AI and machine-learning technologies will lead to a greater and a non-linear generation of data pools. It is necessary to balance this adoption with the basic rights of citizens, given the propensity for misuse of this data by private firms and governments alike. Furthermore, it is also necessary to balance innovation and flexibility with a regulatory framework that is not too restrictive. Annotated pools of data sets across sectors must be freely available, without bias.

Annotated pools of data sets across sectors must be freely available, without bias.

The pace of technological development demands a collaborative approach within countries across academia, government and industry and international collaboration between countries like India and Singapore. Singapore has made strides in developing AI frameworks and adopting horizontal enablers that ensure availability of data in a structured, anonymised fashion for the industry. Similarly, India has been generating vast pools of data from its large Internet user base. These two approaches can be married to yield benefits.

Appendix 1
About the Authors

Dr Karthik Nachiappan is a Research Fellow at the Institute of South Asian Studies (ISAS) at the National University of Singapore. His research focuses on India's approach toward multilateral institutions and global governance with emphasis on issues like artificial intelligence, data management and privacy, climate change and global health.

Before joining ISAS, Dr Nachiappan was an advisor to the United Nations Development Programme (UNDP) China's South-South Cooperation programme, where he liaised with the Chinese government and civil society organisations regarding China's contributions to the 2015 Millennium Development Goals agenda. He has a PhD in South Asian Studies from King's College London and Honours BA in Public Policy and Politics, from the University of Toronto.

Dr Nachiappan is the author of *Does India Negotiate?*, published by Oxford University Press in October 2019. He contributes regular columns and reviews for *The Mint*, *Open Magazine* and *The Hindu*. He is the founding editor of *Lekh*, an online review of books on South Asia.

Mr Nishant Rajeev is a Research Analyst at the Institute of South Asian Studies (ISAS) at the National University of Singapore. Prior to joining ISAS, Mr Rajeev worked in a public affairs firm in New Delhi where he focused on the Indian government's cyber, drone and automotive policies, as well as projects on police reform and child rights. His articles have been published on the websites of *The Diplomat*, *National Interest* and *Pragati*.

Mr Rajeev earned his Master of Science (Strategic Studies) from the S. Rajaratnam School of International Studies at the Nanyang Technological University, Singapore. He holds a Bachelor of Engineering degree from the RNS Institute of Technology and a Graduate Certificate in Public Policy from the Takshashila Institution, both based in Bangalore, India.

Appendix 2
About the Roundtable

ISAS-AAC ROUNDTABLE (WEBINAR)
India, Singapore and the Global Partnership on Artificial Intelligence
30 September 2020

Programme

4.00pm **Welcome Remarks**
Professor C Raja Mohan
Director
Institute of South Asian Studies
National University of Singapore

4.05pm **Opening Remarks**
Dr Shashi Tharoor
Member of Parliament, Lok Sabha; and
Chairman of the Parliamentary Standing Committee on Information Technology and All India Professionals Congress

4.15pm **Session I: Data Governance for AI**
What AI Governance Frameworks Exist in India and Singapore?
What Kinds of Data Policies Facilitate the Development of AI?

Moderator
Dr Karthik Nachiappan
Research Fellow
Institute of South Asian Studies
National University of Singapore

4.20pm **Moderated Discussions**

5.05pm **Session II: AI Commercialisation and Innovation**
How Can India and Singapore Incentivise AI Innovation?
What Are Some Policy Areas and Challenges Where AI Can Be Deployed?
What Are Some of the Challenges that Inhibit the Broad Use and Adoption of AI?

Moderator
Mr Tejpreet S Chopra
Founder and Chief Executive Officer
Bharat Light & Power

5.10pm **Moderated Discussions**

5.45pm **Recommendations on the Way Forward**
How Can the GPAI and Global Rules and Norms Guide AI Development in Countries?

Presenting the Summary and Main Recommendations
Mr Sameer Walia
Chief Executive Officer
Ripples of Hope

6.00pm **End of Roundtable**

Appendix 3
About the Participants

India

Mr Sameer Walia (Chair)
Chief Executive Officer
Ripples of Hope

Mr Arnab Kumar
Former Advisor on Frontier Technologies
NITI Aayog

Dr Shashi Tharoor
Member of Parliament, Lok Sabha; and
Chairman of the Parliamentary Standing Committee on Information Technology and
All India Professionals Congress

Mr Srikumar Misra
Founder and Chief Executive Officer
Milk Mantra

Mr Saurabh Gaur
Joint Secretary
Ministry of Electronics and Information Technology
Government of India

Mr Amber Sinha
Executive Director
The Centre for Internet and Society, India

Mr Joshua Abrahams
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Dr (Ms) Rohini Srivathsa
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Mr Tejpreet S Chopra
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Mr Prasanth Sugathan
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National University of Singapore

Mr Laurence Liew
Director
AI Singapore
National University of Singapore

Mr Shameek Kundu
Chief Data Office
Standard Chartered Bank, Singapore

Dr Karthik Nachiappan
Research Fellow
Institute of South Asian Studies
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Ms Lee Wan Sie
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