DECEMBER 2022

TOWARDS A HUMAN RIGHTS-BASED APPROACH TO

NEW AND EMERGING TECHNOLOGIES

PERMANENT MISSION OF THE
REPUBLIC OF KOREA IN GENEVA

SNU AI POLICY INITIATIVE

UNIVERSAL RIGHTS GROUP

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Without a doubt, this list is incomplete. For all those whom we forgot to mention, our humble apologies for that, and our deepest gratitude nonetheless for your kind support on this project.

EXECUTIVE SUMMARY

'Technology is not neutral.'

This statement increasingly represents the position of technologists, human rights campaigners, ethicists, and political scientists. According to this emerging consensus, technology itself can in fact be instilled with certain values - either in line with or contradictory to human rights norms. This simple conclusion is not merely descriptive, however, but also empowering. It empowers us – in our capacity as diplomats, policy makers, technologists, corporate managers, entrepreneurs, innovators, bureaucrats, civil society activists, students, professors, consumers and regular citizens – to guide technology and bend the ark of its life cycle in the direction of social justice and the promotion and protection of human rights.

Oftentimes, a new or emerging technology holds obvious promise from the perspective of advancing human rights. Without modern technology, for example, the world would have never been able to keep so many of our schools and hospitals running during the COVID-19 public health emergency, a simple fact that helped millions of children and patients continue to enjoy their rights to education and health in the midst of a global pandemic. Modern technology promises to cure some of society's most vexing problems, including many that have the direct potential to advance the cause of human rights, including by creating entire new economies with the potential to lift millions out of poverty.

Confusingly, however, some of those same new and emerging technologies can also be used to undermine human rights. Technologies that typically facilitate global social engagement can also be used for surveillance purposes or can inadvertently undermine social cohesion and democratic institutions. Genetic engineering promises to cure certain kinds of hitherto incurable diseases, but can likewise worsen existing inequalities. Technologies with undeniable individual benefits can result in negative social externalities, while others that clearly improve societies can do so at the expense of individuals and their rights. Technology can be fungible: designed to serve a virtuous purpose and then nonetheless subverted or used by others to serve more ethically ambiguous (or outright nefarious) purposes.

If technology is not neutral, and if there is this consistently foreseeable risk of bad or ignorant actors deploying technology for less-than-noble ends, the burning question becomes how can we do everything in our power to make it more likely than not that technologies are beneficial to individuals, communities and humanity, while minimising and countering some of their inherent potential to do harm? Is there a method by which technologies, especially new and emerging technologies, can be 'hard wired' or 'genetically engineered' to serve pro-social causes that respect, protect and fulfil human rights?

In this policy report, we propose such a method, which we are calling the Human Rights-Based Approach to New and Emerging Technologies (HRBA@Tech, for short).

It was developed jointly by the Universal Rights Group (URG), a human rights think tank dedicated to proposing research-based policy prescriptions to strengthen human rights policy, with offices in Bogota, Nairobi, Geneva and New York, along with the Seoul National University Artificial Intelligence Policy Initiative (SAPI), an interdisciplinary research laboratory at Seoul National University in Korea devoted to the interdisciplinary exploration of issues having to do with artificial intelligence. In developing this model, both URG and SAPI drew on their comparative sources of experience, building on their relationships with the diplomatic, academic, and technical communities to develop and refine the model.

The HRBA@Tech model integrates three different perspectives, each of which brings unique insights to the questions posed above. First, it explores the principles that are most relevant in the development of new and emerging technologies ("the What" of the HRBA@Tech model). Drawing from both human rights standards as well as classical technological ethics literature, the paper articulates seven interlocking principles, organised into two pillars. The first (the 'do no harm' pillar) postulates that new and emerging technologies should be accountable, secure, non-discriminatory, and grounded in international human rights law. The second (the 'make the world a better place' pillar) additionally specifies that new and emerging technologies should also be based on proactive representation of, transparency towards, and the empowerment of those who would likely be impacted by new and emerging technologies.

Each of these principles is associated with a list of discrete processes, for example 'consultation,' 'human rights by design,' or 'capacity building.' The articulation and study of these discrete processes – of which we argue there are a total of 24 – is the true added value of this HRBA@Tech model, since it suggests actionable ways to make real the lofty principles of the HRBA@Tech model in an applied, real-world setting.

Second, the paper describes how these principles and corresponding processes apply to new and emerging technologies along the course of a classical technology lifecycle, starting from the initial days of innovation all the way to a technology's eventual irrelevance. We call this 'the How' of the HRBA@Tech model. The report shows that

certain processes tend to be far more relevant at certain stages of the technology's lifecycle than others.

The third and final perspective is that of the stakeholders ('the Who' of the HRBA@Tech model). Here we ask what stakeholders are relevant, working in which coalitions, to drive the HRBA@Tech model. While these descriptions remain somewhat abstract, the discussion highlights how various stakeholders must learn to work not only in opposition to one another, but also join hands in collaborative problem solving to make headway on this issue.

The paper concludes by illustrating how the HRBA@Tech model would apply to artificial intelligence, highlighting how aspects of this approach are already being utilised by ethically-minded technologists, academics, government officials and corporate managers to nudge technologies in the direction of the promotion and protection of human rights.

The final Chapter of the paper distils those findings into a succinct list of recommendations.

Our intention in these pages is to bring together the various strands of technological ethics underneath the umbrella of a human rights-based approach, using accessible language to do so and highlighting specific processes that will be essential in any such efforts. We especially hope that this paper will contribute to efforts at the United Nations and elsewhere at the international level to use human rights mechanisms to systematically and progressively advance the issue of technology and human rights. Such a concerted effort is sorely needed, and we believe the diplomatic common ground exists to gradually develop implementable standards that can provide tangible guidance for all those who are involved in the process of designing and developing New and Emerging Technologies (NETs).

INTRODUCTION

The interrelationship between science, technology (i.e., the application of scientific knowledge to the world around us) and the fundamental human dignity of individuals and communities has been part of the modern human rights movement since its birth in the late 1940s. The urgency of that discussion was as important in the shadow of the mushroom clouds over Hiroshima and Nagasaki as it is today, when new and emerging technologies are increasingly affecting all facets of human life, creating the potential to strengthen the promotion and protection of human rights, while simultaneously presenting a number of complex risks and challenges for their full and effective enjoyment.

The relationship between technology and human rights is a paradox: on the one hand providing opportunities for social innovators to advance the cause of human rights and accelerate sustainable development, while often simultaneously representing a constant threat to our enjoyment of human rights.

Given this paradox, how should the human rights community situate itself vis-à-vis new and emerging technologies? Must we make the uncomfortable choice between two ultimately fundamentalist positions: the 'luddite,'[1]or precautionary stance on the one hand, whereby we must reject all technological progress unless we are guaranteed that it can be deployed with no risk to existing human rights and societal structures, or the 'tech utopianist'[2] stance on the other, in which we embrace an understanding of what it means to be human where we as a species are constantly influenced, altered and enhanced by the very technologies that we bring into existence?

To answer this question, one needs first to answer the question of whether technology can be said to be neutral with regards to moral or ethical (or human rights) values. It has often been argued that technology itself is neutral–a mere instrument for human beings to exercise their own personal agency. This is the so-called Value-Neutrality Thesis (VNT). The pithy phrase "guns don't kill, people kill,"[3] succinctly embodies the VNT. The VNT is often advanced by those who would resist efforts to regulate or limit the development and diffusion of new technologies. The thesis relies on the claim that technology on its own (the 'artefacts' of technology) do not exude empirically verifiable values, and that therefore the technology must be seen as being either neutral, or at worst infused with only trivial and largely imperceptible values.

We explicitly reject the idea of tech neutrality in this paper. If it were any other way, Part II of this paper, in which we propose a strategy for infusing human rights values into NETs, would not have been necessary. If we considered technology to be the mere extension of human agency, then our recommendations on how to structurally 'nudge' technologies in the direction of human rights would be meaningless. In rejecting the VNT, we join a growing list of scholars, including the members of the Advisory Committee to the UN Human Rights Council,[4] who also believe that technology itself can be imbued with values.

Conducting an analysis of which values might be embedded within a technology requires a process of 'wondering, deliberating, and reasoning.'[5] This is an inherently subjective process that 'registers what is perceived in relation to categories, concepts, and classes that are socially produced.'[6] The HRBA@Tech model presupposes that one obvious -perhaps the obvious - assortment of such 'categories, concepts and classes' is the human rights corpus. Human rights, we argue, can and should be used as the barometer to thread a 'middle path' between the 'luddite' and the 'tech-utopian' stance with regard to NETs. According to this more holistic and moderating approach, the benefits of technology can and should be exploited for the equitable and universal advancement of human rights -- to make the world a better place. But such use should always take place within clear legal and normative limits, based on universally accepted human rights standards, that serve to ensure that the development and deployment of NETs will not violate individuals' fundamental human rights. It recognises that while technological progress is rapid and exhilarating, there must always be an emergency brake as well.

This middle path posits a two-pronged strategy on how to think about and respond to NETs. The first, premised in the classical human rights philosophy of avoiding harm, posits that technologies should be designed and deployed in a manner to allow for the minimisation and remediation of any potential negative social and human rights impacts of a new technology. The second, more positive approach, aims to encourage the development of promising technologies that maximise the likelihood that they will benefit humanity as a whole.

While the international community has been grappling with the implications of technological innovation for decades, with some more predisposed to optimism at the potential to further social progress and others more concerned about the negative societal

implications, the rapid pace of ongoing digital transformations has heightened awareness of the need for an overarching governance framework to address its myriad positive and negative implications for individuals and their rights.

In this context, the international human rights system has been increasingly mobilised to provide guidance to all stakeholders on how to best address the human rights implications of new technologies. Most notably, in 2019, the Human Rights Council adopted a resolution on 'New and emerging digital technologies and human rights', which requested the Advisory Committee to prepare a report on the impacts, opportunities and challenges that NETs pose for human rights and how these can be best addressed within the international human rights system.

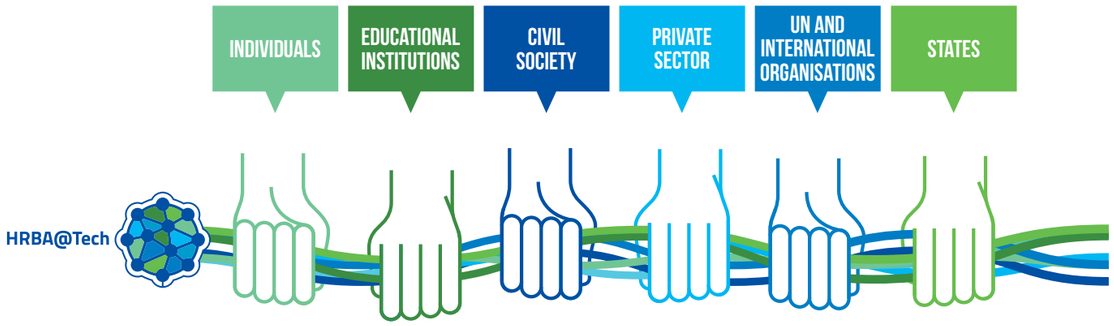
The landmark report, presented to HRC47 in June 2021, highlights conceptual and operational gaps within the existing international human rights framework that act as barriers to harnessing the potential and benefits of such digital technologies while preventing associated risks. Conceptual gaps identified include issues around adapting the existing international human rights framework to current realities of the digital age, a lack of cooperation and coordination between human rights and technology communities and an ensuing lack of understanding of the relationship between human rights and technology, as well as selective emphasis on some technologies and some human rights harms over others. Meanwhile, operational gaps identified include practical challenges resulting from innovation outpacing regulation and the fragmentation of regulatory initiatives that lead to governance gaps, as well as the lack of adequate resources to support existing human rights mechanisms. To tackle these challenges, the Advisory Committee recommended that stakeholders adopt a human rights-based approach driven by multi-stakeholder cooperation and based on three pillars-(1) developing a holistic understanding of technology; (2) developing a holistic approach to human rights; and (3) developing holistic governance and regulatory efforts.[7]

Against this backdrop, the present report aims at tracing the contours of such a working methodology of a human rights-based approach to NETs (the HRBA@Tech Model). Part I of the report lays out the intellectual and normative foundations for the HRBA@Tech model. Since this report is ultimately aimed at the development of a new normative approach to NETs, Chapter 1 begins with a historical overview of existing efforts to develop such norms, starting with the Universal Declaration of Human Rights in 1948. This Chapter shows how many of the debates we are having today have precedent in earlier decades, suggesting that the lessons learned from those conversations in the past may still hold relevance for us today. Chapter 2 shifts from a normative towards a policy stance, illustrating the fundamental paradox of NETs by specifically highlighting four NETs (genetic engineering, internet-based technologies (including social media), geoengineering, and artificial intelligence). Chapters 1 and 2 collectively provide the context for the HRBA@Tech model.

Part II of this report presents the HRBA@Tech model. This is presented merely as a starting point for possible future work, to be taken forward by, for example, a newly created Special Procedures mandate of the Human Rights Council. It brings thinking from the world of human rights, sustainable development, and technological ethics into one framework that aims to be broad enough to be applicable not just to one specific technology, but rather a diverse set of new, emerging, and even as yet unimagined future technologies. The model does not therefore set forth a fixed set of universally applicable standards, but rather proposes a process by which technologists, human rights actors, and affected individuals and communities can jointly define and promote specific standards that are meaningful in the context of a given new technology. Chapter 3 sets out the basic principles of HRBA@Tech, as derived from international human rights law and technology ethics. It draws from previous models of human rights-based approaches, notably in the context of development, which it complements with current discussions surrounding ethics of technology. Chapter 4 breaks down how these principles might be integrated into the typical life cycle of any given technology. It describes the process through which technologists and human rights analysts might identify human-rights relevant intervention points within that life cycle. Chapter 5 focuses on the specific stakeholders or actors who can then mobilise (or be called into action) to make real the promise of the HRBA@Tech model, often working together in multi-stakeholder initiatives. Chapter 6 illustrates the HRBA@Tech model by hypothetically applying it in the context of a project involving the development and deployment of an Artificial Intelligence driven project to advance social justice. This Chapter shows that many of the ideas we describe in the HRBA@Tech model are already embraced by many in the tech community as 'best practices.'

Part III concludes the report with a series of recommended actions for the international community, individual States, and other relevant actors to take in order to continue advancing this agenda forward.

MODEL OF THE HRBA@TECH



DO NO HARM
- Legality
- Non-Discrimination and Equality
- Safety
- Accountability & Access to Remedies

MAKE THE WORLD A BETTER PLACE
- Empowerment
- Transparency
- Participation

Legality
- Implementation of International Human Rights Norms
- Policy Coordination
- Mainstreaming Human Rights

Non-Discrimination
- Impact Assessment
- Internal Diversity

Safety
- Guardrail Innovation
- Standardisation
- Meaningful Human Control
- Use Safeguards

Accountability & Access to Remedies
- Monitoring & Oversight
- Constructive Problem Solving
- Incentivisation
- Clearly Identified Responsible Entity
- Access to the Formal Justice System
- Development of Accessible non-Judicial Grievance Processes at all Levels

Empowerment
- Human Rights by Design
- Community Mobilisation
- Capacity Building
- Technology Sharing & Transfer

Transparency
- Translation
- Disclosure

Participation
- Consultation and Collaborative Needs Assessment
- Representative Advocacy
- Multistakeholder dialogue

METHODOLOGY

This document is the result of a collaboration between the Universal Rights Group, the Seoul National University Artificial Intelligence Policy Initiative, supported by the Permanent Mission of the Republic of Korea to the United Nations in Geneva (MoFA-Genève), that aims to propose a working concept of a human rights-based approach to NETs, which can ideally serve as a starting for future human rights and technology experts—and ideally a Human Rights Council Special Procedure to be established in coming years.

The Universal Rights Group (URG) is an independent think tank dedicated to analysing and strengthening global human rights policy. Its main office is in Geneva, Switzerland and it also has offices in New York City, Bogotá, Colombia and Nairobi, Kenya. URG sits at the centre of a wide international network for academic and research institutions, human rights defenders, and NGOs committed to furthering human rights. URG supports and strengthens policy-making and policy-implementation at the international, regional and local levels by providing rigorous yet accessible, timely and policy-relevant research, analysis and recommendation. The Group also seeks to provide a forum for discussion and debate on important human rights issues facing the international community and a window onto the work of the Human Rights Council and its mechanisms – a window designed to promote transparency, accountability, awareness and effectiveness. The Group is registered as a not-for-profit association under Swiss law.

The Seoul National University Artificial Policy Initiative (SAPI) was launched in 2017 to study social and policy challenges that are likely to arise in response to the expected proliferation of data-driven artificial intelligence (AI) technology. SAPI conducts interdisciplinary research bringing together specialists from the fields of technology development, humanities, social science, and the law. SAPI sees itself as a 'Social Laboratory': a research platform where various disciplines from around Seoul National University, ranked as Korea's top university, come together to discuss these crucial issues. SAPI is leading research efforts in the field of artificial intelligence & law, and is actively engaged in joint research and cooperation with domestic and international experts and institutions in various fields, including human rights, AI & ethics, and compliance.

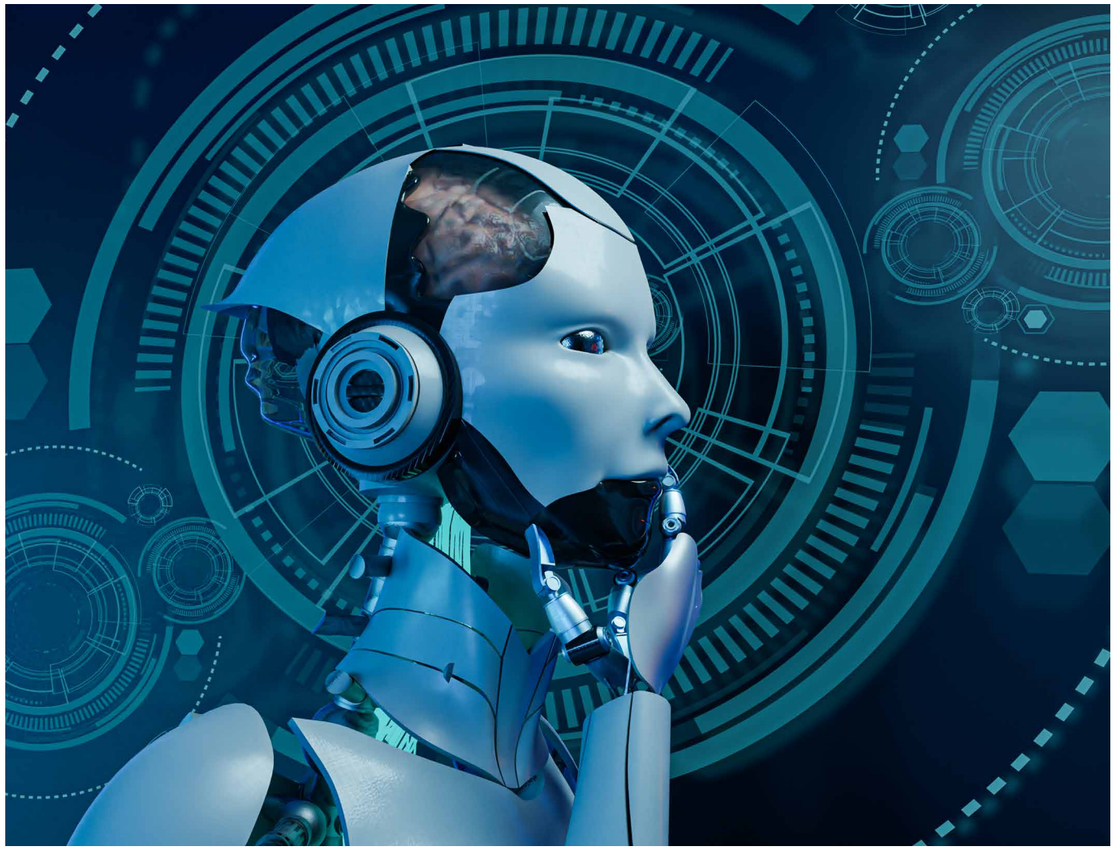
In mid-2022, the Permanent Mission of the Republic of Korea in Geneva generously commissioned URG and SAPI to begin work on a series of policy papers on Human Rights and New and Emerging Digital Technologies. This is the first of those policy papers. Further instalments in this series of policy papers would build on this initial publication and apply the developed approach to specific issues in this field, e.g., human rights, climate change, and new technologies; accountability; Agenda 2030; etc.

Several activities inform the contents of this paper. SAPI and URG both conducted extensive desk reviews of existing literature in this field, prioritising English as well as Korean-language materials in that process. SAPI also conducted numerous key-informant interviews in Seoul, South Korea, specifically with technologists, financiers, scholars, and industry insiders, while URG broadly consulted Geneva-based stakeholders from diplomatic missions, academia, civil society and United Nations entities. While some of these interviewees wished to remain anonymous, all focused on the broad conceptual task of designing a framework for the promotion of human rights that would prove acceptable to multiple stakeholders involved in the development and promotion of NETs. SAPI also hosted a closed-door roundtable of technologists, policy makers, academics, and social workers involved in an effort to develop an AI-driven tool to help improve social services in South Korea. This workshop provided SAPI with a unique insight into the kinds of discussions, and processes, that inform such an effort to harness the power of NETs to combat a high-profile (and high-stakes) human rights issue.

SAPI also leveraged its location in a world-class research institution to bring this project into a classroom, intentionally using those fora as workshops to refine and elaborate on the concepts described in these pages. Students enrolled in the Human Rights and Dignity Clinic at Seoul National University[8] spent the entire 2022 Autumn semester researching ten separate NETs.[9] Using an iterative process to refine and debate crucial aspects of this paper. Students and faculty in that class worked iteratively to refine the HRBA@Tech model presented in this thought piece, seeking to test its appropriateness for any NET—even those we cannot yet even imagine in 2022. Likewise, students enrolled in an interdisciplinary undergraduate course on Rights and Responsibilities spent three weeks working on a case study that closely mirrored the content of the closed-door SAPI roundtable on Social Work and AI. SAPI also partnered with a group of volunteer students from Yale University, facilitated by the University Network for Human Rights, who conducted additional interviews with technologists and human rights researchers, primarily in North America, that further informed the Analysis in this thought piece.

On November 24, 2022, URG and SAPI jointly hosted a policy dialogue in Geneva. This closed-door session brought together 20 policymakers, including representatives of Permanent Missions, civil society, UN entities, international experts, and other relevant stakeholders to discuss the proposal for the HRBA@Tech developed in this report. The policy dialogue provided an opportunity to validate and critique initial findings and to solicit additional input from the assembled stakeholders.

This policy report is a work in progress. Its authors are by no means "done" with this analysis. We sincerely hope, however, that our analysis provides a robust starting point for the focused development of universal norms that speak to NETs and the challenge of harnessing them as a force for the protection and more widespread enjoyment of human rights worldwide. Further, we propose that the methods of multi-stakeholder and multi-disciplinary engagement, dialogue, and iterative conceptual refinement that we used to inform this report might also provide a template for that future process of normative refinement.



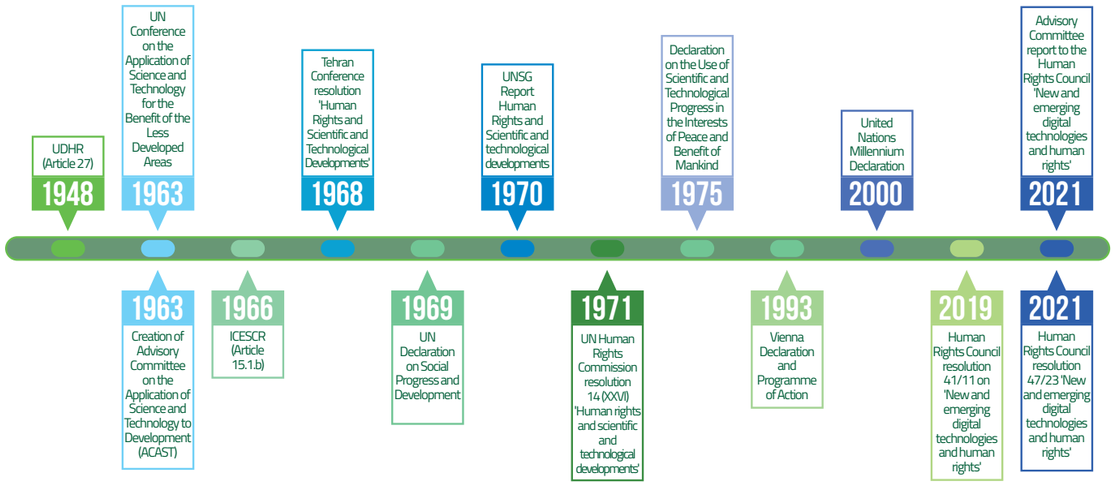
PART I
NEW AND EMERGING TECHNOLOGIES AND HUMAN RIGHTS: SETTING THE STAGE

CHAPTER 1
HUMAN RIGHTS AND NEW AND EMERGING TECHNOLOGIES THROUGH THE YEARS: AN EXPANDING FIELD

Chapter Summary:

Though human rights issues arising out of new and emerging technologies do signify a certain modern and contemporary dimension, debates surrounding the relationship between human rights and technology have long been in existence, including the early and nascent years of the human rights field. This Chapter traces the interplay of human rights and technology through history, delves into the ways in which the field has expanded and adjusted its boundaries to accommodate technological evolutions, particularly advancements in digital technologies, and lastly, provides an overview of more recent developments with respect to new and emerging digital technologies. An understanding of this context offers useful insights to present-day human rights dilemmas related to new and emerging digital technologies and is foundational to the development of a holistic human rights-based approach, as recommended by the Advisory Committee in its seminal 2021 Report to address such issues.

GUIDANCE FROM THE INTERNATIONAL HUMAN RIGHTS SYSTEM



The Universal Declaration of Human Rights (UDHR) was adopted in 1948 against the background of the devastation caused during the Second World War. That war, and the tremendous human suffering that characterized it, was made possible to a great extent by scientific and technological advancements, including the use of atomic bombs and weapons of mass destruction with the potential to jeopardise the very existence of humanity. In an embodiment of the profound lessons learnt during the Second World War, and in recognition of the need to share technologies equitably and prevent their monopolisation by one nation or group of nations at the expense of other peoples,

> "The promise which science offers is understandably high but having invented and perfected the machine, is man going to become himself the slave of the machine or of those few in number who will be in the position to manipulate it?"

UN Secretary General U Thant
Address to the Tehran Conference (1968)

Article 27 of the UDHR provides for "the right freely to […] share in scientific advancements and its benefits." A similar provision finds place in the International Covenant on Economic, Social and Cultural Rights (ICESCR), adopted in 1966. Article 15.1(b) proclaims "the right to enjoy the benefits of scientific progress and its application." The assumption and premise underlying these provisions was that science and technology (as an application of science) must only be used for the advancement of benefits and progress for humanity,[10] and that said advancement should benefit all people.

Despite this prominent incorporation of science and technology into the heart of the international human rights framework, these provisions are rarely invoked within the mainstream human rights movement, and "science [remains] one of the areas…to which states parties give least attention…"[11] The world today looks very different from the world in which most of these "core" international human rights instruments were adopted, and some of the human rights issues unique to NETs (such as AI, genetic engineering, geo-engineering, and modern ICT technologies) may not have been imagined by the original drafters, and yet the broadly worded guarantees of human rights enshrined in these core instruments, which are universal and in-temporal in nature still serve as a powerful starting point for addressing issues in the human rights and technology space even today. The international human rights system also evolved to reflect current technological developments over time. Many of these developments were specifically premised on the human rights and emerging digital technologies paradox, i.e., the realization that technological advancements pose both challenges and opportunities for human rights. Though these trends reflect a growing consciousness of the human rights implications of scientific and technological developments since the 1940s, initial efforts were narrow in scope and limited to specific aspects of human rights such as privacy, data protection, freedom of speech and expression and other such issues. In recent years however, efforts have also been directed towards addressing the human rights implications of digital technologies in a more general, overarching, and holistic manner.

In 1968, on the occasion of the 20th anniversary of the UDHR, the United Nations General Assembly (UNGA) convened an international conference on human rights in Teheran to reflect on the progress made in the field of human rights and also to formulate a programme of action for the coming decades.[12] While the interrelationship between technology and human rights was certainly not at the forefront of the conference agenda, it was on this occasion that the human rights implications of scientific and technological developments, including the specific dangers posed by them, were for the first time specifically highlighted.[13] The resolution on 'Human Rights and Scientific and Technological Developments', adopted at the end of the Teheran Conference,[14] acknowledged that scientific and technological developments had opened new opportunities for economic, social and cultural progress, but also recognised that they posed complex human rights challenges. This duality (the paradox) highlighted at the Teheran Conference has remained central to the human rights and technology discussion ever since.[15] Though the then-UN Secretary General U Thant in his opening address urged the conference attendees to find "the ways and means of turning science and technology from destruction to the enhancement of life",[16] the resolution adopted succeeded only in calling for further study of the issue. More specifically, the resolution emphasized four key focal points for this future research:

1. "Respect for privacy in view of recording techniques;
2. Protection of the human personality and its physical and intellectual integrity in view of the progress in biology, medicine and biochemistry;
3. The uses of electronics which may affect the rights of the person and the limits which should be placed on its uses in a democratic society;
4. More generally, the balance which should be established between scientific and technological progress and the intellectual, spiritual, cultural and moral advancement of humanity."[17]

Later that same year, the UNGA, on the basis of the recommendations adopted in the above resolution, and emphasising the need for human rights standards in the area of scientific and technological developments, mandated the UN Secretary General (UNSG) to

undertake a study into the four issues highlighted above as well as the potential impact of new technologies on national security.[18]

In the resulting report, which was issued in 1970,[19] the UNSG noted that the "explosion of scientific knowledge and of its technological application which has taken place has not been accompanied by an equally urgent and profound consideration of the implications thereof for human rights."[20] The report provided examples of some ways that governments addressed these challenges, predominantly highlighting legislative and regulatory efforts to ban or criminalise technologies that posed threats to privacy rights, security, and the right against self-incrimination, amongst other rights.[21] This focus reflected a general bias in favour of state action to prevent human rights abuses or violations. Other threats, including less tangible or unintentional threats posed by technological development, as well as issues related to the role of private actors and corporations, remained relatively unexplored.[22] The UNSG report mapped the human rights implications and relevant existing standards with regard to the four thematic areas highlighted by the Teheran Resolution, but also acknowledged situations where those existing standards may not be sufficient in their application. It concluded by calling for new standards to be developed that would better protect human rights. In light of the rapid evolution of technology at the time, the UNSG report also emphasised the need for flexible approaches to accommodate the pace of innovation, and called for the UN to serve a standard-setting role.

This early strand of thinking at the UN primarily focused on the "downsides" or risks of technology, positing technology as a potential threat to be controlled. This precautionary or defensive approach to technologies developed alongside and coexisted with another emerging strand of soft law that focused more on the "upsides" or opportunities of technology, specifically the progressive potential of new technologies, especially in regions that today we might describe as the "Global South." This approach had its landmark moment in 1963 with the UN Conference on the Application of Science and Technology for the Benefit of the Less Developed Areas.[23] In stark contrast to the tenor of the Teheran Conference, the chairman of the 1963 conference in his keynote address reminded the participants that "applied science can be the most powerful force in the world for raising living standards if action can be taken to harness it for that purpose-if the Governments and people of the world can find the means and the will."[24]

The 1963 conference led the UN Economic and Social Council (ECOSOC) later that same year decided to establish the Advisory Committee on the Application of Science and Technology to Development (ACAST)-which, as the name implies, couched the discussion of the positive and beneficial aspects of technology within a development framework.[25] A series of events following ACAST's advocacy and periodic reporting led to the UN Declaration on Social Progress and Development in 1969,[26] which embraced both the need to protect human rights as well as the desire to harness the dynamism of scientific collaboration and dissemination of technology as vital components of an emerging development agenda. It noted the potential of science and technology to contribute to and meet "the needs common to all humanity",[27] and called for its increased utilisation for the benefit of social and economic development. It also specified that "[s]ocial progress and development shall be founded on respect for the dignity and value of the human person and shall ensure the promotion of human rights and social justice."[28]

A similar convergence was taking place in the UN Human Rights Commission, which in 1971 considered the report that had been previously submitted by the UNSG on Human Rights and Scientific and Technological Developments and a resolution purporting to take action on that report. "The UNSG report had faced withering criticism by some members of the Human Rights Commission, much of which remains relevant even today. Some voiced their "disappointment" that the report drew on "material collected only from limited areas of the world, especially the countries more developed from a technological point of view."[29] Those same critics lamented that the report focused only on technology's potential threat to human rights and not the "various other aspects of human advancement."[30] Critiques accused the UNSG of highlighting issues with "little or no social significance", relying on "too much speculative material".[31] The critics concluded that "science and technology should not restrict the rights of the individual, but also that science should be used in the interests of society as a whole, and not to increase social and property inequality or to intensify the exploitation of man by man."[32] "It was important", members noted, "not only to study the measures against intrusions into private life but also to guarantee other important human rights within the framework of the progress of science and technology."[33]

The amended resolution, which embraced both the potential risks and the potential opportunities that technologies posed for human rights, was adopted by the Commission on Human Rights at its 27th session on 18 March 1971.[34] The Commission called for presenting a balanced picture of the human rights challenges arising out of scientific and technological developments, including the ways in which they can be used for the benefit of mankind and interest of society as a whole, especially in developing countries. It urged the use of science and technology to improve living conditions and foster respect for human rights, and not to increase social inequality or intensify exploitation of man or to restrict human rights and fundamental freedoms. Interestingly, the Commission also noted that science and technology were in themselves "neutral",[35] and that the problems they pose or advantages they offer for mankind emanate from the use to which they are put. The Commission decided to retain the issue of technological developments as a standing item on its agenda to continue examining the human rights implications of scientific and technological developments. In recognition of the complexity of problems related to technology due to the rapid and unpredictable nature of developments, it called for "constant attention" to accommodate changing realities and the need to adapt accordingly.

> "It [is] important not only to study the measures against intrusions into private life but also to guarantee other important human rights within the framework of the progress of science and technology."
>
> **Debate on the UN Human Rights Commission Resolution on Human Rights and Scientific and Technological Developments (1971)**

These early discussions in the 1960s and 1970s encapsulated the tensions and fault lines that even today continue to define the debate on human rights and NETs. These include debates about tech neutrality (see introduction), as well as debates about whether to embrace a more precautionary stance towards the potential impact of technologies, how best to embrace their potential to facilitate human progress and development, whether and how to prioritise the promotion of civil and political rights vis-a-vis the progressive realisation of economic, social and cultural rights, and how to deal with the potential social and economic disruptions caused by technological advancements (for example, the elimination of entire sectors in light of "creative destruction" by new technological developments).

The duality of the relationship between human rights and technologies continued to be noted over the years. The 1975 Declaration on the Use of Scientific and Technological Progress in the Interests of Peace and Benefit of Mankind,[36] for example, emphasised the need for international cooperation, the facilitation of greater transfer and exchange of technologies, capacity building in developing nations, and ensuring that the benefits of technology are enjoyed by all strata of society. In 1983, the Commission on Human Rights once again set out to identify concrete strategies to harness the potential of scientific and technological achievements in the realisation and promotion of human rights and fundamental freedoms,[37] and again reiterated the duality of the relationship between human rights and technology.[38] The 1993 Vienna Declaration and Programme of Action[39] again noted the potential adverse human rights consequences of scientific and technological advances, notably in the field of information technology. The subsequent United Nations Millennium Declaration[40] announced a major new global push to harmonise international development standards and affirmed the need to ensure that the benefits of new technologies, especially information and communication technologies, be available to all.

Though the turn of the millennium was marked by rapid technological advancements, particularly in the fields of information and communication technology and in the health sector (see Chapter 2), the human rights implications of those technological developments were addressed only sporadically and intermittently, mostly in the form of soft law instruments. These efforts were also relatively narrow in their scope, addressing the impacts of specific technologies on specific aspects of human rights, such as the right to privacy, data protection, freedom of speech and expression, and health amongst others.

This report, and the HRBA@Tech model more generally, pertains to all NETs, and therefore it is worth briefly considering the nature of various NETs, their human rights implications, and an overview of the existing responses to these new and emerging technological innovation thereto, which is the subject of Chapter 2.

DIGITAL TECHNOLOGIES AND HUMAN RIGHTS

The term “digital technologies” encompasses electronic equipment and applications that are used to find, analyse, store, create, communicate and disseminate information (i.e., data), and is often used interchangeably with the term “Information and Communication Technologies (ICT).” ICT is an umbrella term that refers to the infrastructure that facilitates computing and is generally accepted to mean all devices, applications, networking components and systems that enable communication and management of information as well as network hardware and software, and associated services. It includes antiquated technologies such as telephones, radio and televisions but also more recent technologies such as cellular/mobile phones, computers, and satellite systems, amongst others. “Digitalisation” is the process of using such ICT technologies to convert physical information into digital formats or computer readable language.

Digital technologies today are pervasive and deeply integrated in almost every aspect of human life and across areas of social, economic and political activity. Business models for the supply of products and services increasingly rely on digital technologies and the creation of such digital economies has altered patterns of production and consumption, reshaped systems of education, healthcare and public infrastructure. These technologies are also increasingly influencing public services, as states are heavily investing in the use of digital tools across the full range of decision-making processes. The trend towards digitisation accelerated rapidly during the COVID-19 outbreak, where digital technologies and tools became essential to the pandemic response. They ensured continuation of access to healthcare, education, economic activity and other necessary services at a time when most other aspects of social and public life had come to a standstill.

Digital technologies are not new, however they have become more sophisticated over the years. This is due to an exponential increase in computing power ushered by the development of new and cheaper microprocessor technology. This has made it possible to execute complex tasks at higher speeds and scales than ever before. This greater capacity spurred the development of new devices and technologies offering enhanced capabilities and services, facilitated by the availability of vast amounts of data and the growth of the Internet and broadband networks.

These trends have variably been referred to as the third and fourth industrial revolutions. The "third revolution" typically refers to the explosion of electronic and ICT products and the advent of the internet, and the “fourth revolution” to the explosion of digital products and services building upon existing ICT products and taking the innovations of the “third revolution” to new levels in ways that have a transformative impact across sectors and areas. The fourth industrial revolution is characterised not just by the increasing sophistication of individual digital technologies, but also their cumulative societal effect.

Business models for the supply of products and services increasingly rely on digital technologies and the creation of such digital economies has altered patterns of production and consumption, reshaped systemsofeducation,healthcare and public infrastructure.

NEW AND EMERGING DIGITAL TECHNOLOGIES: WORK OF THE HRC AND THE 2021 ADVISORY COMMITTEE REPORT

Recent years have seen many efforts within the international human rights system and the UN system in general to address the human rights implications of the innovations associated with the third and fourth industrial revolutions.

Most recently, this includes the work of the Human Rights Council (HRC) on “new and emerging digital technologies.” In 2019, the HRC adopted resolution 41/11, in which it recognised that digital technologies have the potential to accelerate human progress and to facilitate efforts to promote and protect human rights. The resolution noted that the full extent of possible human rights impacts is still poorly understood, and requested the Advisory Committee to prepare a report exploring the human rights implications of new and emerging digital technologies as well as the potential role of international human rights mechanisms in helping to address those issues.

After undertaking a detailed study of the issue, surveying existing initiatives, and considering the inputs from a range of stakeholders, the Advisory Committee presented its landmark report to the HRC in June 2021. The report defines “new technologies” as the technological innovations that transform the boundaries between the virtual, physical and biological spaces, and also includes in that definition new technologies and techniques for the datafication (the process of transforming subjects, objects and practices into digital data), data distribution and automated decision-making. Examples of such novel techniques include Artificial Intelligence (AI), the Internet of Things, blockchain technology and cloud computing, amongst others. These processes are characterised by the synchronisation of online and offline spaces in a process described by the Advisory Committee[41] as the physical-digital-physical loop or the datafication cycle which is spread across a series of three stages: (1) a datafication stage where physical events are transformed into data and stored online; (2) a distribution stage where that data is shared and distributed into larger datasets; and (3) a decision-making stage where those digital datasets are used to design policy or make decisions that have an impact on people in the real world through algorithmic or automated systems, with or without human oversight.

The Advisory Committee report highlights the technology paradox, and notes also the important role played by private actors, such as tech companies, in the development and deployment of new technologies. The report highlights various conceptual and operational gaps within the existing human rights framework, which effectively act as barriers to addressing human rights issues arising out of new and emerging digital technologies and prevent the development of a unified approach. These conceptual gaps include the challenges of adapting existing international human rights standards to the current realities of the digital age, a lack of cooperation and coordination between the human rights and the tech communities, and the selective emphasis on some technologies and some human rights harms as opposed to a more balanced approach that embraces also the potential 'upsides' of technological innovations in the achievement of human rights. The report also highlighted several operational gaps, including practical challenges due to the nature of innovation, which usually outpaces any credible attempts to regulate new technologies, and the fragmentation of regulatory initiatives leading to governance gaps. Moreover, the report notes a lack of resources for human rights mechanisms. The report concludes by calling for a “human rights-based approach” to NETs based on three pillars: (1) a holistic understanding of technology; (2) a holistic approach to human rights; and (3) holistic governance and regulatory efforts.

Previous efforts at the international level to deal with human rights and ICT technologies often proceeded in disciplinary silos. The Advisory Committee report, in contrast, focuses on overarching and holistic solutions. The Advisory Committee Report also explicitly rejects the VNT (the assertion that technology is neutral), which had been central to previous discussions of the human rights implications of new technologies at the UN level. The Advisory Committee report dismissed the VNT as an oversimplification and observed that technologies can and do embody the values and biases of the people or entities that make them. The Advisory Committee noted that such biases (whether intentional or unintentional) can result in discriminatory outcomes, especially in cases of AI-based decision-making. Accordingly, the Advisory Committee recommended strategies to be elaborated that would function to seek out and counter bias not just from individual user(s) of technology, but also the technology itself.

Second, the Advisory Committee Report recognized the futility of focusing on the human rights impacts of any one technology taken in

isolation, and how a singular technology cannot be distilled from the cumulative impacts of that technology as part of an interconnected ecosystem of technologies. This again represents a paradigmatic shift from previous approaches, many of which focused on one technology in isolation. According to the Advisory Committee's approach, technology (or rather technologies) are woven together into evolving technological ecosystems that collectively impact human interactions, and can therefore only be addressed by means of an integrated and holistic approach.

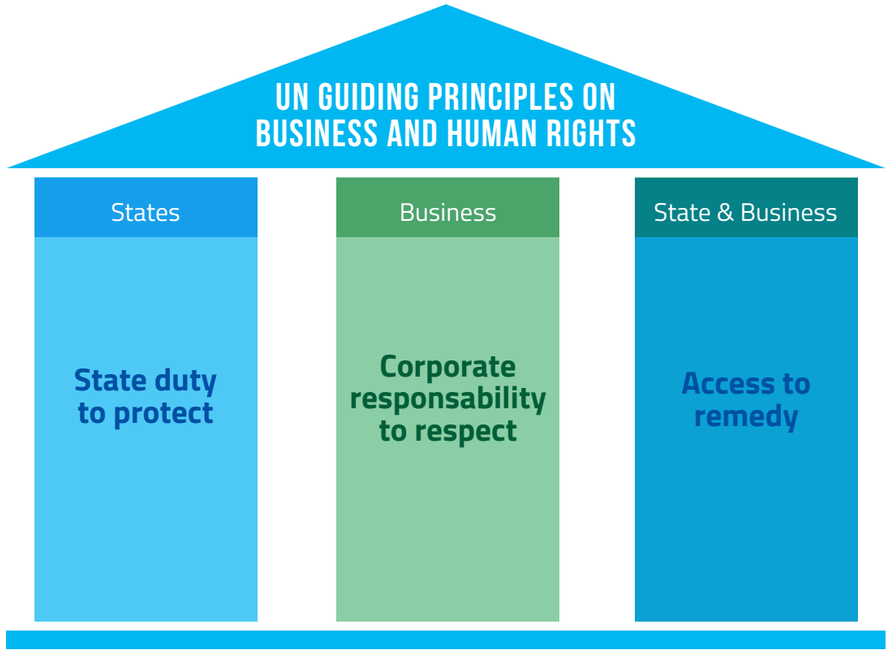
After the Advisory Committee issued its report, the HRC issued Resolution 47/23, in which it reaffirmed the need for a human rights-based approach to new and emerging digital technologies and the need for a holistic, comprehensive and inclusive approach with an emphasis on multi-stakeholder cooperation.

A general view of the room XX during the thirty-first regular opening of session of the Human Rights Council, Geneva, Switzerland, February 29, 2016.

UN Photo/Pierre Albouy

BRINGING THE PRIVATE SECTOR INTO THE EQUATION

UN GUIDING PRINCIPLES ON BUSINESS AND HUMAN RIGHTS



In parallel to these developments, a separate yet closely related strand of normative evolution was emerging in the form of the business and human rights movement. This normative strand of thought is relevant to new and emerging digital technologies, since many of these technologies are developed and deployed by private (corporate) actors.

The classical human rights framework was traditionally designed with the State at the centre of obligations towards individual rights holders. Over the years, however, much work has been done to articulate precisely how this framework applies also to private actors, in recognition of the seminal role that businesses play in the realisation (or non-realisation) of human rights. Although States remain the primary duty bearers and thus the primary actors responsible for enforcing human rights norms within their respective jurisdictions, businesses are increasingly also understood to be key stakeholders in the promotion and protection of human rights.

In the year 2000, at the initiative of the UN Secretary General, the voluntary Global Compact (which brings together private sector actors to promote sustainable development and act in the service of broader UN initiatives) promoted a soft law approach to regulate the activities and operations of transnational corporations. It set out ten non-binding principles that companies could mainstream across their business operations, with the key focal points being human rights, labour protections, environmental sustainability, and anti-corruption. The Global Compact lacks a robust enforcement mechanism or recourse in case of non-adherence to these principles, but nonetheless served an important role in the articulation of globally-applicable norms. With time, these norms gradually found their ways into corporate boardrooms and ethics policies around the world.

In 2011, the UN Special Representative of the Secretary General on Human Rights and Transnational Corporations and other Business

Enterprises (SRSG on Business) presented the UN Guiding Principles on Business and Human Rights (UNGPs)[42] to the Human Rights Council. The UNGPs represented a landmark moment in the ongoing efforts to promote a sense of corporate social responsibility and respect for human rights, and were unanimously endorsed by the UN HRC.[43] The UNGPs provided a three-pillar framework:

1. The State's duty to protect human rights.

   States, as the primary duty bearers, retain the obligation to protect human rights. This includes the obligation to enforce laws requiring businesses operating within their jurisdiction to respect human rights. States must ensure that their domestic laws and policies, including corporate law, do not constrain but rather enable business to respect human rights. States are also obligated to provide effective guidance to businesses on how best to respect human rights throughout their business operations, and encourage (and where appropriate) require businesses to communicate those efforts publicly.

2. A corporate responsibility to respect human rights.

   This corporate responsibility to respect human rights entails a conscientious effort by businesses to not directly or indirectly cause or contribute to adverse human rights impacts through their activities and to address, mitigate and remedy such impacts if they nonetheless do occur. Accordingly, businesses are required to articulate their corporate strategy or commitments to respect human rights. In addition, they are required to develop human rights due diligence processes designed to identify, prevent, mitigate and account for any human rights impacts of their business operations. Finally, they are obligated to develop legitimate grievance processes that enable the remediation of any adverse human rights impacts they cause or to which they may have contributed.

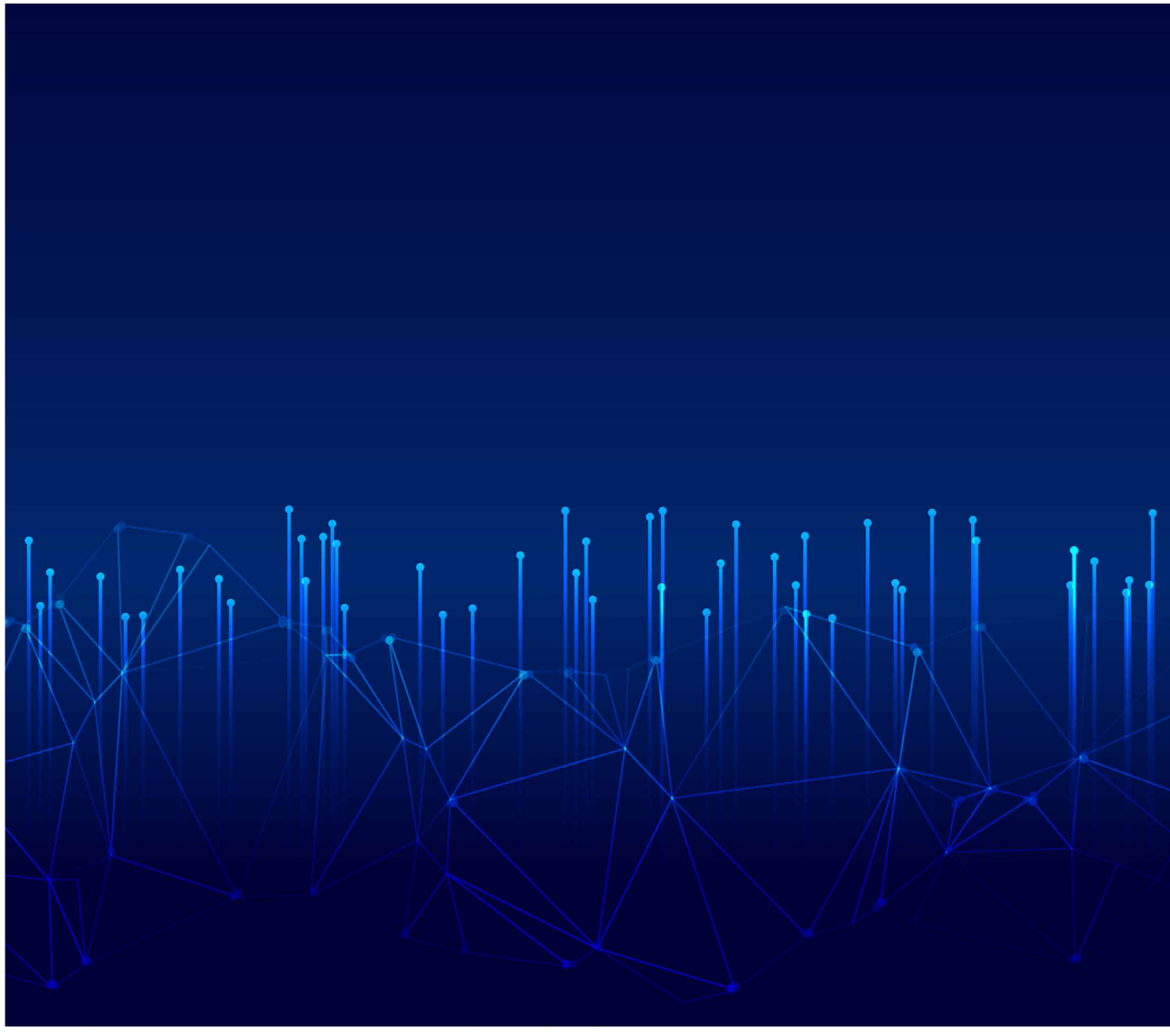
3. Victims access to an effective remedy.

   Lastly, victims of business-related human rights abuses, as individual rights holders, must have access to effective remediation mechanisms. This includes state and privately administered grievance processes, all of which should embody a common set of minimal standards to be considered legitimate.

Though the UNGPs constitute "soft law" and are not legally binding, they have nonetheless become authoritative standards for corporate responsibility to respect human rights, and have already been adopted into various binding legal and policy frameworks in national jurisdictions. They continue to guide further work in the area of business and human rights, and are becoming increasingly accepted standards even in jurisdictions where they do not currently constitute "hard law." The UNGPs speak to the responsibilities of all private corporations, including today's technology companies, whether they be start-ups or multinational corporations. In many ways the UNGPs are ideally suited for technology corporations, since they often wield immense political and financial power and are sometimes able to defy jurisdictional control while also exerting significant influence on society and policy makers. Some of these corporations are even performing core governance functions that previously might have been handled exclusively by sovereign States, such as providing public services, facilitating the adjudication of disputes, and even holding human rights violators to account for their misdeeds in "courts of public opinion" (as exemplified by the #MeToo or the #BlackLivesMatter movements).

Following its adoption of the UNGPs, the Human Rights Council replaced the Special Rapporteurship with a more robust and multidisciplinary Working Group on Business and Human Rights, comprised of five members. Together, these experts remain responsible for the promotion of the UNGPs and to make recommendations for their further implementation. The Working Group has also examined the impact of technological developments on the realisation of the UNGPs, discussing, for example, the human rights challenges posed by novel and disruptive technologies such as AI and blockchain technology, while also pointing out their promise in realising some of the goals of the UNGPs—for example, by enabling the more efficient tracking and assessment of complex supply chains,[44] or in helping to reduce barriers for vulnerable social groups such as women and minorities[45] to enter into the labour force.

Building upon the UNGPs, several human rights mechanisms have examined the role of business in the context of specific rights. The Committee on Economic, Social and Cultural Rights, for example, issued General Comment No. 24 in 2017[46] wherein it noted the key role of businesses—including tech companies—in the realisation of economic, social and cultural rights such as the rights to health,[47] housing,[48] food,[49] water,[50] social security,[51] and right to work and just and favourable conditions of work,[52] amongst others. The ICESCR has also noted the challenges of holding businesses accountable for human rights violations when they operate extraterritorially, and in the context of NETs has specifically observed that many inequalities are strongly linked to the capacity of businesses to access, store and exploit massive amounts of data.[53] The Committee on the Rights of the Child issued General Comment No. 16 in 2013 on the impact of businesses on the rights of children,[54] noting the growing impact of the business sector on child rights owing to globalisation, privatisation of State functions, and technological advancement. The Committee on the Rights of the Child also highlighted the role of technology companies with regard to online crimes against children, online sexual abuse and exploitation, and exposure to harmful content, emphasising the need for cooperation between States and the ICT industry and also the need for those corporations to conduct child rights impact assessments and due diligence.[55] The Committee on the Rights of the Child subsequently focused specifically on the rights of children in the digital environment in its 2021 General Comment No. 25.[56]



OTHER DEVELOPMENTS ON NEW AND EMERGING TECHNOLOGIES

In parallel to the work going on under the auspices of the Human Rights Council, the UN Secretary General has also been actively promoting efforts to address the impacts of NETs. In 2018, the UNSG released his Strategy on New Technologies, an internal, overarching guide for the UN system to define how it will use new technologies to accelerate its efforts in the achievement of its mandate. This strategy draws on the 2030 Agenda (the Sustainable Development Goals) that advances five principles: the protection and promotion of global values; the fostering of inclusion and transparency; the ideal of working together in partnership with other stakeholders; building on existing capabilities; and adopting a learning mindset. In the same year, the UNSG also established the High-Level Panel on Digital Cooperation to strengthen international and multi-stakeholder digital cooperation and provide recommendations for the international community to optimise the benefits of digital technologies while mitigating risks. In 2019 the Panel published its report titled "The Age of Digital Interdependence", which included a series of recommendations on digital cooperation, including the building of an inclusive digital economy and society; the development of human and institutional capacities; the protection of human rights and human agencies; the promotion of digital trust, security and stability; and efforts to foster global digital cooperation. On the basis of this report, the UNSG in 2020 launched "A Call to Action for Human Rights" and a "Roadmap for Digital Cooperation", setting the agenda to reflect upon the actual and potential implications of digital technologies on human rights and recognizing them as important instrumentalities of a fair, safe, and dignified future for humanity and the eventual achievement of Agenda 2030. This was also followed by the establishment of the Office of the Envoy of the Secretary-General on Technology. Meanwhile, efforts to negotiate a Global Digital Compact to ensure an open, free and secure digital future for all remain ongoing.

These initiatives by the UNSG are complemented by parallel efforts undertaken by the Office of the High Commissioner on Human Rights (OHCHR) on digital technologies and human rights. OHCHR's "B-Tech Project" seeks to provide an authoritative roadmap for applying the UNGPs to the development and use of digital technologies. It promotes an inclusive and participatory consultation and research process involving key stakeholders in order to better understand the cross-cutting impacts of NETs on the enjoyment of human rights, and a search for practical solutions that build on existing initiatives, good practice and expertise. Its work comprises practical guidelines and public policy recommendations for the realisation of a human rights-based approach to the development, application and governance of digital technologies.

The Human Rights Council, in its 2021 Resolution 47/23, requested the OHCHR to prepare a report on the practical application of the UNGPs to tech companies. The OHCHR published its report in 2022, wherein it noted that despite a wealth of initiatives and efforts within the international human rights system to deal with the duality of human rights implications of new and emerging digital technologies, existing regulatory frameworks remain fragmented and unclear. The OHCHR's conclusions echoed those reached by the HRC's Advisory Committee, arguing that the UNGPs provide the most compelling starting point for tech companies and States to mitigate risks associated with digital technologies while also fostering innovation and creating a fair, level playing field for all. The OHCHR issued a series of detailed recommendations for applying the UNGPs to the activities of tech companies.

Finally, in recent years the UN system itself has embraced digital technologies as part of its own operational strategy. Recognizing its function as a global platform for engagement on issues related to NETs, the UN is modernising its own approach to technology. Its various organs and specialised agencies are increasingly utilising digital technologies and innovations to improve their operations. The UNSG, for example, has established an innovation lab to promote technological innovation, share best practices, and promote innovative solutions to accelerate implementation of the SDGs. It has also led to the establishment of the Global Pulse Platform to leverage AI and big data in efforts to promote peace and development.

This review of existing efforts at the UN to develop standards pertaining to human rights and NETs, barely scratches the surface of work that defines this field. It does not cover, for example, the voluminous work taking place at national policy-making levels, in regional and other international organisations, within the corporate sector, under the auspices of multi-stakeholder industry associations, in civil society, and in academic circles. A full discussion of those efforts goes beyond the scope of this paper.

Certainly this paper, and its proposed HRBA@Tech Model, is neither the first such proposal, nor will it likely be the last. We identified more than 200 existing proposals for standards on how to manage the human rights impacts of technology. The authors of this paper seek merely to bring together as many strands of thought on this issue as possible. We propose a common way forward, built on a recognition of the fundamental duality of technology and oriented towards the development of a concrete, solution-driven model that can be embraced by human rights actors and technologists alike as they jointly work to 'nudge' technologies in the direction of human rights."

CHAPTER 2
THE HUMAN RIGHTS AND NEW AND EMERGING TECHNOLOGIES PARADOX

Chapter Summary:

This Chapter focuses on the paradox of new technologies, namely that the same technologies can often have both positive and negative impacts on human rights. NETs can enhance our collective enjoyment of human rights (e.g., access to information, the right to quality health care and education, or efforts to assist persons living with disability to participate equally in civic life); improve public health and welfare; improve inclusive education and youth welfare activities; promote efforts to monitoring human rights situations (e.g., by facilitating secure communication among human rights activists, remote sensing, satellite imagery, data forensics, protecting human rights defenders, etc.). At the same time, NETs can also cause potential and actual human rights harms (e.g., by facilitating discrimination based on race, gender, or other protected characteristics, by enabling discriminatory surveillance, through biased algorithms, by spreading hate speech and by allowing online sexual harassment and other crimes to proliferate in difficult-to-regulate forums, etc.). These two elements–the positive and the negative; the human rights promoting as well as the human rights threatening elements of NETs–would be addressed together in order to move away from a polarising dichotomy in which this issue is often framed, and to move instead towards a more nuanced, holistic and comprehensive approach to the issue. The Chapter highlights a diverse set of four NETs and considers the particular implications of these technologies for the enjoyment of human rights. It briefly addresses some of the past attempts to address these technologies from a human rights perspective, with a view to setting the stage for the presentation of the HRBA@Tech model in subsequent Chapters.

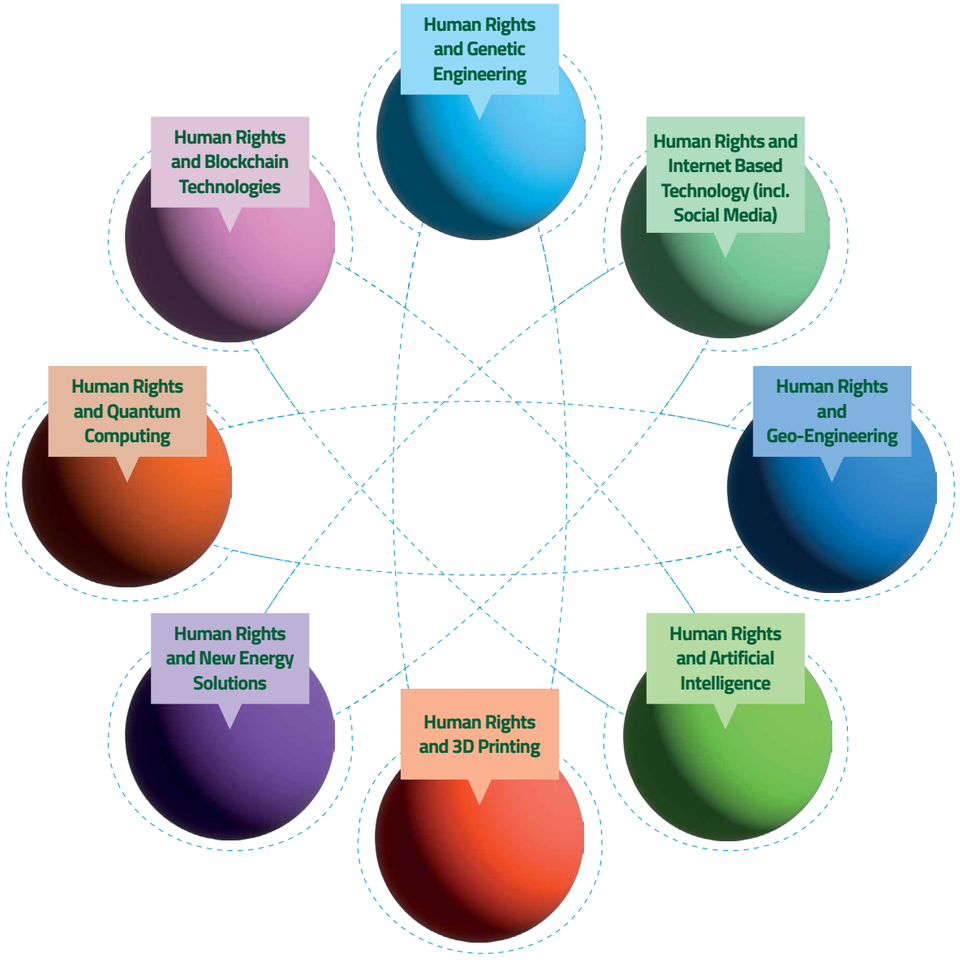
The analysis in Chapter 1 revealed two insights. First, it has shown that the paradox of NETs is no novel discovery. The duality of NETs has likely been with us since the origins of technological innovation itself. Thus, our challenge is to find a middle path between those two extremes. The second insight is that while what is considered a "new and emerging" technology may change from one day to another, and yet the paradox remains a constant.

To illustrate this, we initially selected eight NETs – or at least technologies that were described as "new or emerging" in 2022 – as the fuel that would drive the elaboration of the HRBA@Tech model (described in Chapter 3). We were keenly aware that each NET would likely pose new and unique particularities, and hoped that this strategy might help us reality-test our emerging ideas about what a universal HRBA@Tech model would look like not just in light of one particular technology, but in light of all of them in a general and overarching way.

	New & Emerging Technology	Brief Description
1	**Human Rights & Genetic Engineering**	Genetic engineering is a method of artificially changing the human genome by means of a new technology that allows scientists to adapt, replicate, change, or block certain parts of the human DNA genome. This technology promises to allow scientists to edit human genomes, potentially curing previously incurable diseases. The technology also opens the possibility, however, for scientists to make changes to the human genome that can be passed from one generation to the next (infinitely) thus potentially indefinitely altering the human genome. It also opens up at least the theoretical possibility of scientists creating "designer babies" with certain non-medically necessitated alterations (e.g., certain hair or eye-colour, gender, or other physical characteristics that might be considered "desirable" by the parents but that might also perpetuate harmful social stereotypes).
2	**Human Rights & Internet-Based Technology including Social Media**	The internet and social media are not new technologies, and yet they continue to be active spaces for innovation. This technology has connected billions of people on single platforms, opening up hitherto unimaginable opportunities for communication and the exchange of ideas. This same technology has also opened the door for predatory behaviour to flourish, for example criminal efforts to harass, exploit, or humiliate individuals via online channels. New developments in this field are exploring a so-called "Metaverse" in which technologists hope we will spend even more of our time immersed in virtual realities, both professionally as well as socially.
3	**Human Rights & Geo-Engineering**	Geo-engineering is a controversial technology, often criticised by environmentalists as well as technologists as untested, unethical, and as a diversion from more pressing discussions on tackling the climate crisis. However, with increasing and accumulating evidence that global efforts to 'mitigate' and/or 'adapt' to climate change will likely not succeed in keeping global temperatures within the target of 1.5°C of pre-industrial averages, scientists are again exploring whether it might be possible to "engineer" the climate back within safe limits, either by removing carbon dioxide from the atmosphere or by deflecting sunlight away from the earth's surface. This technology is unproven, but to prove it one risks causing irreversible harms that cannot – by definition – be contained in a laboratory. The impacts of these harms also risk being unevenly distributed globally, raising concerns that single countries might initiate such a scheme without regard for the harms it might be causing in other communities.
4	**Human Rights & Artificial Intelligence**	Artificial Intelligence has already revolutionised how we work with data and make decisions. From health care to national security, artificial intelligence is increasingly changing how we perceive, reason and engage with our world. A new generation of machine learning is making these decisions autonomously, often without meaningful human control or oversight. AI is an enabling technology – speeding up and rendering infinitely more powerful various decision making processes. The technology promises to revolutionise virtually any process-those designed to maximise profit but also those designed to promote human rights. The flipside is also true, however, in that AI can also undermine human rights, including exacerbating discrimination, threatening privacy and stifling free speech amongst others. Far from extreme scenarios of killer robots and machines that can "feel" human emotions, the much more present-day threat of AI is its ability to subtly replicate social biases and 'sterilise' them under the guise of quantified objectivity.
5	**Human Rights & 3D Printing**	3D printing is rapidly evolving to allow regular individuals to print three-dimensional objects at home, using printing instructions that can be freely downloaded online. Simple 3D printers allow users to print using one material, but more sophisticated printers can conceivably print in a variety of materials, including even human tissues. This technology can enable tinkerers in literally any corner of the world to create dynamic physical objects, and can potentially be used one day to "print" replacement organs for human patients. At the same time, the technology risks undermining intellectual property regimes, and could even threaten sanctions regimes – a tool often used by the human rights community to encourage human rights compliance. Moreover, 3D printing risks rendering irrelevant entire sectors of craftspersons, small manufacturing operations, and cottage industries.
6	**Human Rights & New Energy Solutions**	In light of the world's global climate crisis massive efforts are being exerted to develop clean technologies, such as electric vehicles, new batteries, solar and wind power generating devices, etc. The benefits of such technologies are obvious, also from a human rights perspective (right to a clean environment, right to health, etc.). At the same time, many of these technologies are sparking new iterations of "gold rushes" to secure valuable and rare natural resources that are essential for this clean energy transition. While these technologies may be "new", the human rights issues associated with the extractive industries and supply chains required to bring these new technologies to market are very "old," and many of the same well-known challenges apply.

7	**Human Rights & Quantum Computing**	Quantum computing promises to be the next big leap in computing power, unleashing a torrent of new computing capacity. Any nation or organisation that manages to unlock the potential of quantum computing would command a tremendous advantage over existing computing technology. It could of course use this computing power to promote human rights, but it might also use it to prevent other competitors from developing the same technology, decrypting previously un-encryptable communications, and undermining the national security (or trade secrets) of nations. Such scenarios pose a direct threat to global peace and human security.
8	**Human Rights & Blockchain Technologies**	Blockchain technologies are an emerging field, allowing a secure and distributed record-keeping that cannot be easily deleted or altered by one party. It holds great promise for secure transactions, possibly putting some financial or contractual transactions beyond the reach of national regulatory authorities. The technology also holds tremendous promise for human rights, activists conducting fact-finding and other documentation operations.

THE PARADOX OF NEW AND EMERGING TECHNOLOGIES



For each such technology we first conducted a rudimentary analysis of that technology's "promise" from the perspective of protecting and promoting human rights. Second, we conducted a similar analysis of the potential harms or "risks" that might flow from that technology, again from the human rights perspective. Finally, we discussed efforts underway to 'nudge' each of those technologies into the direction of human rights. We chose four of the above-mentioned technologies to highlight in this chapter, based on their diversity and also the degree to which they are currently considered "hot topics" at the intersection of human rights and technology.

Each of those sub-Chapters illustrates the paradox of technology, and highlights the kaleidoscope of different stakeholders coalescing at different points of a technology's life cycle, in common pursuit of different principles.

EXAMPLE 1: HUMAN RIGHTS AND GENETIC ENGINEERING

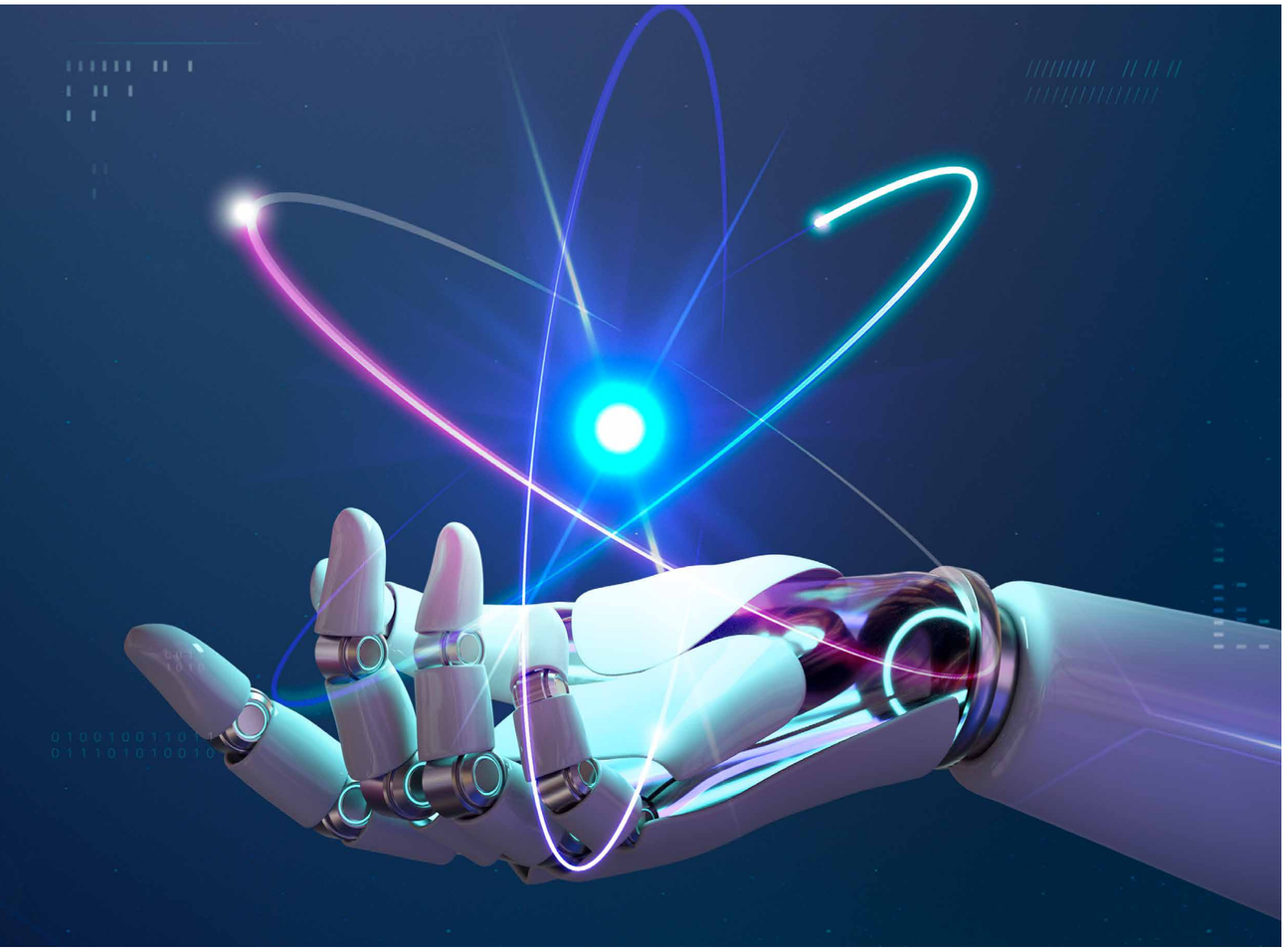
Genetic engineering, in some form, has always been a part of human history. Native Americans living in present-day Mexico, between 8000 and 4000 BCE used selective breeding methods to cultivate modern-day corn (maize) from teosinte, a type of wild grass native to the area.[57] Similarly, horse breeders in the latter half of the 18th century aggressively bred horses for agility and power, thus dramatically reducing the genetic diversity that had existed prior to that point among the worldwide horse population.[58] With the discovery of the 3-dimensional structure of deoxyribonucleic acid (DNA) and the realisation that embedded within these DNA molecules were the "blueprints" for biological life, however, the field of genetics transformed from a theory about selective breeding into the study of a concrete DNA molecule. By 2003 the human genome had been mapped in its entirety[59] and by 2014, scientists at the Massachusetts Institute of Technology had developed a "genome editing" technology known as CRISPR (named after the "Clustered Regularly Interspaced Short Palindromic "Repeats" that form part of the body's natural defences against bacteria), that could be used to correct, deactivate, or replace targeted parts of the DNA molecule with alternative sequences.

Promises

CRISPR technology has made it relatively easy for scientists to experiment with genetic engineering. Proponents of this kind of research anticipate finding new treatments for a number of diseases such as cancer, various types of ocular, haematological, immunological, cardiovascular, and neurodegenerative diseases, among others.[60] Some diseases, for example Cystic fibrosis, Huntington's chorea, Duchenne muscular dystrophy, and sickle cell anaemia result from mutations in only one gene in the human genome.[61] Patients suffering from such diseases might be cured of their diseases by means of a CRISPR-based cure, thus restoring their regular biological functions. Such treatments are referred to as "somatic cell modification" therapies "reflecting the traditional approach to disease mitigation" since the impact of the intervention is limited to the patient being treated only.[62] Genetic engineering can also alter the cells used to reproduce, however, in which case the altered genetic code would be passed from one generation to the next, in perpetuity. This type of genetic engineering, which is already common in agriculture and animal experiments, is called "germline genome editing." It holds the radical promise of eliminating certain diseases permanently from the human population.

Risks

In 2018, a Chinese scientist announced that he had used germline genomic engineering to produce two viable human embryos (twins): girls named Lulu and Nana. This caused an immediate condemnation of the scientist's actions from around the world, including strong legal and regulatory disciplinary action in China itself. Arguments against germline genomic engineering are many, and have mostly to do with still unanswered questions about the relationship between the human genome and the physical traits that manifest based on that DNA. As a result, scientists can often only guess at whether a particular change in the human genome will have the desired therapeutic effect. Moreover, scientists may also not be able to predict unintended side-effects that might result from a particular genetic alteration. If such an unintended negative side-effect happens because of somatic cell modification therapy, the impacts will be limited to that one (presumably consenting) adult patient. If the unintended negative impacts happened in cells used for reproduction, on the other hand (germline genetic editing) the impacts could be profound, altering humanity in perpetuity, and obviously without the consent of those future generations who would be accordingly altered.



Risks of unintended consequences aside, some have also argued that genetic engineering risks permanently altering what it means to be human itself, and thus constitutes a violation of basic human dignity, especially for future generations who will have been robbed of what today we might describe as our full human experience.[63] Still others worry that by offering the possibility of "correcting" for traits that today may be associated with common disabilities, genetic engineering risks re-stigmatizing persons who already live with such disabilities, undoing years of hard-fought progress in combatting stigma. Analysts have also warned about the potential for "designer babies" to create a new class inequality, reinforced not just socio-economically but now also biologically. These critiques, while powerful, are not universally shared, and many scientists feel that the risks of genetic engineering are more than outweighed by their potential therapeutic value, and moreover that they can be effectively managed.

Proposed Solutions

Numerous attempts have been made to regulate genetic engineering. Initially, many of those efforts have proposed blanket bans on genetic engineering, especially those interventions focused on germline editing. With time, however, such stances have softened, driven (perhaps) by a re-examination of the comparative risks and benefits associated with this technology, and no-doubt informed by greater scientific familiarity with the underlying risks involved.

In addition, industry-efforts are also underway to limit the degree to which genetic engineering will be prone to exploitation by "rogue scientists."[64]

At the international level, discussion began to focus on genetic engineering around the turn of the millennium. In 1997, the Council of Europe issued the Convention for the Protection of Human Rights and Dignity of the Human Being with Regard to the Application of Biology and Medicine (commonly known as the Oviedo Convention).[65] This convention stated that the "interests and welfare of the human being shall prevail over the sole interest of society or science," and explicitly distinguished three types of genetic engineering:

1. predictive genetic tests, which are permissible as long as they are motivated by "health purposes," (Article 12);
2. genetic engineering, which is permissible for "preventive, diagnostic or therapeutic purposes only" and only for somatic-cell modifications, not germline interventions (Article 13); and
3. a complete prohibition on sex-selective genetic interventions, except when motivated by a desire to avoid a serious inheritable disease (Article 14).

This early convention language, which was drafted almost two decades prior to the invention of CRISPR technology, established a strong normative predisposition against germline genetic engineering in all cases, regardless of its potential therapeutic value. The convention grounded this blanket prohibition in this understanding of the human genome as a constituent part of human dignity and human identity (Article 1).

Later that same year, UNESCO hosted a process culminating in the Universal Declaration on the Human Genome and Human Rights.[66] This declaration again highlighted the human genome as the "heritage of humanity." It highlighted fundamental issues related to the dangers of unethical scientific and technological research in the fields of biology and genetics, and proposed a three-pronged approach to protect against those dangers:

1. "States and competent international organisations [should] identify [] such practices and [] tak[e], at [the] national or international level, the measures necessary to ensure that the [practices which are contrary to human dignity, such as reproductive cloning of human beings, shall not be permitted]" (Article 11);
2. The benefits of scientific research should "be made available to all" (Article 12.a); and
3. A reaffirmation that freedom of research derives from the fundamental human right to freedom of thought, but also that "[t]he applications of research, including applications in biology, genetics and medicine, concerning the human genome, shall seek to offer relief from suffering and improve the health of individuals and humankind as a whole." (Article 12.b)

As is true also in the HRBA@Tech model (described in Chapter 3 below) in this paper, the declaration goes beyond a "do-no-harm" approach to human rights in that it places a proactive normative obligation on scientists to advance human well-being by means of their research.

Eight years later, in 2005, UNESCO oversaw the drafting of the Universal Declaration on Bioethics and Human Rights,[67] which set forth universally recognized principles in the field of bioethics, anchored in human rights and the need to safeguard human dignity, respect for privacy, autonomy, confidentiality, non-discrimination, informed consent, the need to maximize the benefits while also minimizing the harm of advancements in scientific knowledge, respect for human vulnerability and personal integrity, the desire to share the benefits from scientific research and its applications, and the protection of future generations – all issues that remain central to the debate on human rights and technology more broadly even today.

In parallel to these efforts at the international level, many countries also implemented national legislation to regulate genetic engineering. A discussion of those various legislations goes beyond the scope of this paper.

Other stakeholders have also been busy supplementing these regulatory and legislative efforts. This so-called "'ecosystem approach' will arguably do more to control and guide [] technology than a moratorium or formal ban."[68] This ecosystem of actors includes institutions at the international level (for example the World Health Organization, which can create specialised committees to promulgate advice and guidance), the national level (for example national licensing authorities responsible for approving new therapeutic treatments) as well as at various private and academic institutions (for example insurance providers, research oversight boards, funders, publishers of respected academic journals, and even professional medical licensing bodies).[69]Each of these stakeholders has an important role to play. Only when actors at all these levels are appropriately sensitised about the need to protect human rights (and the modalities of doing so) can this ecosystem function effectively.

EXAMPLE 2:
HUMAN RIGHTS AND INTERNET BASED TECHNOLOGY (INCL. SOCIAL MEDIA)

The internet first emerged in the 1960s as a physical connection between the computers of various research institutions in the United States. In 1983, a new and standardised communications protocol was unveiled that allowed computers to "speak" with one another. This is considered to be the birth of the modern internet as we know it today, where any computer can communicate with any other computer as long as they are both connected to the same communication network. The internet allows for the sharing of files, exchange of emails and electronic bulletin boards (blogs, distribution listservs, etc.), and also the creation of the countless websites on which individuals or corporations can post information for the rest of the world to access.

The way in which information is displayed, shared and communicated on the web is also evolving, largely enabled by changes in technology, communication trends, and hardware capabilities. In what has been called Web 1.0, websites were largely static information "broadcasting" tools. The owners of those websites would assemble the contents, whereupon users (usually using desktop or laptop computers) could consult that information. This earliest version of the internet fuelled a hitherto non-existent ecosystem of corporations that have since become household names (not to mention multibillion-dollar enterprises), including companies that manufacture the hardware devices consumers use to access the internet (e.g., Samsung, Apple, Lenovo, Fujitsu), companies that specialise in selling products to customers online (e.g., Amazon, Coupang, Alibaba), and companies that help users orient themselves within the internet using simple and intuitive interfaces (e.g., Google, Naver, Baidu).

Beginning in the mid-2000s, a new generation of technology firms began to offer more interactive services over the internet, commonly known today as "social media" offerings. These more interactive web applications are commonly referred to as "Web 2.0" websites (including YouTube, Facebook, Instagram, Naver, and countless others). Web 2.0 sites emphasise interactivity between the user and the owner of the website, or typically amongst the users themselves. Such engagement-oriented websites (often described collectively as "social media") have led to an explosion of various consumer and entertainment products and allowed the owners of these sites to gather increasing amounts of data about their users, and eventually market that data as a lucrative "product" to sell to those seeking more targeted advertising opportunities.

The growth of Web 2.0 applications, and especially their integration into the daily routines of so many individuals—increasingly not just in the Global North but also in the Global South—is the result of a symbiotic relationship between those web-based products and services and the explosion of the market for handheld computing devices (mobile phones) coupled with major technological advances in wireless telecommunications technology. The process of interacting with the web, which in the 2000s would have required sitting down at a desktop computer to use a web-browser via a typically halting internet connection has now shrunk to a matter of seconds, using the mobile phones that many of us carry with us constantly, and the volume of data we can process using those technologies has grown from kilobytes to megabytes. The ubiquity of these devices, coupled with the interactive nature of Web 2.0 applications, has also given rise to a host of web-facilitated services that play out in the offline world, for example delivery services, ride-sharing applications, and e-government services. This is the web that – by and large – has become a familiar feature of modern life at the time this report went to press in late 2022.

Technologists are currently speculating about a third generation of web applications, dubbed as Web 3.0 applications. What precisely distinguishes these applications from their 2.0 predecessors is still somewhat loosely defined. Some have mentioned that Web 3.0 applications will be decentralised, relying not on centralised servers storing mass volumes of data but rather decentralised blockchains storing data that can be accessed from anywhere. Others have commented on the increasing prevalence of AI enabled functions within Web 3.0 applications. AI-enabled online applications and services allow users to interact with websites using natural (human) language as inputs, and also allow for the automated screening and analysis of large volumes of data in ways that are increasingly indistinguishable from how a human might manage the same process (except for its vastly improved speed). Other technologists are predicting that Web 3.0 applications will transform Web 2.0 social media experiences into truly immersive social spaces, often dubbed the "Metaverse", where – for example – colleagues from around the world can collaborate in virtual office spaces despite being physically located on different parts of the planet, perhaps even communicating across language barriers using AI-enabled translation apps, and collaborating in virtual spaces that appear as though they were the real thing by means of sensory-enhancing virtual reality technologies.

Finally, a new generation of interconnected machines promise to extend the internet beyond our web browsers, and beyond even our mobile phones, into various connected devices in our homes, workplaces, and lived environment. This so-called Internet of Things (IoT) might, for example, allow our refrigerators to "know" when we are running low on eggs, automatically add an item to a shopping list that will be curated and delivered by a delivery service to our doorstep the following morning. Each step in this scenario could conceivably unfold without the homeowner even being consulted once to approve the various transactions required to make this ecosystem work. It might also allow our children's dolls to "talk" to our children using child-friendly language, enabled by AI language recognition programmes. Similarly, our internet-connected watches might sense irregularities in our heartbeats and automatically call an ambulance, just as our internet enabled "smart speakers" may pick up auditory signs of domestic violence in a household and call the police to investigate.

Promises

From a human rights perspective, the internet has enabled an entire industry of "liberation technologies" built on expanding the fundamental right of free speech and expression. Human rights activists have used the internet to effectively spread information about rights abuse in ways that would have been difficult if not impossible in a pre-internet era. This has changed the way traditional human rights organisations do their work.[70] This potential has given birth to a new generation of human rights organisations dedicated to the use of technology as a tool to advance human rights.[71] Human rights activists have coordinated across borders and worked to effectively raise awareness about pressing human rights challenges. This has transformed community activism, human rights fact-finding, and strategies for human rights awareness-raising. It has enabled, for example, labourers and communities located along the upper reaches of a supply chain to engage directly with consumers of the products that rely on those raw inputs, transforming the potential for fundraising, community empowerment, and agency, and eliminating or lessening some of the distortions that plagued traditional advocacy efforts.

The internet has also dramatically expanded our collective access to information. Individuals at one moment can post information to the internet for the entire world to see, and a moment later they can access the thoughts, ideas, and reactions of virtually anyone else in the world. This has allowed interest-communities to emerge that might previously never have had the occasion or resources to interact with one another. This has been particularly important for marginalised, persecuted and vulnerable communities. Movements such as #MeToo, Black Lives Matter, #StopAsianHate, and various LGBTQI+ movements did not suddenly "discover" new human rights problems in societies, but they did successfully mobilise diverse coalitions of individuals with similar experiences and similar convictions in ways that would have been unimaginable without Web 2.0 platforms to facilitate such efforts.

The internet has also proven to be a tremendous enabler of social and economic rights, in ways too numerous to recount here. Rural communities in the Global North and the Global South have been able to dramatically improve the quality of their schools through the use of digital technology. During the COVID-19 Pandemic many of these technologies went through an accelerated and forced adoption process, allowing children around the world to continue receiving an education, even despite mandatory school closures. While post-pandemic research has shown that online technologies still fall short of their offline alternatives in terms of effectiveness,[72] they undoubtedly still represent a vast improvement over no education at all.

Digital technologies also promise to revolutionise medical care. Internet-based technologies are enabling medical professionals to extend their reach far beyond their offices and even across national borders.[73] Such 'telemedicine' promises to extend high quality specialist healthcare deep into previously underserved regions, often also at significantly lower costs. Furthermore, a slew of wearable medical devices and AI-driven services promise to revolutionise early detection of potentially curable or preventable diseases.

Risks

Despite the technology sector's best efforts to reinforce the security of these various internet-based technologies, it is also well known that all systems remain prone to hacking. This poses profound national security threats, which go beyond the scope of this paper. It also raises numerous human rights issues. State and non-state actors, for example, can exploit technical or human weaknesses to compromise the data of individuals or organisations whom they consider to be adversaries. This information can be used to directly harm those adversaries, subvert their activities, or extort them to cease their activities. Numerous prominent human rights activists have found themselves on the receiving end of such attacks.

Moreover, state and private actors have also used internet-based technologies to effectively subvert regular democratic processes. The internet, and especially Web 2.0 type platforms, have proven to be fruitful playgrounds for small groups of activists to spread certain messages, perhaps with the intention of influencing public opinion in a certain way. Using the facilitated flow of communication that these platforms enable, state propagandists have found a low-cost, high-impact means to spread their messages, often in ways so subtle they can no longer be traced to their original authors.

In some ways, online spaces are merely continua of offline realities.[74] In this sense, the internet can be said in some instances to merely reflect and perhaps amplify existing social, economic, or political inequalities and discrimination. This is especially with regard to vulnerable groups such as racial, ethnic and linguistic minorities, women, children, older persons and persons living with disability, among others. In other instances, the "digital divide" (unequal access to the internet or digital illiteracy) creates a new vector for old inequalities and discriminatory social structures to manifest again in the form of unequally distributed resources and access. In yet other situations, hate speech and harassment, which obviously predated the advent of the internet, nonetheless proliferate and flourish in volumes and scale that would have been unimaginable prior to the digital era.

In addition, the architecture and logic of social media sites often does more than merely allow existing social biases to continue to proliferate. Social media has frequently been blamed for actively facilitating the degree to which societies around the world are becoming increasingly socially and political polarized.[75] Algorithms designed to keep users engaged (and thus maximize advertising revenue for the technology platform) have been found to promote ever more salacious content, gradually pushing individuals into more and more self-reinforcing extremist political communities, rather than exposing them to a diversity of opinions and topics.[76] Moreover, the ability to post information to a diverse group of readers without having to internalize the sometimes significant impacts of those postings on the readership has emboldened many users of Web 2.0 technologies to post increasingly incendiary, racist and intentionally offensive messages. Social media "trolls" sometimes even make a sport of causing offense, seeking the thrill of causing social turbulence as a reward in and of itself, often with no conceivable social repercussions for doing so (if not all) social media platforms, have evolved their approach to such threats: moving from an initially all permissive stance to one much more focused on purging their sites of terrorist or state-sponsored propaganda, hate speech, or obvious disinformation and misinformation attempts.

Another problem, from a human rights perspective, is that the business models of many Web 2.0 platforms are specifically built on efforts to gather as much personal data about its users as possible. This data enables a host of ever-more-narrowly tailored advertising campaigns, which can be monetized by the technology platforms to generate vast profits. But these caches of data, held by private corporations, also represent a massive potential erosion of personal privacy, especially if those data start being used to discriminate against certain groups of individuals as a result of the datafication cycle (when accumulated datasets get used to inform decisions with real-world impacts)

The new Web 3.0 type IoT ecosystems, which often make direct use of such datasets, pose a whole new set of potential privacy issues. It is not hard to imagine how a malignant actor with sufficient technological hacking expertise could seek to gather information directly from the listening devices which – thanks to IoT technology – will be present in millions of households, phones, and wearable devices around the world—all conveniently connected directly to the web. Such privacy violations have already been documented, for example hackers' successful efforts to hack baby monitors, alter the functionality of cardiac devices, log into the video feeds of security cameras, and even take control of moving automobiles.[77] Such hacks promise to become ever-more prominent as the ecosystem of different IoT devices begin to proliferate.

Proposed Solutions

The international community for almost a half century has been grappling with the human rights implications of what we today have come to describe as ICT and digital technology.

As early as 1977, the Commission on Human Rights tasked a newly-created Special Rapporteur to study the human rights implications of computerised personal files.[78] The Rapporteurship led the UNGA, 13 years later, to adopt the UN Guidelines for the Regulation of Computerised Personal Data Files.[79] This document set forth ten succinctly-stated principles ("orientations") that national authorities should use to guide their efforts to regulate the collection and retention of personal data files. In 1988, the Human Rights Committee issued a General Comment on the Right to Respect of Privacy, Family, Home and Correspondence that clarified key terms and specified the States' responsibility to ensure that such privacy rights are respected.[80]

As described above, since that time, ICT developments have transformed the ways in which humans communicate. This transformation has led to renewed efforts to bring ICT technologies in line with human rights priorities and principles.[81] Various international human rights bodies, including many Treaty Bodies and Special Procedures, have addressed both the positive as well as the negative role of the internet and ICT technologies in the realization of all human rights. Examples include the Committee on Economic, Social and Cultural Rights General Comment No. 21 on the right to take part

in culture through the internet,[82] the Committee on the Elimination of Racial Discrimination General Comment No. 29 regarding online hate speech,[83] and various efforts to promote the rights of children online.[84]

A series of massive protests and uprisings across the Middle East and North Africa region, often known as the "Arab Spring," famously highlighted the tremendous potential for the internet and social media to play a role in the promotion of international human rights as a tool of mobilisation and awareness raising, but also – in a subsequent wave of repression and reaction by many regimes in the region, as a tool of suppression, infiltration,[85] and a means to suppress independent speech and thought.

Partially in response, many international bodies emphasised the paradox of technology described above. Many noted, for example, how the internet and internet-based technology facilitates freedom of speech and expression[86] and freedom of assembly[87] The Committee on Economic, Social and Cultural Rights, for example, which is mandated to protect the right to enjoy the benefits of scientific progress and its applications,[88] has highlighted the role that technology, including ICT, plays in advancing the right to education[89] and health[90] among other economic and social rights.[91]

The Human Rights Council in the early 2010's embraced a theme of "Promotion, Protection and Enjoyment of human rights on the internet," which led to a number of corresponding resolutions. In 2012,[92] the HRC issued a resolution under that heading, which acknowledged that the rapid pace of technological development had enabled individuals all over the world to use ICT and recognized the internet as an enabler of human rights. The resolution emphasised the global and open nature of the internet as a driving force accelerating progress worldwide, and emphasised that people should enjoy the same human rights online that they do also offline.

A number of other resolutions focused also on the ways in which our increasing reliance on ICT-enabled communication made us more vulnerable to human rights abuse. In light of striking revelations about the extent of global mass surveillance in the United States and elsewhere, a number of UN resolutions were drafted to protect the right to privacy in the digital space. The UNGA, for example, issued five separate resolutions on the Right to Privacy in the Digital Age,[93] supplemented by four more issued by the Human Rights Council (HRC).[94] The United Nations Office of the High Commissioner of Human Rights (OHCHR) drafted three separate reports on the right to privacy in the digital age,[95] and in 2015 mandated the creation of a new Special Procedure on the right to privacy.[96]

Various human rights mechanisms and advocacy organisations have pointed out how ICT technologies can be used to facilitate online content censorship (or moderation),[97] intentional disinformation campaigns,[98] restrictions on freedom of speech and expression, and online surveillance that directly interferes with the right to privacy.[99] Other mechanisms have addressed the ways in which the internet and internet-based technologies can amplify gender-based violence,[100] or the tendency for online hate speech to disproportionately impact women, LGBTQI+ communities, and racial, ethnic, linguistic or religious minorities.[101] As technologies mature, some of these pronouncements require periodic updating, giving the impression that efforts to craft meaningful human rights norms at the international level often lag years or decades behind the development of the technologies themselves. The Human Rights Committee's General Comment No. 34, 2011 in fact replaced its earlier General Comment No. 10 on the freedoms of opinion and expression and urged state parties to take into account the extent to which developments in information and communication technologies, such as internet and mobile based electronic information dissemination systems have substantially changed communication practices.[102] Similarly, the HRC, in its General Comment No. 37 (2002), also discussed how the implications of the right to peaceful assembly have changed over time in light of evolving ICT capabilities.[103]

EXAMPLE 3: HUMAN RIGHTS AND GEOENGINEERING

Geoengineering is the "deliberate large-scale intervention in the Earth's natural systems to counteract climate change."[104] There are generally two categories of geoengineering solutions. The first focuses on Solar Radiation Management (SRM), consisting of strategies to reflect part of the sun's radiation back into space, thus counteracting the rise in global temperatures. The most promising such geoengineering technology involves seeding the earth's stratosphere with sulphate particles that would emulate the effect of a volcano on the earth's upper atmosphere, blocking (temporarily) a fraction of the sun's energy and thus cooling the climate.[105] A second strand of research focuses on Greenhouse Gas Removal (GGR), which involves somehow removing carbon dioxide from the earth's atmosphere, either directly by carbon removal technology or indirectly, possibly by stimulating the oceans' capacity to absorb CO2.

Promises

The promise of geoengineering technologies is substantial. Climate scientists are increasingly pessimistic about the chances of our world escaping the worst ravages of climate change. Each successive year, scientists issue ever-direr warnings about what will happen if current policies do not change, and every year policy-making efforts fall shorts of the desired targets. Increasingly, geoengineering technologies, which have been often criticised by mainstream climate scientists as unproven and potentially reckless (given their propensity to reassure policy makers that a simple technological "fix" to the climate crisis might be close at hand, thus obviating the urgency to make costly emissions reductions in the short-term), have been re-embraced as possibly the last chance humanity has to save itself from the worst effects of unchecked climate change. This would carry clear positive implications for the enjoyment of all human rights that depend on the environment, most notably the right to enjoy a clean, healthy and sustainable environment, as well as the right to life and development for potentially millions of people who are increasingly living in the path of accelerating climate change fueled natural disasters.

Risks

The risks of geoengineering are also substantial. The UN Special Rapporteur on human rights and the environment, in a 2021 report to the UNGA, warned that geoengineering technologies "could have massive impacts on human rights, severely disrupting ocean and terrestrial ecosystems, interfering with food production and harming biodiversity."[106] The Intergovernmental Panel on Climate Change (IPCC) has consistently warned of geoengineering's risks to people and ecosystems, which remain poorly understood. There are inherent uncertainties involved in almost any geoengineering project. Some worry that SRM technologies may alter weather patterns, for example the South Asian monsoon, thereby potentially disrupting the livelihoods of millions of people in parts of the world that depend on those seasonal weather patterns, while leaving largely unaffected those living in other parts of the world. From a human rights perspective, the inherent inequality of who is likely to bear the most substantial risk (and who the benefit) from the hypothetical use of such technologies is highly concerning. Moreover, human rights activists have raised concerns that most solar geoengineering experiments are currently planned or implemented on Indigenous territories with often inadequate provisions for securing the free, prior, and informed consent of impacted communities and with only insufficient public oversight.

Proposed Solutions

Those who advocate for at least considering geoengineering technologies as part of a global response to climate change are well aware of these ethical and human rights concerns, and have proposed several solutions they claim will protect against harm. Oxford University's Geoengineering Programme, for example, has proposed a set of guiding principles for the governance of geoengineering projects "from early research to the point where they may be available for eventual deployment."[107] These principles hold that (1) geoengineering should be regulated as a public good, meaning that private corporations can and should play a role in their delivery, but that the governance of that technique should always remain with public authorities; (2) public participation should inform the decision making process; (3) geoengineering research must be made public; (4) the impacts of any geoengineering research should be independently audited, and (5) geoengineering research should not take place before any governance structures are put in place.

In the absence of any national or regional regulatory guidance, academic institutions are also beginning to think seriously about the ethics of approving open-air geoengineering experiments. Harvard University, for example, in 2019 set up an ethics committee specifically for geoengineering, tasked to "ensure that researchers take appropriate steps to limit health and environmental risks, seek and incorporate outside input, and operate in a transparent manner."[108] Critics of the Harvard approach stressed the potential for the oversight board to be insufficiently independent from the university, and also highlighted the potential for fierce social backlash against such research if done without a necessary national consensus.[109]

Human rights organisations have also expressed concern about the potential risks of geoengineering and called for governance frameworks to be grounded in the right to a healthy environment. Substantively, this requires recognizing the interdependence of the natural environment with basic human rights, and procedurally it requires the development of robust public participation processes. The Human Rights Council also expressed concern about the potential human rights impacts of geoengineering, and – in its 2021 Resolution 48/14 establishing a Special Rapporteur on human rights and climate change, also tasked its Advisory Committee 'to conduct a study and to prepare a report, in close cooperation with the Special Rapporteur [for submission] to the Council at its fifty-fourth session."

Outside of the few voluntary codes of conduct and university review processes described above, few credible governance structures currently exist that would regulate or guide such research, much less the potential deployment of any real geoengineering interventions. Efforts to create such governance models at a global level are only just getting underway. In 2013, David Winickoff and Mark Brown proposed a series of standards designed to build a trusted institution that can regulate and oversee research in this area as well as (in the future) make decisions about the potential deployment of any geoengineering solutions.[110] Pascal Lamy, former Director General of the World Trade Organization and former EU Trade Commissioner is currently leading an effort to develop and promote various governance structures relevant to geo-engineering.[111] Lamy predicts that these governance structures will likely need to operate at the international level, thus avoiding the temptation for any one government or leader to take the task of regulating the global climate into his or her own hands. Futurists, on the other hand, ominously predict that precisely this risk poses a significant threat to a stable and coordinated global response to climate change, especially if and when climate-change continues to cause increasingly costly natural disasters in certain countries with the technological capacity to implement such geoengineering projects.[112]

EXAMPLE 4: HUMAN RIGHTS AND ARTIFICIAL INTELLIGENCE

The Organisation for Economic Cooperation and Development (OECD) defines an Artificial Intelligence (AI) system as a "machine-based system that is capable of influencing the environment by producing an output (predictions, recommendations or decisions) for a given set of objectives." Such AI systems use "machine and/or human-based data and inputs to (i) perceive real and/or virtual environments; (ii) abstract these perceptions into models through analysis in an automated manner (e.g., with machine learning), or manually; and (iii) use model inference to formulate options for outcomes. AI systems are designed to operate with varying levels of autonomy."[113] This broad definition moves on from first generation rule-based systems, which are no longer considered to be "new or emerging" by technologists, to encompass modern machine learning systems.

As an initial matter, AI systems should be distinguished from simple algorithms. An earlier generation of AI in the 20th century, often called rule-based expert systems, tried to realise AI through pre-defined logic. The algorithms that would be used in these expert systems would instruct a computer what to do with a predefined set of inputs.

An algorithm, for example, might instruct a computer program to take a certain entry in a dataset and multiply it by two. Why two? – it would be the task of a computer programmer to determine the correct parameter (which in this case would be "2"). In more modern machine-learning AI systems, on the other hand, the AI system itself automatically 'learns' a model (a set of parameters) from data without being explicitly programmed. The AI system on its own determines the appropriate parameter to use, for example by conducting a complicated analysis of large volumes of data to determine that value. AI systems are built using algorithms, but they distinguish themselves from simple algorithms by having autonomous learning and decision-making capabilities. While rule-based expert systems are inductive and logical, machine learning AI systems are deductive, statistical, and data-driven.

Alan Turing, as early as 1950, suggested that machines that could fool another human into believing the machine was actually a human should be considered as "intelligent" machines.[114] While this so-called "Turing Test" has remained controversial ever since it was first proposed, it is safe to say that for an increasing number of human functions, machines are rapidly approaching or even exceeding human levels in terms of their performance.

Machine learning derives its models from past data (or experiences) and using those insights to predict future behaviour. This type of AI can self-adjust its predictive modelling logic based on new data inputs and is therefore capable of 'learning' and 'predicting,' not just 'doing.' In particular, multi-layered perceptron, or "deep learning" is framed on "artificial neural networks," in which data (inputs) are processed not all at once (a single layer of analysis) but rather across a series of interim analytical processes (including "forward feeding" and "backpropagation"). What humans do is only to design a basic structure (for example, setting the numbers of layers and nodes) and then feed data to the system. It is then the machine's task to calculate the degree at which each node affects subsequently connected nodes (which are called weights and biases, or collectively "parameters"). As such, deep learning is often called "end-to-end learning" or a "black box." This technology, which was rapidly improved since the early 2010s,[115] is particularly useful in analysing non-linear, unstructured data sets (for example natural human language, images, or the natural environment as seen through the lens of a digital camera). Such AI is opening the doors on NETs like autonomous driving cars,[116] robots that can manoeuvre autonomously in the built environment,[117] speech recognition,[118] toxicology testing for new drugs,[119] medical image analysis,[120] and even as a replacement for traditional social science opinion surveys.[121]

More recently, deep learning AI technologies have themselves evolved into Convolutional Neural Network (CNN), Recursive Neural Network (RNN), and Transformer Network (TN) models of AI. The TN model of AI, which is built on a self-attention algorithm, is currently regarded as "state-of-the-art", and has recently been applied to various downstream tasks such as language models including GPT-3 and BERT or AI-powered painting. The Human Centered AI Programme at Stanford University (Stanford HAI) recently described the TN model the "foundation model" and warned that it might generate homogenous social harms while being used for multiple tasks.[122]

To fully pass the Turing Test, future AI systems may also need to develop increasingly sophisticated theory-of-mind strategies (the ability to emulate human "common sense" or emotions) as well as self-awareness.[123] While recognizing how such an idea might cause concern among lay observers, technologists also warn that by focusing too much on this issue one might inadvertently distract attention from more immediately relevant (and no less urgent) human rights issues related to existing AI technologies.[124]

As computing power has continued to grow in recent years, AI systems have become increasingly able to outperform humans, even highly trained specialists, at certain narrowly defined tasks (often described as "Narrow AI" or "weak AI"). While there is no consensus as to when

exactly this might occur (or if it perhaps has already occurred), experts are confident that AI systems will soon attain higher degrees of freedom and be able to meet or exceed human-level abilities within the next few decades.[125] Once this threshold is crossed, scientists and philosophers will have to deal with the prospect of machines that can "out-think" even the most brilliant human minds, using logic that may exceed the capacity of humans to easily comprehend. So far, this is the domain of science fiction, and yet, as one CEO of an AI company recently put it: "[if] this type of AI is successfully created, no one knows what the impact will be."[126]

Promises

As described above, AI is not one specific technology, but rather a technology that can be embedded within other strategies to render them more efficient, more precise, and more effective. Thus, AI holds the promise to improve any technologically-enabled strategy to promote and protect human rights. This is especially true for economic and social rights, which are often difficult for states to guarantee due to the costs of realising them. Bringing those costs down by means of AI-enabled technologies would subsequently make it more likely that states could progressively realise those rights, as defined in the ICESCR. One study, built on a "consensus based expert elicitation process" found that AI had the potential of advancing 82% of the indicators in the Sustainable Development Goals (SDGs) related to social outcomes, 70% of those related to economic outcomes, and 93% of those related to environmental outcomes.[127]

> [In] SDG 1 on no poverty, SDG 4 on quality education, SDG 6 on clean water and sanitation, SDG 7 on affordable and clean energy, and SDG 11 on sustainable cities, AI may act as an enabler for all the targets by supporting the provision of food, health, water, and energy services to the population. It can also underpin low-carbon systems, for instance, by supporting the creation of circular economies and smart cities that efficiently use their resources."[128]

This finding mirrors the historical pattern described in Chapter 1 whereby technology has always been embraced by the development community as one of the primary drivers of progress and improved human security.

AI can also be deployed to protect and promote civil and political human rights. NAVER (the South Korean technology company) for example, has used AI as part of a charitable campaign designed to raise awareness about the lives of people suffering from cerebellar atrophy, a rare and unfortunately incurable neurological disorder. In an effort to increase awareness about the disease, Naver used its Cloud-Based Virtual Assistant (CLOVA) to analyse the handwriting of a patient suffering from this disease to create a font named "Let's Walk Together" that could be freely downloaded through its philanthropic service HappyBean, prompting (so far) over 6,000 donations to support patients with this and other rare and incurable diseases.[129]

Similarly, researchers at MIT's Lincoln Laboratory have been "developing machine learning algorithms that automatically analyse online commercial sex ads to reveal whether they are likely associated with human trafficking activities and if they belong to the same organization." Using natural language processing, researchers are rendering visible transnational human trafficking networks and passing that information along to law enforcement authorities. This information is indexed and sorted into "three major buckets — text, imagery, and audio data. These three types of data are then passed through specialised software processes to structure and enrich them, making them more useful for answering investigative questions." Using facial recognition algorithms the researchers can "identify [] additional victims and corroborat[e] who knows whom." Finally, researchers can "allow investigators to partially transcribe and analyse the content of [jail phone calls from suspects who are awaiting trial, for indications of witness tampering or continuing illicit operations]."[130]

AI is also being deployed by public authorities to improve and render more efficient their services. Using AI methods, national security agencies are increasingly deploying "predictive analytics for terrorist activities; identifying red flags of radicalization; detecting mis-information and disinformation spread by terrorists for strategic purposes; moderating and taking down harmful, terrorist or extremist online content; countering terrorist and violent extremist narratives; and managing heavy data analysis demands".[131] All of these strategies, while traditionally thought of as national security strategies, also inure to the State's obligation to protect the right to life of its citizens.

Some governments, notably the Republic of Korea, are also developing so-called "welfare technology" to improve their social welfare system, [132] integrating data from across numerous administrative agencies and combining them with IoT gadgets to better target social services and resources to previously 'invisible' populations. Other technologists are developing AI systems that provide customised solutions to differently abled individuals.

Finally, by its very nature as a data-driven technology, machine learning (assuming it operates without bias) could foreseeably be more predictable and more consistent than human-based discretion and cognition, which of course also suffers from the very human traits of getting tired, making simple mistakes, and the more insidious phenomenon of unconscious implicit bias that most of us have even without knowing it.[133]

Risks

For many people, AI conjures visions of killer robots, perhaps animated by cinematic dramas about machines having reached self-consciousness and turning on humanity. Such dystopian scenarios, which campaigners draw upon to great effect,[134] often serve as a distraction from the debate about technology and human rights. AI is not yet "fully autonomous," nor is it clear to most technologists what that would necessarily entail, even if it were technologically conceivable. Such scenarios, therefore, while certainly not inappropriate as topics of discussion and research, are not yet imminent present-day threats. Short of worrying about killer robots, there are numerous other human rights issues that also deserve our urgent and more immediately actionable attention.

One of the biggest technological problems associated with AI is that the datasets used to 'train' the AI systems often reflect significant biases within them that then get replicated in the resulting AI models.[135] Thus, for example, AI systems designed to predict crime in urban areas are trained using historical crime data risk simply amplifying and reinforcing the racial and socio-economic biases that informed that training data. Machine learning cannot distinguish legitimate data patterns from illegitimate or illegal biases, and thus risks silently perpetuating human biases while also 'sanitising' them in the guise of the 'objective' but inscrutable logic of AI. This has made some AI models the silent modern-day enforcer of age-old stereotypes, biases, prejudices and inequalities.

AI ethicists point out that such examples illustrate two interrelated (but separate) types of harms. The first are so-called "allocative" harms, which occur "when opportunities or resources are withheld from certain people or groups".[136] Allocative harms are the ones we read about in the newspaper, and the ones we can attempt to measure (for example, by comparing the outcomes of AI decisions based on race, gender, age etc.) These allocative harms are often compounded by a second type of harm – so called "representational" harms, which occur "when certain people or groups are stigmatized or stereotyped".[137] Representational harms imprint themselves in the psyches of victims and observers, manifesting in subtle and often impossible-to-detect ways, such as when a child growing up in a minority neighbourhood takes to heart the message, reinforced and "sanitised' by a biased AI system, that "kids in my neighbourhood don't make it to college," for example. Such representational harms are far more difficult to measure, and perhaps far more difficult to purge even after the problem has been identified.

Another example of representational harms comes from the process by which modern-day natural language processing (NLP) AI systems "learn" to emulate human speech. Such AI systems "train" using content found on the internet, and can therefore result in the system generating prejudiced, offensive or otherwise inappropriate language.[138] Researchers have found, but been unable to pinpoint exactly why, more modern AI systems, which were trained on bigger datasets, tended to generate more toxic and stereotyped language than their older predecessor systems that had been trained using smaller datasets.[139]

Others have pointed to AI as a modern-day threat to privacy. Especially those AI systems that depend on users providing their personal data in exchange for online services, serious privacy risks, since users are often not aware of how easy it is to "dox" or re-identify a person from supposedly 'anonymous' or 'pseudonymized' data.[140] NLPs have also been found to be susceptible to information retrieval attacks, where sophisticated users can use targeted prompts to get an AI system to reveal personal information embedded deep within its training datasets, including addresses, phone numbers, etc.[141] Such privacy violations can then easily lead to other forms of human rights abuse, especially in the hands of governments intent on denying those rights or criminal private actors. Governments can use AI systems, for example, to efficiently target certain minorities, political opponents, or other vulnerable communities. This can compromise a host of human rights across the civil, political, economic, social and cultural spectrum.

Other well-documented human rights impacts of AI might involve autonomous systems such as self-driving cars, drones, or robots navigating in crowded areas that inadvertently cause harm to humans in the vicinity, for example when a self-driving car fails to respond to a preventable accident, or when robots (including automated wheelchairs) manoeuvre in crowded pedestrian areas.[142] Such accidents cause an obvious threat to human life and well-being, even if arguably the non-AI powered alternatives to such systems might cause statistically even more harm.

A more systemic impact –one that harkens back to the 19th century luddite protests against improved weaving technologies, in which

traditional weavers rose up in revolt against the technologies they accused of robbing them of their traditional livelihoods is the threat of AI systems to entire professional vocations. While technologies have long been eroding certain types of jobs, those have often tended to be the jobs of less socio-economically powerful groups. As AI systems gradually become more and more capable, however, they are increasingly able to replace higher-skilled workers, including doctors, lawyers, psychologists, accountants, stock brokers, artists, researchers, journalists, and others. As fewer and fewer professions become "safe" from predation by increasingly efficient and indefatigable AI systems, the risk of displacement, accompanied by the incumbent social disruption and poverty, becomes difficult to avoid.

At its most existential level, some critics have pointed out that AI systems still lack the humanity that is essential to certain care professions.[143] An AI-enhanced restaurant that replaces its wait staff with AI-based robots, for example, may be missing the intangible human element of care (a smile, a joke, an understanding glance from one parent to another) that makes such interactions more dignified when conducted between humans.

Proposed Solutions

Given the human rights implications of the spread of AI technologies, most countries in the world are putting in place specific laws and policy frameworks to regulate the use of AI systems. These national frameworks demonstrate a range of options on how to deal with AI, starting from those that focus heavily on regulation and accountability to others oriented more towards encouraging research and development in AI products through a lighter regulatory touch.[144]

A few such policy guidelines include various policy recommendations or guidelines designed to promote so-called "trustworthy AI", designed to bring AI more in line with many of the important human rights concerns described above.[145] Various other 'hard law' (enforceable) laws also exist, including regulations designed to govern automated decision-making[146] Similarly, there are also numerous legislations designed to curb the use of facial recognition technology, including those in the state of Virginia, and the cities of Boston and San Francisco. The European Union similarly is preparing more comprehensive regulatory frameworks of such technologies.

Researchers have found that developed economies are often far better at implementing legislation than those in the Global South, where merely implementing good law is rarely tantamount to effectively regulating a new technology such as AI that is almost always controlled and deployed by corporations operating from outside of those jurisdictions.

Corporations engaging in AI research also are actively promulgating AI Codes of Ethics. Some prominent examples include the AI ethics codes of Google,[147] Microsoft,[148] IBM,[149] Kakao,[150] and Naver,[151] to mention just a few.

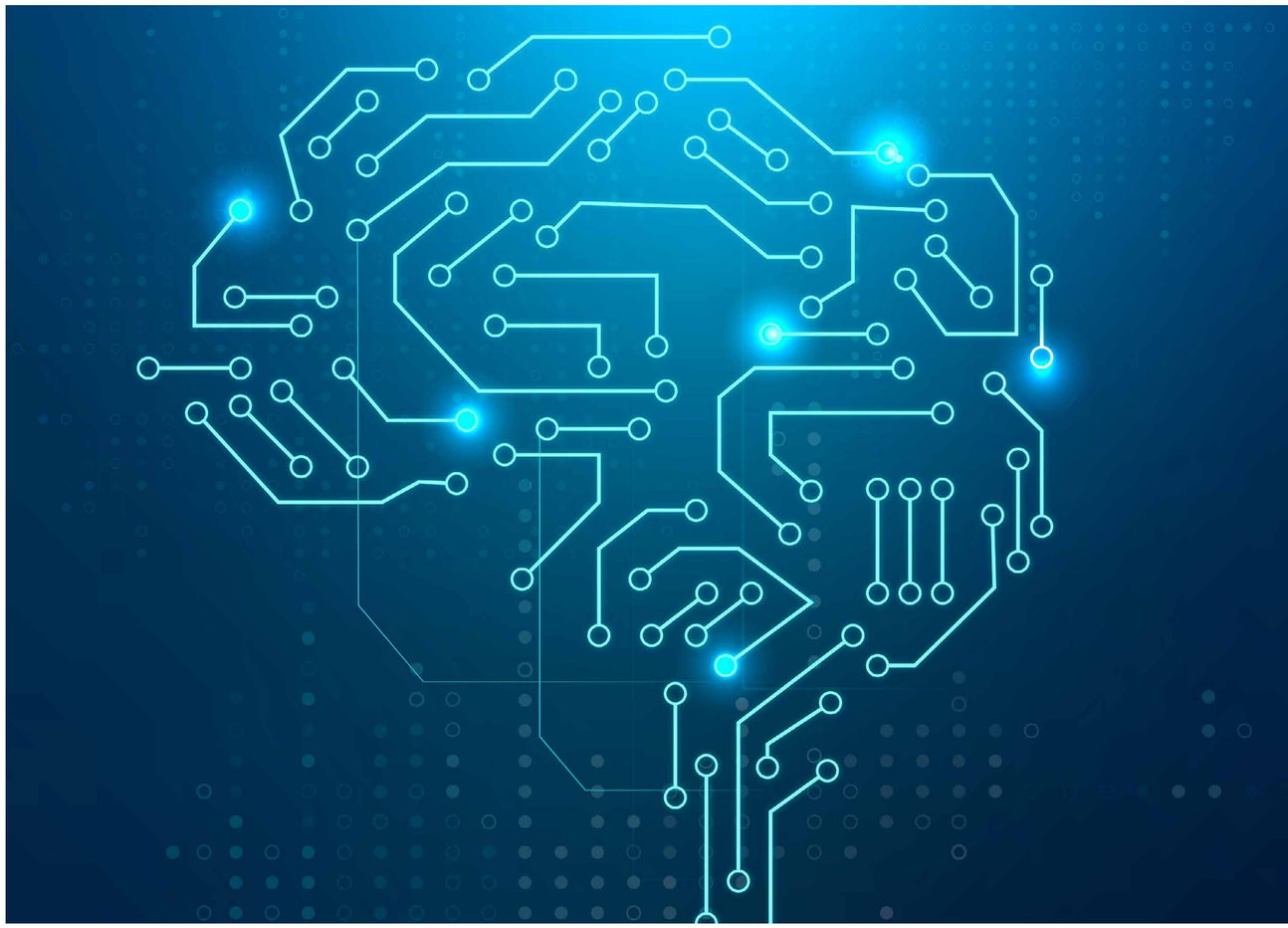
One meta-study analysing various proposed governance principles on AI put forward by various corporations, civil society organisations, governments, international organisations, and or multi-stakeholder collaborations found that they emphasised eight separate principles, and that there was an increasing convergence trend among these many documents.[152] These are:

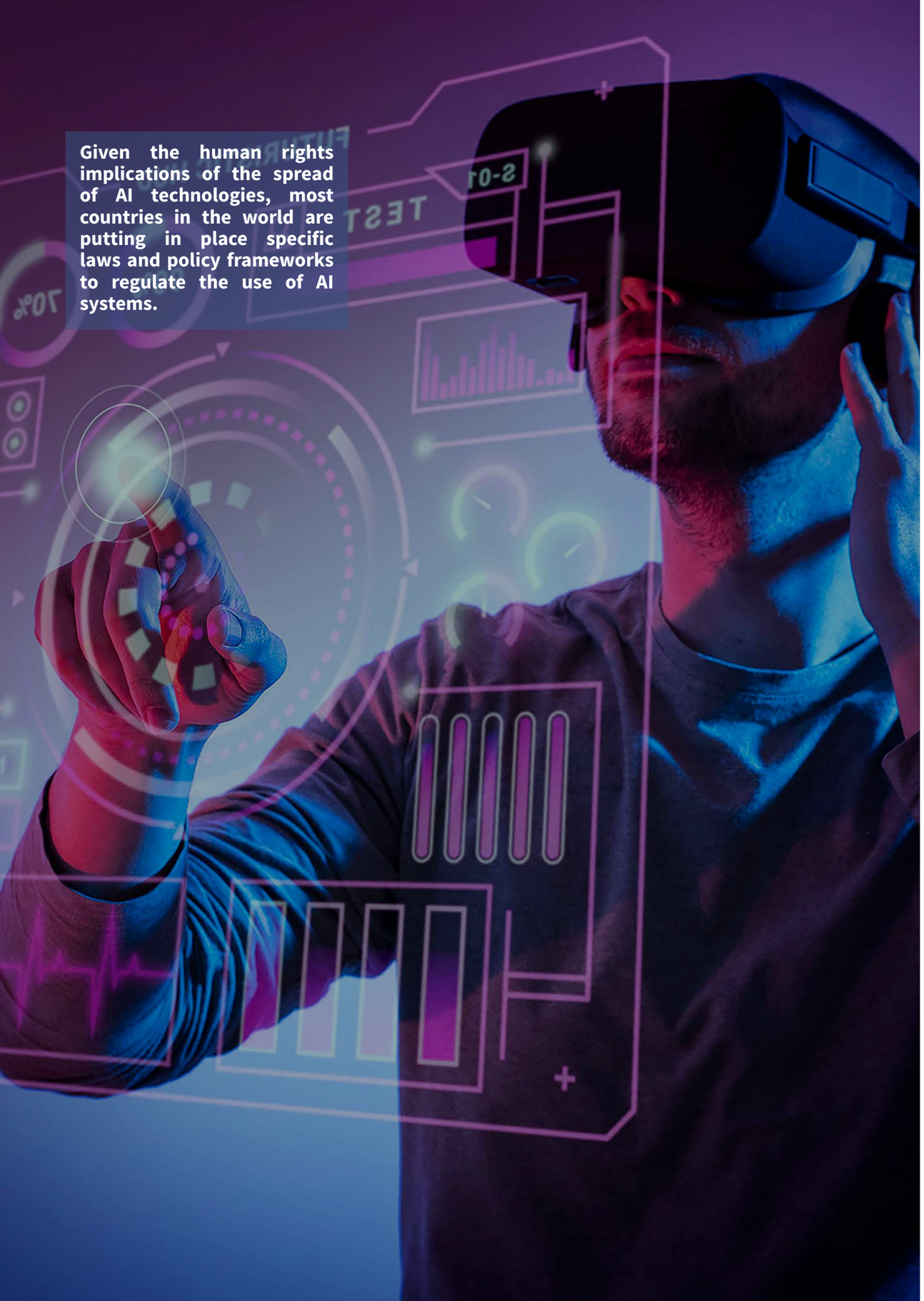
1. **Privacy.** "AI systems should respect individuals' privacy, both in the use of data for the development of technological systems and by providing impacted people with agency over their data and decisions made with it.
2. **Accountability.** There should be "mechanisms to ensure that accountability for the impacts of AI systems is appropriately distributed, and that adequate remedies are provided."
3. **Safety and Security.** "AI systems [should] be safe, performing as intended, and also secure, resistant to being compromised by unauthorised parties."
4. **Transparency and Explainability.** "AI systems [should] be designed and implemented to allow for oversight, including through translation of their operations into intelligible outputs and the provision of information about where, when, and how they are being used."
5. **Fairness and Non-discrimination.** "AI systems [should] be designed and used to maximise fairness and promote inclusivity."
6. **Human Control of Technology.** "Important decisions [should] remain subject to human review."
7. **Professional Responsibility.** Individuals play a vital role "in the development and deployment of AI systems [and should consider it as their professional duty to ensure] that the appropriate stakeholders are consulted and long-term effects are planned for.
8. **Promotion of Human Values.** "The ends to which AI is devoted, and the means by which it is implemented, should correspond with our core values and generally promote humanity's well-being."

Finally, numerous serious research efforts are under way to pre-emptively address the still unanswered question of how to constrain AI if and when it ever becomes technologically possible to create super-intelligent, general AI,[153] such that dystopian fictions about robots dominating humanity remain strictly in the realm of hypothetical science fiction, not reality.

Conclusion

Chapters 1 and 2 have shown that the time is ripe to propose a holistic, multidisciplinary, and action-oriented approach to ensure that NETs serve as a force for progress and human rights in society, rather than the opposite. We are not the first generation to struggle with the impact of NETs on our societies, nor will we likely be the last. And yet we are faced with several NETs that promise to fundamentally disrupt the way our society works. In fact, many technologists pride themselves for developing so-called 'disruptive' technologies. Given the still tenuous foothold that modern human rights norms – barely 75 years old at the time this report goes to press – have in so many of our societies, we ought to be careful to avoid new technologies from "disrupting" our slow but steady progress towards their ultimate realisation. As such, perhaps the time has come for us to discuss what it would take to 'nudge' NETs in the direction of actively promoting and protecting human rights. In other words, far from considering technology to be a morally neutral concept, we should actively seek out concrete strategies (broken down into individual processes) to structurally render new and emerging technologies into a force for good.

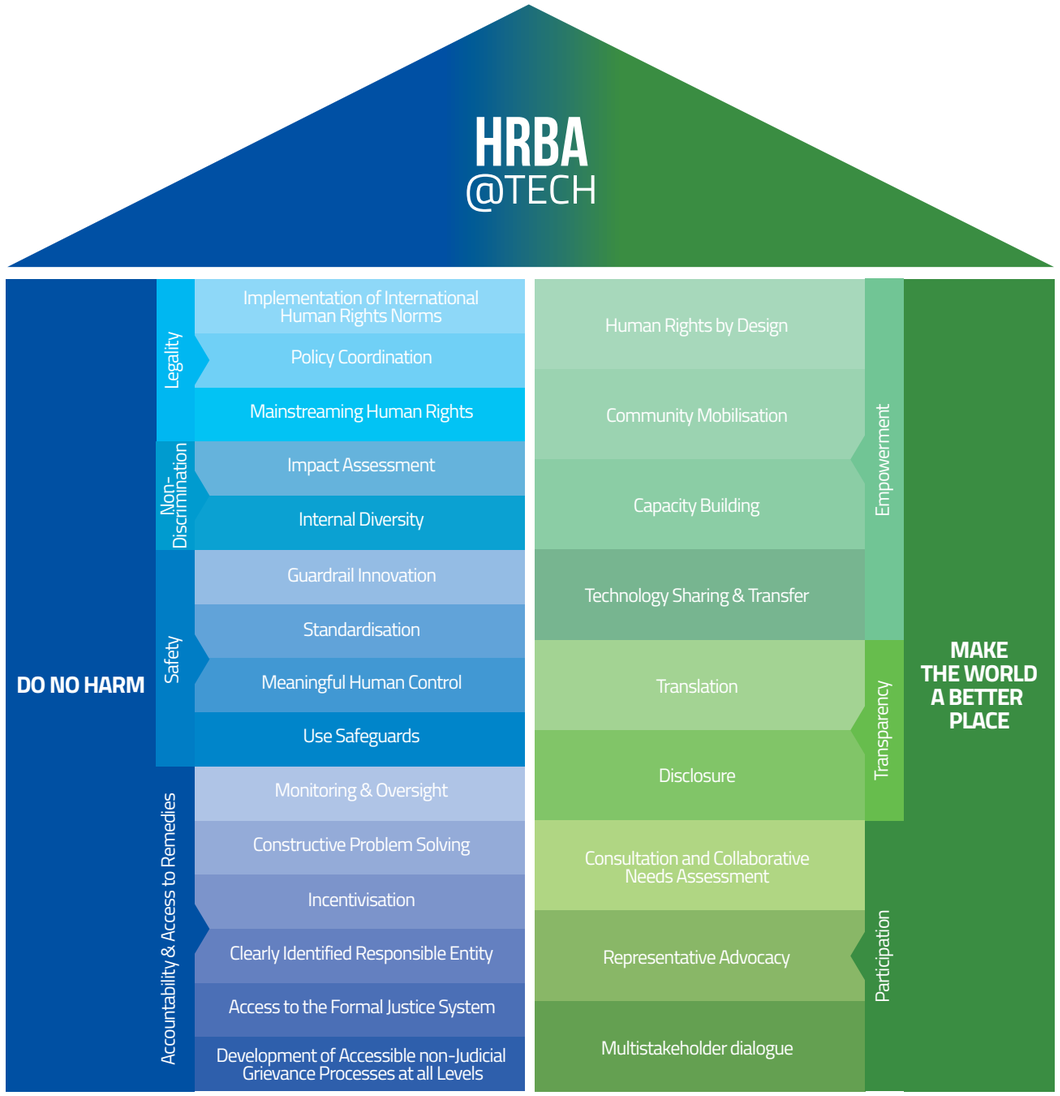




Given the human rights implications of the spread of AI technologies, most countries in the world are putting in place specific laws and policy frameworks to regulate the use of AI systems.

PART II
A HUMAN RIGHTS BASED APPROACH TO NEW AND EMERGING TECHNOLOGIES

THE HRBA@TECH MODEL



The second part of this policy report proposes a way forward. The discussion so far has made clear that the question of how to nudge technological and scientific innovation towards a better, more equitable, more just, and more dignified world has been with us since at least the start of the industrial revolution, if not since the dawn of human history. The international community has been grappling with how best to conceptualise technological innovation from a human rights perspective since at least the 1960s. We have also seen, however, that many of these discussions end by merely reaffirming the 'paradox' of technology and human rights, namely that new technologies can be used either for good or for bad purposes. This duality often leaves one with the impression of having to choose between a tech utopian or a tech-phobic approach, corresponding with the vision of a deregulated libertarianism on the one hand and a much more precautionary approach on the other. When neither of those two extremes seems satisfying from a human rights perspective, many prior attempts to speak with more nuance on this issue have ended with a humble call for 'further study' of the issue, or perhaps a more targeted effort to regulate only one particular technology.

What follows is what we are calling the Human Rights Based Approach to New and Emerging Technologies (HRBA@Tech). It brings together two distinct strands of thinking that were apparent already in the debates of the 1960s and the 1970s. The first is the commitment to the gradual improvement of human society, articulated best by the bullish optimism of the international development sector. This approach embraces and celebrates the potential of NETs to solve many of our world's problems and "make the world a better place." It looks to technology and scientific innovation to help us find solutions to some of society's most vexing problems: global climate change, governance, the challenge of entrenched discrimination, social alienation and exclusion from mainstream society, public health threats, market inefficiencies, etc. The approach also, however, embraces the more precautionary (some might argue constructively realist) approach one might associate with the human rights movement, namely an insistence that "no one should be left behind."[154] In the push to make the world a better place, this second more cautionary approach also reminds us that individuals and vulnerable communities cannot be sacrificed at the altar of societal and technological progress. To make this a reality, some of the time-tested human rights strategies, built on accountability mechanisms and concrete incentives to nudge actors towards decisions that advance the cause of human rights, remain a necessary component of an overall strategy.

The human rights-based approach, originally devised in the context of development cooperation, is a framework for policy making and development programming anchored in international human rights standards. It provides a flexible model to guide technologists and policy-makers on how to uphold human dignity throughout the lifecycle of technology. Under the international human rights framework, States are and remain the ultimate duty bearers for the protection and promotion of human rights. Nonetheless, the human rights-based approach also provides a practical and flexible framework that applies also to non-state actors such as private companies, civil society actors, and academia, all of which are central to the NET space. The human rights-based approach remains conceptually tethered to international human rights norms, and yet operationally it is a broader framework of principles and processes that go well beyond the traditional human rights toolbox. The HRBA@Tech model places human rights at the centre of policy making, both as legal compliance standards and as an ethical frame of reference. It is malleable enough to encompass a range of governance and policy measures, undertaken by a wide variety of stakeholders, all designed to 'nudge' NETs in the direction of human rights. While the approach is grounded in human rights, the HRBA@Tech model also proceeds beyond a mere articulation of principles and standards to identify a multidisciplinary range of core processes–some of them familiar to classical human rights actors and some of them less so.

The HRBA@Tech is presented in three separate Chapters. The first (Chapter 3) presents the framework itself. This Chapter can be seen as "the What" of the HRBA@Tech – a vision of a future world in which advancements in technology and science are intentionally designed, produced, and deployed in ways that insure a greater respect for the inherent human dignity of all who might be impacted by those technologies. This vision is broken down into two pillars, which themselves are sorted into sub-components, each of them corresponding to a discrete area where processes can be designed to make real on the promise of the HRBA@Tech model. This can be thought of as the aspirational vision of the HRBA@Tech model.

Chapter 4 focuses on "the How" of the HRBA@Tech model. It proposes a general approach to understand and analyse the human rights implications of any new and emerging technology. It is structured to highlight a non-exhaustive list of potential "intervention points" along the classical Technology LifeCycle (TLC) of a NET, where various coalitions of motivated actors can begin to 'nudge' new scientific or technological innovations towards human rights or human dignity reaffirming outcomes.

Chapter 5, finally, focuses on "the Who" of the HRBA@Tech approach. It explores the types of stakeholders that typically can collaborate—sometimes joining together in innovative and unusual coalitions—to design and implement the procedural safeguards to ensure that new technologies and scientific innovations lead to a better world.

The challenge in writing these three Chapters is to leave them sufficiently abstract that the framework can apply to any new or emerging technology (even those we cannot yet even imagine today), while also being specific enough to still offer the human rights and technology communities some concrete guidance on how to proceed.

CHAPTER 3
ELEMENTS OF THE HRBA@TECH MODEL AND HOW THEY TRANSLATE TO NEW AND EMERGING TECHNOLOGIES

Chapter Summary:

This Chapter introduces the HRBA@Tech model. This Chapter describes The What of the HRBA@Tech model, drawing inspiration from international human rights law as well as parallel discussions taking place in the field of technology ethics. It breaks these principles into two broad categories (or pillars) that collectively support the HRBA@Tech model. The first, the "do no harm" pillar, is further broken down into four constituent principles. The second, the "make the world a better place" pillar, is broken down into three constituent principles. Together, these seven principles provide the normative basis for the HRBA@Tech model.

These seven principles are associated with an exhaustive list of 24 core processes that, we argue, constitute the complete toolbox of strategies and methods that together can be used to 'nudge' technology in the right direction. If technology is not neutral (as we argued at the outset of this paper), these 24 processes constitute the proposed methodology we believe should use to ensure that new and emerging technologies are structurally biased in favor of human rights priorities.

The HRBA@Tech model can be thought of as a house built on two columns, with interlocking support beams to lend stability to the edifice. The first pillar focuses on the well-established obligation to "do no harm." The second focuses on how to "make the world a better place." To breathe life into these two foundational pillars of the HRBA@Tech Model, each pillar is broken down into several aspirational principles that provide the normative framework for the HRBA@Tech model. By thinking through the practical applications of these principles for different stakeholders, the HRBA@Tech model moves beyond the aspirational language of principles and norms, and turn to the very practical business of bringing those norms to life. It proposes concrete processes that, taken in the aggregate, will ensure that the development and deployment of any new and emerging technologies can be consistent with (and in fact supportive of) the human rights agenda. The Chapter ends with an illustrative chart listing the 24 identified processes that might be used by various stakeholders to achieve the objectives associated with the HRBA@Tech model.

FUNDAMENTAL PRINCIPLES OF THE HRBA@TECH MODEL

1	**Legality**	States must enact laws to promote and protect human rights in the context of the development and deployment of NETs. Private companies and other stakeholders should fully respect human rights and take steps to support their full and effective realisation.
2	**Non-Discrimination and Equality**	The use of new and emerging technologies must not intentionally or inadvertently discriminate against any persons or groups, even if doing so might (purportedly) allow for other persons or groups to enjoy an enhanced quality of life.
3	**Safety**	Safety concerns and adequate safeguards or "guardrails" must be integrated into the development of technology so that its deployment can adhere to intended use.
4	**Accountability & Access to Remedies**	Systems and mechanisms must be put in place to ensure that those responsible for the development and deployment of NETs face costs for not respecting human rights, while ensuring rights holders have an avenue to secure remedy for grievances.
5	**Empowerment of Vulnerable Populations**	Any new or emerging technology should be designed to make the vulnerable better off than they were before that technology existed. The best way to achieve this is through their empowerment.
6	**Proactive Transparency**	It is the duty of the technologists to disclose relevant information and to make a new or emerging technology understandable for non-technologists, policy makers, potential users of those technologies.
7	**Proactive Representation in Design and Implementation**	The only way to earn the trust of communities that stand to be affected by a new or emerging technology is to proactively involve them (or their representatives) in the design and implementation of that technology.

"DO NO HARM"

The first pillar of the HRBA@Tech model is to "do no harm." Mary Anderson pioneered the "do no harm" concept in the field of humanitarian assistance[155] but of course this concept is also well known to medical professionals in the form of the Hippocratic Oath. In the context of NETs, this principle can be derived from the efforts of ethicists who see technology as neutral -- a mere instrumentality of humans acting with agency. For those thinkers, the focus should be on those human actors who intentionally or inadvertently deploy technologies for nefarious or non-human rights compliant purposes. This prong of the HRBA@Tech model seeks to raise awareness primarily among the users of a technology, incentivizing them to use it responsibly.

The 'do-no-harm' principle posits four principles, broken down further into nine constituent processes, that together serve to minimise and remedy those human rights harms as best possible.

This pillar draws heavily from the existing business and human rights framework described above (p.16). Just like the UNGPs, the framework speaks to both state and private (corporate) actors.

Legality

The principle of legality is an obvious and well-established corollary of the international human rights regime. According to classical human rights theory, States enter into mutually binding human rights agreements with each other or become subject to obligatory human rights norms as a matter of customary international law. Individual citizens, however (i.e., rights-holders who are the ultimate intended beneficiaries of those human rights protections), are only actually guaranteed those rights once States act on their duty to first recognise those human rights as legally enforceable entitlements within their domestic legal systems, usually when they adopt laws and policies for their implementation.

Since the adoption of the UDHR, an elaborate system has evolved to monitor State compliance with these universal human rights principles and to recommend policy prescriptions designed to improve the alignment of domestic laws and practices with international human rights norms. The principle of legality entails that States: 1) bind themselves to human rights obligations by becoming States Parties to the nine core human rights treaties;[156] 2) translate these international norms into domestic laws and policies for the effective enjoyment of human rights; and 3) implement recommendations from the various international human rights mechanisms to constantly improve their compliance with relevant standards.

The legality principle also requires domestic lawmakers to remain alert to potential threats (as well as opportunities) arising from NETs. This can be challenging, since lawmakers usually have a hard time anticipating the impacts of such technologies, and once potential human rights implications are more apparent it may often already be too late to retroactively 'legislate away' the damage. Thus, lawmakers have a unique obligation to onboard technical human rights and technology experts who can help 'translate' the human rights implications of new and emerging technology into policy language.

Notably, given the prominent role that private corporate actors play in the development, design and promotion of NETs, the principle of legality also requires States to take measures to protect against human rights abuse within their territory and/or jurisdiction by third parties, including business enterprises. In turn, this implies that businesses must fully comply with national laws and regulations protecting human rights.

The technical challenges of the State properly regulating NETs in line with applicable human rights norms under its jurisdiction should never serve as an excuse for private actors to ignore human rights principles when they begin to develop and deploy NETs. A private actor's responsibility to respect human rights 'exists independently of States' abilities and/or willingness to fulfil their own human rights obligations' and 'over and above compliance with national laws and regulations protecting human rights'[157]

The UN Global Compact and the UN Guiding Principles on Business and Human Rights (UNGPs) are especially relevant in this regard. The Global Compact sets out principles for proactive engagement of businesses with regards to human rights (i.e., to respect and support human rights), while the UNGPs provide an authoritative, conceptual, and operational framework for States and companies to do so with respect to their human rights obligations and responsibilities.

The principle of legality also requires private corporations to articulate codes of conduct or ethics codes that 'make real' the company's commitment to protect and promote human rights. These policies should not merely enumerate aspirational goals, but also include concrete governance provisions designed to ensure that the company lives up to its aspirations.

New technologies illustrate the interdependence and indivisibility of the universal human rights corpus. As was demonstrated above, a technology designed to advance the right to education cannot at the same time undermine the right to privacy, even though the former is typically articulated in the ICESCR and the latter in the ICCPR. Since so many NETs aim to advance (i.e., "progressively realise") our ESC rights, and so many of the unintended impacts of new technologies threaten to impact our CP rights, the interdependence of all human rights is more apparent with regard to NETs than is often the case in other human rights discussions. Jurisdictions that have been hesitant to embrace certain human rights should realise that when it comes to regulating new technologies, it must be done in light of the entire corpus of human rights. The principle of legality does not presuppose that there will never be potential contradictions between competing rights claims. The right to free speech, for example, may be in tension with the right of women, girls, and sexual minorities to be free from revenge porn and harassment. When maneuvering such challenges, stakeholders must seek out nuanced approaches, balancing of interests of different individuals and communities within the context of a rights-based approach to NETs. The UN Office of the High Commissioner for Human Rights' Rabat Plan of Action, for example, provides one example on how to balance between freedom of expression (Article 19 of the ICCPR) and the right to be free from incitement of discrimination, hostility or violence (Article 20 of the ICCPR). Such standards can provide concrete guidance, for example, to content moderators on social media platforms when deciding on what kinds of speech to allow or disallow on their websites.

This further entails that international organisations and entities, such as the Office of the UN High Commissioner for Human Rights (OHCHR), the International Telecommunication Union (ICU), and the international human rights mechanisms, have key roles to play in clarifying the application of international human rights standards to particular technologies. These organisations and entities (along with others) are central to any efforts to ensure global policy coherence in the field of technology and human rights. These organisations are uniquely mandated to overcome governance and regulatory fragmentation by coordinating diverse international actors, as well as by monitoring compliance with international human rights norms, helping to build the capacities of various other stakeholders (including UN country teams, domestic policy-makers and rights holders), and by mainstreaming human rights throughout international, regional and national systems.

Finally, regional human rights instruments and standards can prove instructive for upholding the legality principle to the HRBA@Tech. Overarching human rights instruments such as the African Charter of Human and People's Rights, the American Declaration on the Rights of Man, the Arab Charter on Human Rights, the ASEAN Human Rights Declaration, and the European Convention on Human Rights, can help mainstream a HRBA@Tech model, and importantly, integrate crucial regional perspectives. Additionally, regulations such as the EU's General Data Protection Regulation (GDPR), or the US' proposed AI Bill of Rights, both of which provide guiding frameworks for privacy and data protection of EU and US citizens, can breathe further regionally relevant life into the principle of legality.

Processes Associated with Legality	
Implementation of International Human Rights Norms	Give domestic effect to international human rights norms. Ensure a balanced focus on both CP as well as ESC rights. This process depends on legislative reform efforts to give domestic effect to human rights, as well as capacity building and awareness raising activities to ensure that a nation's institutional framework is prepared to respect, protect and fulfil human rights.
Policy Coordination	Develop coherent technical expertise at the United Nations to provide non-binding advice to member states on new and emerging technologies, their potential human rights implications and also comparative best practices on how to manage relevant risks and opportunities, and increase policy coordination amongst the various UN organs and agencies. This activity also involves standard setting, especially at the international and industry-wide levels.
Mainstreaming Human Rights	This obligation applies to all stakeholders, namely to ensure that human rights norms and principles are mainstreamed throughout all relevant stages of the development and deployment of new and emerging technologies.

Non-Discrimination and Equality

The principle of equality and non-discrimination is a foundational principle of the international human rights framework. It posits that the inherent equal dignity of all human beings entitles them to enjoy all universally accepted rights and freedoms 'without distinction of any kind, such as race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or other status' (Art. 2 UDHR). The right to equality and non-discrimination entails that every individual is entitled to be treated equally before the law. In other words, in equal circumstances two persons are to be treated in the same way.

Early on, the modern international human rights movement recognised that in order to fully realise equality, measures would have to be taken to rectify and counter past and existing discriminations. In this sense, the principle of equality and non-discrimination requires not just formal equality before the law but also a focus on the particular situation of vulnerable and marginalised populations, as well as an understanding of how a given measure (e.g., a law or a policy) can have structurally discriminatory effects even despite its application on equal terms. In other words, blind justice without an awareness of existing inequalities can constitute a harm by entrenching discrimination.

Artificial Intelligence tools, for example, have often been accused of discriminating against some individuals (for example racial minorities) in the name of efficiency. An example might be an algorithm that considers race (or information that acts as proxy for race) as a factor in calculating a customised life insurance policy, with the result that minorities (who have historically been discriminated against in such situations) may receive higher-priced product offers whereas non-minority customers receive better and more cost-effective services. This in turn, becomes a data point for future determination of life insurance policy for other individuals, creating a negative feedback loop and perpetuating a vicious cycle of discrimination by reinforcing existing structural inequalities or historical discrimination. Even if hypothetically speaking the aggregate impact of such a technology across all members of society might be positive, and even if this might be a potentially very lucrative market opportunity, this still would be an unjust use of such a technology.

For States, adherence to the principle of equality and non-discrimination in relation to new and emerging digital technology therefore requires more than just establishing general prohibitions on discriminatory treatment on the basis of protected characteristics (e.g., through constitutional protections or sector specific protections)

- though this is a necessary starting point. It requires proactive consideration of how certain laws, policies and practices. In line with their commitments to the SDGs, States should collect disaggregated data, allowing them to better track and assess discriminatory impact (including multiple and inter-sectoral forms of discrimination) on particular groups. Such monitoring can inform national reports to international human rights mechanisms. Human rights impact assessments are particularly relevant when an NET is used by public authorities, for example in the context of providing social services or for national security initiatives. The collection of such disaggregated data for purposes of assessing discrimination must be accompanied by adequate safeguards to ensure that the information gathered does not itself constitute a threat to privacy and data protection, perhaps at the hands of unscrupulous private or state-sponsored hackers.

As a corollary of their duty to protect against abuses from private entities, States must take effective measures to ensure that the principle of equality and non-discrimination is fully upheld by business enterprises. At an initial level, this means prohibiting intentional direct discrimination by companies, either in their internal policies or in their design and use of technologies. State protective measures should also help companies identify and prevent indirect discrimination by mandating or encouraging human rights impact assessments and due diligence measures. To be effective, impact assessments should be conducted regularly throughout the lifecycle of technology. Those who develop and deploy NETs, working either on their own or in partnership with other stakeholders, can also devise relevant methods, standards, and technical benchmarks to assess potential bias or discriminatory impact. And it goes almost without saying that once evidence of any such bias or discriminatory impact is discovered, this should lead immediately to a remediation process, even if not prompted by a concrete "grievance" lodged by an affected individual or community.

In a commercial or business setting, this assessment should start from a calculus of the impact of a NET on classic categories of 'vulnerable' individuals and groups. These categories might change depending on the technology, and yet there are certain categories that are good to start with as a 'baseline,' including women, children, older persons, persons living with disability, ethnic or racial minorities, sexual minorities, etc. Assessment should then move on to consider the potential negative effects on individuals and groups in local contexts that could be disproportionately affected. In the case of a "disruptive" technology. Let us imagine, for example, a ride-sharing app that may threaten to displace traditional taxi services in an urban area. In such a scenario the impact assessment should focus not only on the impact of the new technology on the potential consumers of the proposed service, but also those whose livelihoods stand to be made redundant by the new technology. The principle of non-discrimination applies also to situations where a new technology promises to bring little benefit to anyone other than the investors who fund the new technology.

This is not to say, of course, that the responsibility to ensure this non-discrimination should rely solely on one actor (see below, Chapter 5). In the case of the disruptive ride-sharing technology, for example, the corporations have some responsibility as they develop their business model, the municipal and regulatory authorities have their responsibilities to manage social change and minimise the negative social and economic externalities of businesses operating in their jurisdiction, the individual consumers have a responsibility, and also those whose livelihoods are at stake have an obligation (or perhaps a strong incentive) to gradually re-skill and retool—presumably with the support of other actors who provide those opportunities—so that they too can continue to thrive in a changing and modernising community.

Two other strategies, both having to do with diversity, additionally help those who would seek to develop or deploy NETs to avoid discrimination being inadvertently 'hardwired' into that technology. The first such strategy is to constantly work towards high levels of internal workplace diversity, not just as an overall statistic but also within the individual teams tasked with developing and deploying NETs. Cultivating workplace diversity is typically considered to be a human resources challenge and not a technological challenge, and yet it has a major if indirect impact on the integrity of NETs, primarily by ensuring that a plurality of views are systematically represented throughout an NET's technology lifecycle. Such efforts to cultivate internal workplace diversity can be further strengthened by the proactive participation measures described below, which fall under the "Make the world a better place" pillar of the HRBA@Tech Model. Non-discrimination requires diversity and representation, especially of vulnerable and marginalized communities, in the teams developing NETs, as well as at all other levels of an organization. It may also entail diversification across supply chains including representation in the choice of suppliers and vendors. In order to be truly meaningful, this diversity must also be accompanied by an openness to free communication and engagement, thus ensuring that with the greater workplace diversity and representation comes also a corresponding diversification of viewpoints, perspectives, concerns, and departure points for creative brainstorming that flows naturally from such diversity.

Processes Associated with Non-Discrimination and Equality	
Impact Assessment	Anticipatory Impact Assessments (Vulnerability Assessments) Those responsible for developing and deploying NET must assess the potential bias or discriminatory impact of the NET throughout all stages of the technology lifecycle. This includes assessing the impact of a new or emerging technology on classic or 'baselines' categories of 'vulnerable' individuals and groups, including women, children, older persons, differently abled persons, and minorities, amongst others. These categories might change depending on the technology in question or the local context or conditions, and can thus also include any other readily identifiable group that could be potentially affected by the NET. Ongoing Impact Assessments (Testing NETs for Disparate Treatment) Those responsible for developing and deploying NETs must also conduct ongoing impact assessment and monitoring and oversight to ensure there is no disparate treatment, either intentional or unintentional, as a result of the implementation of the NET. Remediation: For non-discrimination to be meaningful, when an impact assessment detects bias or discriminatory impacts of a NET, relevant stakeholders must take necessary follow-up action and remediate the shortcomings in good faith.
Internal Diversity	To minimize the risk of potential bias or discrimination (or any other negative impact) being baked into a NET, stakeholders must ensure internal diversity and representation within an organisation. Such internal diversity can take the form of representation within the teams associated specifically with the development and deployment of NETs, across supply chains (including the diversification of suppliers and vendors) and also within the general workforce at all levels including key leadership and decision-making positions and roles.

Safety

Those responsible for the development and deployment of new and emerging digital technologies must ensure the safety of technology at all times. The greater the implications of a NET on human dignity and human rights, the more acute this obligation becomes. For example, if a scientist invents a new and a more efficient lightbulb, the burden to think about the safety of that new technology is relatively minor since it is extremely unlikely the new lightbulb would have profound implications for humanity or society or on the human dignity or rights of anyone who used it.

There are NETs, however, which pose a heightened risk of such impacts. These include a variety of complex and sophisticated AI tools, which are gradually supplanting human decision-making and action at various levels. These powerful AI tools can increasingly rival human capabilities and sometimes pose significant challenges to the human dignity, agency, and self-determination of communities and individuals whose lives stand to be affected by these technologies. Germline genetic engineering can potentially alter the genetic makeup of future generations of humans. Geo-engineering with its potential to manipulate the environment risks, changing medium-to-long term weather patterns, and with it entire ecosystems. Those developing and deploying such technologies should bear a correspondingly high burden to ensure that these technologies are absolutely safe before they are released into the market or the open environment.

There are several components to ensuring safety with respect to such technologies. First, it requires incorporating safeguards or 'guardrails' from the earliest stages of innovation and design throughout the entire lifecycle of a product's development. These guardrails should be updated with every new feature or innovation associated with the technology. Guardrails might necessitate the creation of internal features in the NET that can act as 'emergency brakes' to prevent and avoid harms. They also require ensuring the incorruptibility of the technology itself from external risks, such as hacking and misuse or abuse by bad faith actors. While technologies will always be susceptible to the risk of hacking, misuse, or abuse, the principle of safety requires adopting a precautionary approach to such risks, and ensuring that adequate safeguards are built directly into the technology or protocols to use a particular NET. These safeguards should serve to ensure its integrity and that it does not inadvertently expose users ot consumers to risks beyond what they might agreed to assume. In particular, technologies harnessing personal data including sensitive medical or financial information require higher levels of safety and robust safeguards to ensure protection of privacy and data security.

Such a precautionary approach would also require virtually absolute certainty that a technology is safe, and that human rights implications have been adequately accounted for before a NET can be ethically deployed.

Safety of NETs, especially complex technologies such as machine learning AI, also requires ensuring they perform as intended and are predictable and reliable. Those responsible for the development and deployment of such technologies must have safeguards in place, both technological and procedural, to ensure that such technologies are not used for purposes other than the legitimate intended aims (while of course acknowledging some degree of uncertainty in any such endeavour). This can involve adding design features directly into a technology, as well as purpose specifications for the use of a technology that can be included in contractual provisions between different entities relating to the use or licensing of a particular NET.

Devising such safety features or guardrails may require additional technological innovation. Collaboration amongst various stakeholders, including technologists, academic institutions, think tanks and other actors may be useful in bridging knowledge gaps and ensuring more effective safeguards. Stakeholders may consider sharing or transferring technologies or technical know-how about effective safeguards, and also provide other forms of assistance and capacity building (going beyond the “do no harm” approach) to developing and less developed nations, technologists, civil society organisations and other entities with fewer resources to secure their systems.

Standards are also relevant to ensure the safety of an NET. They help to establish meaningful guardraisl and build crucial societal trust in an NET. Stakeholders, typically working through multi-stakeholder initiatives, can establish relevant industry or sectoral standards that provide minimum safety thresholds to be applied by those developing and deploying NETs. This is typically a role reserved for national regulatory bodies or international organizations like the ITU, but can also be facilitated by the important work of civil society organisations. Underwriters Laboratories Solutions, for example, is a US-based independent not-for-profit organisation that has developed various general safety standards, including for autonomous systems, that can be tailored to any specific industry or application.[158] Designated standard-setting organisations also play a key role. The Institute of Electrical and Electronic Engineers (IEEE), for example, has developed various standards for the design and development of intelligent systems through its Global Initiative on Ethics of Autonomous and Intelligent Systems.[159] Standard setting organisations should always consider collaborating with relevant international human rights organisations or mechanisms to develop standards for NETs.

Governments must establish appropriate laws, policies and regulatory frameworks to ensure the safety of NETs. This includes drawing “red lines” where applicable, particularly for high-risk technologies, including those that may pose national security threats. When responding to such national security threats, however, governments must nonetheless comply with relevant human rights standards and principles including the customary prohibition on violating non-derogable human rights and limits on restricting any other human rights unless doing so is strictly necessary to tackle the national security challenge.

Regardless of whether such government frameworks are in place, private actors can (and should) also adopt self-regulatory standards, including industry-wide initiatives, to hold themselves to the highest possible standards. This can include self-imposed restrictions by companies or consortia of companies while developing or deploying certain technologies, or limits on research undertaken with respect to certain technologies by educational institutions.

NETs must always have a human-in-the-loop or some other design feature (a 'safety brake') that can prevent the spectre of a runaway autonomous technology. Such human control must be meaningful. In other words, human control or supervision must always be more than merely superficial involvement, for example a human pressing a button once virtually all other decisions have already been made by an automated system. Human operators of NETs must retain the prerogative for human intervention and independent judgements of an action's appropriateness or ethical legitimacy. Meaningful human control is necessary to pull the proverbial emergency brake if a technology spins out of control, to prevent or avoid any harms or unintended and unforeseen consequences, and to deal with nuances and unpredictable exigencies which humans may be better equipped to tackle than machines by virtue of our capacity for subconscious intuition, emotion, empathy, compassion and other quintessentially human subjectivities.

In the case of AI, ensuring meaningful human control over the technology can take a number of forms. First, of course, AI can be used to make mere suggestions to a human actor, who ultimately retains the ability to either accept or reject that automatically generated advice. This model leaves the human actor with the ultimate responsibility for how she ends up using the AI-generated content. Human control can also come in the form of guardrails built into an AI system, for example a large language model that is programmed not to generate instructions on bomb-making, for example (as is true in the new ChatGPT system), or one that redirects users to sources of support when they ask, for example, how best to inflict self-harm upon themselves (as is true in Google's search function). Human oversight can also consist of efforts to periodically review an AI system to ensure that it is still operating as intended, and of course by actively monitoring the flow and nature of grievances that may or may not be making their way through a grievance procedure established as part of the accountability and access to remedy principle (see below).

It is also necessary for actors using such automated decision making systems to be conscious of "automation bias" (the tendency to perceive AI-generated decisions as neutral, objective and accurate, and therefore authoritative) and for them to feel empowered to take active measures to overcome such bias. Such empowerment can only come about in institutional environments where individual (human) actors are not disincentivised to exercise their prerogative, where there is a certain acceptance that humans may sometimes make an incorrect judgment call but still play a useful oversight role over technology, and where the known risks of a NET are clearly communicated to those who would use those technologies, in terms that they are able to comprehend (see discussion of transparency below). A judge or a public official using the results of an AI system to make risk-assessments about a potential defendant, for example, should be well briefed of the dangers of inherent bias in AI systems before using such a system as part of a sentencing process. Rigorously training these human operators of NETs not just on the technicalities of using an NET, but also the ethics of relying too heavily on that NET, serves as a crucial aspect of ensuring the safety of NETs.

Processes Associated with Safety	
Guardrail Innovation	Safety requires adoption of a precautionary approach while developing and deploying new and emerging digital technologies and incorporation of safeguards or “guardrails” from the initial stages of innovation and design all through the technology lifecycle. It includes creation of internal features which act as “emergency brakes” within the technology to prevent and avoid harms. It also includes ensuring incorruptibility of the technology from external risks of hacking and misuse or abuse by bad faith actors.
Use Safeguards	Safety requires ensuring new and emerging digital technologies perform as intended. Stakeholders responsible for developing or deploying such technologies must have technological or procedural safeguards in place to ensure there is no “function creep” i.e. the technologies are not used for purposes other than the legitimate and intended aim that is specified.
Standardisation	Standards ensure safety, help establish guardrails and build trust in a new and emerging digital technology. Stakeholders including standard setting organisations, either on their own or through multi-stakeholder initiatives, can work towards establishing relevant industry or sectoral standards as minimum safety thresholds to be applied by those developing and deploying new and emerging digital technologies.
Meaningful Human Control	Every new and emerging digital technology must have a human-in-the-loop and such human control must necessarily be meaningful. This meaningful human control can be applied through the technology lifecycle including the decision-making, technological and operational stages and can be spread amongst different actors.

Accountability and Access to Remedy

Accountability demands for duty-bearers to be identified if they fail to meet their obligations with regard to an NET. It also involves the creation of viable procedures and mechanisms for “consequences” to be levied in cases of non-compliance or negligence. Accountability is a multi-faceted concept that includes the identification of duty-bearers and the delineation of their corresponding responsibilities. As described above in the description of the importance of conducting ongoing impact assessments, in line with the principle of non-discrimination and equality, accountability also requires ongoing monitoring and oversight activities to understand how people’s rights are being impacted by a given NET, and of course a procedure designed to provide effective remedies to any negatively affected individuals or communities.

States traditionally have been (and still remain) the primary duty-bearers within the human rights framework. They have the obligation to respect, protect and fulfil human rights within their jurisdictions at all times. Non-state or private actors, including corporations, are increasingly central to the realisation of human rights, however, as described in Chapter 1 of this paper. This is especially true with regard to NETs, where private actors often make the most crucial decisions in the development and deployment of those technologies. Private actors are therefore obligated, in line with the provisions of the UNGPs, to respect the laws of the States in which they operate (including laws designed to defend and promote human rights) but also to pursue their own corporate responsibility to respect and promote human rights.

Accountability mechanisms can be both formal (judicial) in nature, but can also include informal or less formal (non-judicial) mechanisms and processes. Part III of the UNGPs contain a description of what constitutes meaningful access to remedies.

The discussion distinguishes state-run judicial mechanisms from informal grievance processes, which can be further subdivided into those administered by the state (for example ombudsman offices or human rights commissions) and those administered by a private company or as part of an industry consortium.

State-based judicial mechanisms typically involve formal judicial institutions and processes. In first order, this refers to the State's formal courts, but can also include regulatory agencies and human rights mechanisms. Seeking accountability through such fora often involves litigating civil or private law claims, in which an individual or a community 'sues' another individual or legal entity over harms caused, and in which remedies might typically include financial compensation for those harms. Alternatively a complainant might petition a relevant regulatory agency to intervene in a certain dispute, and of course it may always involve criminal prosecutions by the States against individual wrongdoers if their pattern of misbehaviour rises to a criminal standard. Constitutional law, administrative law, or other regulatory frameworks also act as useful entry points for accountability and access to remedy through the formal justice system.

Non-judicial grievance mechanisms, both run by the State as well as other actors (ex: integrated grievance mechanisms within a corporate governance structure), can also act as important channels for accountability and access to remedy. The UNGPs detail a set of criteria that characterise an 'effective' non-judicial grievance mechanism (Article 31). These so-called "Ruggie Principles" hold that in order for a grievance process to be effective it must be:

a. **Legitimate:** enabling trust from the stakeholder groups for whose use they are intended, and being accountable for the fair conduct of grievance processes;

b. **Accessible:** being known to all stakeholder groups for whose use they are intended, and providing adequate assistance for those who may face particular barriers to access;

c. **Predictable:** providing a clear and known procedure with an indicative time frame for each stage, and clarity on the types of process and outcome available and means of monitoring implementation;

d. **Equitable:** seeking to ensure that aggrieved parties have reasonable access to sources of information, advice and expertise necessary to engage in a grievance process on fair, informed and respectful terms;

e. **Transparent:** keeping parties to a grievance informed about its progress, and providing sufficient information about the mechanism's performance to build confidence in its effectiveness and meet any public interest at stake;

f. **Rights-compatible:** ensuring that outcomes and remedies accord with internationally recognized human rights;

g. **A source of continuous learning:** drawing on relevant measures to identify lessons for improving the mechanism and preventing future grievances and harms;

And, in the case of operational-level grievance mechanisms, they should also be:

h. **Based on engagement and dialogue:** consulting the stakeholder groups for whose use they are intended on their design and performance, and focusing on dialogue as the means to address and resolve grievances.

These Ruggie Principles should apply also to any informal grievance processes associated with the deployment of NETs.

Given the transnational reach of many NETs, the international community might also consider the development of an international grievance mechanism, perhaps structured along similar principles, that can handle grievances where jurisdictional complexities might otherwise limit the ability of individual rights holders to access a remedy when they feel their rights have been violated. The international community may also consider leveraging existing institutions, mechanisms or channels by expanding their mandates, jurisdiction, and capabilities to handle grievance related to NETs.

Accountability is a broad concept that can also extend beyond adversarial strategies to 'nudge' stakeholders towards greater compliance with human rights principles. While there is an important and valuable role for adversarial accountability mechanisms, some accountability processes should also be designed to promote positive and value-creating constructive engagement opportunities between various stakeholders, outside of the more adversarial judicial processes described above. Creating these processes will incentivise multi-stakeholder (and multi-disciplinary) collaborations, in line with the overall objectives of the HRBA@Tech model. Such processes might be particularly relevant in the context of independent monitoring and oversight processes for purposes of accountability. Investors and donors, for example, can 'nudge' the actions of technology startups and publicly traded corporations towards human rights by incorporating human rights metrics into key performance indicators and contractual obligations, by insisting that corporations conduct rigorous due diligence and impact assessments, etc. Multi-stakeholder initiatives like the Global Networking Initiative, which requires member companies to undergo periodic reviews by independent analysts to assess the integrity of their due diligence activities, also serve an important accountability function, primarily by relying on the peer pressure of companies to jointly invest in the integrity of a certain 'certification' standard to legitimate their products in an effort to avoid free-riders undermining that standard. Accountability can also be promoted by means of a mix of mandatory or voluntary measures designed to raise the costs of non-compliance with human rights, while also offering tangible benefits for compliance. Such measures might include designing favourable regulatory environments for certain types of pro-social products or technologies, targeted subsidies or tax concessions for 'deserving' tech projects, the prioritisation of certain types of products or technologies in government contracts and public procurement processes, and export controls amongst others.

Of course, private and government actors will also want to promote internal accountability, searching especially for any systemic sources of bias that may produce consistently human rights violative outcomes. A failure to conduct such internal accountability audits would result in an unacceptably large risk of continual legal liability. Machine learning systems, for example, are known to sometimes produce biased outcomes, some of which might hypothetically arise because of latent bias among the its programmers. In such a case, accountability measures remedying only the (biased) outputs of such a system would be inadequate and unsustainable, since the bias would never truly be corrected for. Such a situation would require an internal forensic analysis to identify why a system produces consistently biased outcomes, a subsequent effort to correct for those root causes, and finally the institutionalization of processes designed to ensure that such biases no longer taint future technological innovations. Such forensic analysis necessitate either internal or external monitoring and oversight mechanisms, periodic reviews or audits by independent experts, participation in multi-stakeholder initiatives, robust grievance processes, and a good-faith commitment to follow-up on recommended remediation strategies.

Finally, it is crucial for there always be an addressee who can answer, justify or explain in response to a potential complaint. A technology cannot just exist independently – it must always be owned by some legal entity (a real or legal person). If a technology ever becomes completely autonomous (i.e., if it breaks free from its emergency brake and therefore fails the test of safety (see above, p.53), then the last legal entity to have exercised control over that NET would be the addressee and can be potentially deemed liable for any human rights grievances that may ensue from that technology gone rogue.

Processes Associated with Accountability and Access to Remedy	
Access to the Formal Justice System	Accountability and access to remedy, at the outset, requires having formal judicial institutions and processes in place. The domestic legal and justice system should be open and accessible to all stakeholders. Civil, criminal and constitutional law in addition to other regulatory frameworks can act as entry points for seeking accountability and access to remedy for any grievances that may arise as a result of the development and deployment of a NET.
Development of Accessible Non-Judicial Grievance Mechanisms and Processes	Governments, corporations, and other stakeholders of the international community should work to establish grievance mechanisms and processes structured around the Ruggie Principles (if they are non-judicial) that can be accessed by rights-holders who believe that they have suffered harm due to an NET.
Monitoring & Oversight	Government regulatory bodies, civil society actors, individuals and other relevant stakeholders all share the responsibility to engage in monitoring and oversight of those responsible for the development and deployment of NETs and in cases of potential negative human rights impacts and non-compliance with relevant laws, regulations or ethical guidelines– to use all available means to raise the alarm.
Constructive Problem Solving	All stakeholders have a responsibility to engage constructively in the search for viable solutions to promote accountability and ensure that individual rights-holders have access to effective remedies
Incentivization	Stakeholders must explore options – in addition to grievance mechanisms and procedures – to raise the costs of non-compliance with human rights standards and simultaneously incentivize pro-human rights behavior by those responsible for the development and deployment of NETs.
Clearly Identified Responsible Entity	For every NET, there needs to be a clearly-designated responsible actor, who assumes both legal as well as ethical responsibility to ensure that the technology is in full compliance with applicable human rights standards.

"MAKE THE WORLD A BETTER PLACE"

As described above, the HRBA@Tech model requires both the commitment to 'Do No Harm' as well as a more forward-leaning commitment to 'Make the World a Better Place.' This second pillar builds on a number of the aforementioned processes, but goes a step further by transforming them into a strategy to actively improve the world, with a particular focus on the most vulnerable in society. It thus draws on the thinking of those who do not consider technology to be neutral, and who thus see a moral and ethical imperative to nudge new and emerging technologies (in their non-neutrality) towards human rights and pro-social values.

Human Rights-Based Empowerment

Human rights-based empowerment means equipping rights-holders to better claim and enjoy their rights and equipping duty-bearers to better meet their obligations and responsibilities. As a process, empowerment entails capacity-building of both rights-holders and duty-bearers and also includes identifying and removing barriers that prevent the realisation of empowerment. Empowerment in the context of human rights treats rights-holders as active participants in the processes shaping decisions and policies that affect their lives instead of treating them as mere passive objects or recipients of aid or charity.[160]

Further, empowerment requires paying special attention to particularly vulnerable and marginalised groups, and includes other aspects such as access to relevant information, awareness and understanding of rights, meaningful participation and access to technology. In other words, the principle of empowerment is closely intertwined with the participation, accountability and non-discrimination principles of the HRBA@Tech.

States, as primary duty-bearers, have the obligation to respect, protect, and fulfil human rights. This includes not only negative obligations (i.e., to refrain from violating a human right or protect rights-holders from third-party interference), but also positive obligations (i.e., to secure effective enjoyment of human rights). NETs are increasingly being used by States to improve the efficiency of government systems, access and quality of public services, and in turn, the realisation of human rights. The pandemic, in particular, has accelerated digitalisation across areas such as education and healthcare, which prevented the spread of COVID and enabled the continuation of vital social, economic and other activities despite physical barriers. Digital technologies were central to COVID response around the world and continue to play a key role in post-COVID recovery of societies and economies.

While private companies do not have direct obligations under international human rights law (as opposed to States), they do have a responsibility to respect human rights, which would fall under the HRBA@Tech 'do no harm' pillar. Companies can also, however, choose to actively "make the world a better place" by contributing to the empowerment of individuals and communities through the provision of products and services that directly advance the realisation of human rights or provide rights-holders with the means to claim and enjoy those rights. Doing so would mean that the company has made empowerment a part of its business model, and implemented 'human rights by design' i.e., that it has explicitly prioritised the social benefits of technology. Stakeholders such as governments and international organisations can also actively facilitate and promote such socially beneficial technologies, either directly or by regulatory, financial, promotional or other means of indirect support.

Promoting empowerment under the HRBA@Tech model requires ensuring and expanding access to a particular NET and/or associated services to vulnerable and marginalised communities. These communities can use these technologies to more effectively self-effectuate themselves. Prioritizing such empowerment can, of course, be motivated by a charitable impulse, for example in line with a corporate social responsibility policy. But companies can also find ways to promote empowerment while still generating profits (so-called "social entrepreneurship" businesses models). Even though the profits associated with social enterprises might sometimes be more modest than those associated with strictly profit-driven models, social enterprises have the potential to flourish precisely because they tend to be less vulnerable to boom-and-bust business cycles, and also because they tend to enjoy stronger relationships with customers and affected communities. They are also less likely to fall afoul of changing regulatory environments, especially as policy makers begin to focus on the need to encourage more socially-beneficial business models.

Moreover, businesses with credible social entrepreneurship business models are becoming increasingly attractive to investors, thanks in large part to the growing Environmental, Social, and Corporate Governance (ESG) investment agenda. Governments, businesses, civil society and international organizations can promote a range of financial instruments designed to promote innovation by social entrepreneurs. These include social impact bonds, where a municipal authority or private enterprise premises the repayment of investor funds on the achievement of certain predefined human rights indicators, for example the reduction in poverty rates or a drop in prisoner recidivism rates as a result of the introduction of a certain NET. Social entrepreneurs (especially during their startup phase) might also pursue capital from impact investors (perhaps motivated by the ESG investment agenda), sustainability loans, or innovation funds, which earmark capital specifically for certain socially-beneficial business proposals. The availability of such funding options has grown substantially in recent yeas due to the high demand for green and socially-beneficial investment opportunities, as well as due to the robust financial returns for many such social enterprises. In 2020, for example, it was found that a majority of European-based ESG funds outperformed the wider market[161]. These initiatives can be supplemented by various other financial incentives favouring social entrepreneurship, for example in public procurement processes and government contracts, or through relevant collaborations and partnerships with international development organisations and financial institutions.

Inherent in the process of empowerment, of course, is the central agency of the rights holders themselves. Rights-holders frequently pursue their empowerment by means of community mobilisation. While the capacity for such community mobilization activities, resources, and access to key technologies may vary across communities, NETs themselves can often play a key role in that community mobilization process (as evidenced, for example, by the #BlackLivesMatter or #MeToo movements). Entrepreneurs seeking to develop technological tools that will support such community empowerment must understand how communities would use those tools to mobilise in favor of human rights. Digital technology tools centred on crowdsourcing initiatives and processes, for example, can also be powerful facilitators of community mobilisation. A prominent example of such a technology tool is Ushahidi (Swahili for "testimony"), which was created by a non-profit technology company based in Kenya that seeks to empower communities through its crowdsourcing platform. This platform is based on open-source software (which means other communities working can adapt Ushahidi's work and customize it based on the mix of issues they are working on). The software utilises user-generated reports to collate and map data that can subsequently used by communities and activists to advance social change.[162] Initially developed in 2008 as a tool to monitor and map post-election violence on the basis of crowdsourced reports of election incidents, the technology has since been adopted in a variety of different contexts, including by the UN in order to geolocate victims during earthquakes and other natural disasters[163].

A second crucial aspect of empowerment is capacity building. As mentioned already, this includes building the capacity of rights-holders (so that they may better claim and enjoy their rights) as well as duty-bearers (so that they may better satisfy the needs and entitlements of rights-holders). Capacity building is (by necessity) a collaborative process. It often requires the strengthening of institutions and having robust mechanisms in place to facilitate such capacity-building processes (for example strong bilateral institutions to manage international development aid flows). In the context of NETs, capacity building activities include, for example efforts to improve digital or medical infrastructure, and efforts to ensure the more widespread access, availability, and affordability of these services. It might also include equipping rights-holders, individuals or groups with the necessary literacy, skills and training to ensure that they can avail themselves of NETs should they choose to do so. Capacity-building also requires education in order to encourage awareness about relevant rights, responsibilities, and obligations. Educational institutions and civil society organisations can play a key role in this regard by encouraging interdisciplinary engagement to promote the language and logic of human rights. Multi-stakeholder collaborations can also serve vital capacity-building functions, particularly partnerships and networks that span across the Global North-South divide.

Closely related to capacity building is technology sharing and transfer. Empowerment also requires that stakeholders (governments, international organizations, and private corporations) make real efforts to bridge the digital divide at various levels: internationally but also amongst different sections of society within a State. Technical know-how about how to use NETs, as well as NETs themselves, should be shared liberally with developing or less developed States and communities. In addition, private enterprises in the Global North should consider forming partnerships with private enterprises in the Global South, protecting intellectual property while also working to spread the reach of socially-beneficial technologies globally. This is particularly true for technologies with an undeniably positive social benefit (for example vaccines). In such cases technologies should be shared with other actors, even if there is no clear 'market case' to do so. National governments and international organisations in particular have an important role to play in the facilitation of such technology sharing arrangements, and can work to expand technological innovations to areas where it might not be otherwise considered commercially feasible, for example in the development of certain vaccines for diseases impacting primarily poor and rural communities in the Global South, such as the Ebola virus, Polio, or Malaria. Open standards, open data and open source initiatives and approaches for socially beneficial technologies can serve as crucial enablers of such community empowerment.

Processes Associated with Empowerment	
Human Rights by Design	Those responsible for the development and deployment of a NET should explicitly consider prioritising the social benefits of an NET. Public actors should actively facilitate and promote such socially-beneficial technologies, through regulatory, financial, promotional or other forms of support, and private actors work to create business models that are explicitly built around the socially-beneficial aspects of new and emerging technologies.
Community Mobilisation	Community mobilisation is a process where the community takes the lead in an empowerment process designed to identify and address their human rights needs, and this process informs the empowerment strategy. Despite differences in resources and capacities, a community mobilisation effort requires the community itself (or the rights-holders themselves) to retain 'ownership' over key decisions regarding the development and deployment of NETs with the potential to impact them.
Capacity Building	Capacity building is a two-pronged process: (1) capacity building of rights-holders to better claim and enjoy their rights and; (2) capacity building of duty-bearers to better meet their responsibilities and obligations. In pursuit of these twin objectives, governments and other stakeholders must work to build the capacity of rights-holders to better advance their concerns, needs and rights claims. They must also build the capacity of duty-bearing entities to better respond to the rights-holders, including paying particular attention to vulnerable groups. This includes strengthening institutional frameworks and having robust mechanisms in place to accommodate capacity-building processes. It also includes education and sensitization about rights as well as responsibilities, and the facilitation of various multi-stakeholder collaborations, including between the Global North and the Global South. It also includes overcoming traditional siloes of thought and learning and to encourage interdisciplinary engagement amongst stakeholders, including educational institutions, to promote the language and logic of human rights.
Technology Sharing & Transfer	Empowerment requires efforts to bridge the digital divide at various levels. This includes transfer and sharing of socially beneficial technologies as well as technical know-how with developing and less developed nations, civil society organisations, financially weak private enterprises or any other entities with limited resources in order to enable them to harness the benefits of such NET and secure their operations. Where a certain technology has undeniably positive social externalities (for example, a novel vaccine to cure a pandemic) various stakeholders, notably States and international organizations, can collaborate to facilitate technology sharing and transfer efforts and arrangements and to work towards bringing such technological innovations to areas even when there may be no "viable market" for it. The use of open standards, open data, and open source initiatives for socially beneficial technologies can also be crucial in this regard.

Transparency

By their very nature, scientists, technologists, designers, managers, human rights campaigners, policy makers, and lawyers all have their unique way of speaking, interpreting, and reasoning. These patterns of interpretation and expression can be defined as the 'professional cultures' of these various vocations. In its 2021 report, the Human Rights Council Advisory Committee identified the differences between these varoius professional cultures as a significant barrier to the development of a more holistic human rights based approach to NETs. Transparency is therefore central to the development of a holistic understanding of NETs, and in turn to a proper and comprehensive assessment of the human rights implications of these technologies. Achieving such transparency entails creating access to relevant information, and ensuring that such information is understandable to a variety of audiences. This can pose significant challenges, especially in light of increasingly complex technologies impacting our societies, such as machine learning, genetic engineering, and some of the more complex ICT products discussed in Chapter 2. Greater transparency gives individuals and communities the information they need to seek redress in situations where they feel an NET has harmed their interests. A lack of transparency, therefore, can act as a major barrier to accountability. This is true not just for potential rights holders but also for the institutions that we look to in order to resolve our grievances. In 2020, for example, a Dutch court deciding a challenge to a predictive algorithm tool called "SyRI", which is used by the Dutch authorities to detect welfare fraud, noted that the failure by the defendants to disclose relevant information and the lack of transparency about the algorithm constituted a barrier for the court to effectively understand the workings of a new technology, and therefore a barrier to effectively address the plaintiff's claim.[164] In this way transparency is also closely tied to the accountability principle under the "do-no-harm" pillar of the HRBA@Tech model.

Transparency is not a concession to be made grudgingly in response to pressure or legal obligation imposed by lawmakers or judges. Rather, it is a voluntary and value-additive responsibility that those with a monopoly over information about how an NET works should exercise as a standard part of their efforts to promote and deploy the technology. We therefore refer to this as "proactive" transparency, to distinguish it from the more reactive type of transparency that might result from a court order, a law, or as the outcome of an embarrassing public advocacy campaign (naming and shaming).

Proactive transparency requires the voluntary disclosure of relevant information regarding the development and deployment of NETs.[165] It can also include retroactive disclosures (i.e., in response to being compelled to disclose some pertinent facts about an NET), but the focus is primarily on anticipatory disclosures, i.e., the periodic or regular disclosure of relevant information throughout the different stages of the technology lifecycle. Proactive transparency can pertain to the nature and working of the technology itself, but can also focus on the human decision-making that led to the development and deployment of the technology. This can include, for instance, decisions about the purpose specifications of the NET, whether there existed any credible alternatives that may have been less disruptive or invasive of human rights, the reasons for choosing one technical solution over another, and of course a range of other technology-specific considerations that may be of particular interest to technologists and ethicists with a background in that particular NET. In an AI context, for example, proactive transparency may require the disclosure of training datasets that were used to train an AI system, as well as the specifics of any guardrails that may or may not have been built into the system to prevent human rights violations. Proactive transparency can also create potential feedback loops and facilitate constructive stakeholder at different points of the technology lifecycle, which can help find sustainable solutions to particularly vexing human rights considerations.

Proactive transparency is particularly important in cases of a public-private collaboration in the development and deployment of NETs. An example might be a digital technology developed by a private corporation for use by municipal authorities in order to improve public services. In such a situation, proactive transparency would not be limited to transparency between the company and the government "customer" of that technology, but also the community or individuals who might potentially be affected by that novel technology. Thus, transparency would demand that the details by which the contract was awarded are made public, that the public should know about what data is being shared between the corporation and the municipal authorities, what provisions have been made to keep that data secure, whether and how the government can request data held by a private corporation (or the reverse), and the extent of the private actors' ongoing involvement in the operation of the system, among other relevant questions.

The right to information and corresponding freedom of information laws can be useful tools to ensure transparency related to the use of NETs, but usually only in the context of retroactive transparency. The HRBA@Tech model, in contrast, requires stakeholders to assume a more proactive posture towards transparency. To incentivise such an approach, governments can draft laws, policies, and regulatory

Empowerment requires paying special attention to particularly vulnerable and marginalised groups, and includes other aspects such as access to relevant information, awareness and understanding of rights, meaningful participation and access to technology.

frameworks designed to encourage proactive transparency, along the lines envisaged by the UNGPs. Such provisions might include disclosure requirements with respect to human rights due diligence processes and obligations to publicise the impact assessments for NETs and corresponding risk mitigation measures put in place to avoid negative human rights outcomes as a result of a newly-developed NET. Such transparency requirements, of course, must be limited by considerations of national security, intellectual property protections, and the right to protect trade secrets. And yet even in such situations governments can come up with creative institutional solutions to facilitate proactive transparency while also allowing businesses to profit from their innovations. Doing so, far from being a regulatory burden, will inure directly to greater societal trust of NETs, and increase the likelihood that NETs will be biased in favor of human rights.

Open standards, open data and open-source initiatives can also promote transparency.[166] Open standards refer to publicly available standards. Open data refers to information that can be freely accessed with an open licence (while securing necessary privacy protections). Open source is software with source code accessible by anyone and is based on the idea of collective ownership.[167] Technologists, academic institutions, civil society organisations and other relevant stakeholders can all join forces to develop socially-beneficial open-source and open-data tools, training sets, and benchmarks (such as impact or bias assessment tools), that can be shared with and used by other actors to evaluate and test their technology tools. Governments can also adopt an “open government” approach by leveraging such open data and open source initiatives and digital platforms to ensure greater transparency for citizens and access to relevant government information.

A major barrier to meaningful transparency is also the inherent complexity of many NETs, and the almost inevitable "black box aura" that tends to surround many such technologies for most lay people, especially during their early days. Most lay persons, even those who often jump to adopt new technologies when they first emerge, often lack the requisite technical competence, scientific literacy, or awareness to fully understand them. The complexity barrier cannot be overcome merely by adding more disclosure requirements to technology corporations. For transparency to be truly meaningful in such a context it must also be accompanied by intelligibility i.e. ensuring that the information provided is understandable to diverse audiences, irrespective of their technical or legal knowledge, and is accessible also in terms of format or language. At its core, transparency is also about translating technical standards and language into intelligible and comprehensible information that can lend itself to evaluation, also by those without technical insider expertise (for example by affected communities, policy makers, and human rights activists).[168] Translation ensures a better understanding of the logic and functioning of a new and emerging digital technology, which is necessary to effectively and comprehensively scrutinise the human rights impacts of such tools and also establish responsibilities and hold actors accountable.[169]

The process of translation would also, at a minimum, require technologists and other stakeholders to make themselves accessible to questions regarding the technologies they may develop or deploy. While it may be relatively straightforward to demand answers, explanations and justifications from human programmers of traditional digital technology tools, this is much less the case for complex NETs, such as machine learning, where the distance between the human in the loop and the actual decision making process is becoming more and more attenuated.[170] In such cases, the process of translation would also include being accessible to questions and available to provide explanations or justifications when needed regarding the workings and processes associated with a NET.[171]

Technologists, therefore, must prioritise the development of simplified and comprehensible translation strategies that enable meaningful transparency. In so doing, they should collaborate with non-technologists, for example with academics, policy makers, and human rights activists. An example of such an initiative is the creation of simple and standardized documentation describing datasets and algorithmic models that inform an AI system, which provides consumer with relevant information about the technology. These have been known by various names such as model cards,[172] factsheets,[173] datasheets,[174] or even data nutrition labels.[175] Translation in the case of complex algorithms and machine learning tools can also come in the form of providing counterfactual explanations, for example descriptions of what changes in the input data might have resulted in different or desirable outcomes. Such information could work to create greater transparency about the AI without necessarily needing to pierce the 'black box' of the AI system itself.

Google Cloud’s AI Explanations, for example, help understand how a machine learning model reaches its conclusions and why it made the decisions it did by providing summaries quantifying each input data factor’s contribution to the output decision.[176] Such simplified translations can, ensure meaningful transparency and also build trust in the technology.

Processes Associated the Proactive Transparency	
Disclosure	Transparency requires proactive disclosure of relevant information regarding the development and deployment of an NET, including information about its intended use and any direct or indirect effects of such use. Transparency applies both retroactively as well as proactively, requiring disclosures throughout the various stages of the technology life cycle. Governments should consider appropriate legal and regulatory frameworks for meaningful mandatory disclosure requirements as appropriate. In situations where public disclosures may not be possible (for instance, in case of national security), relevant information may nonetheless be made available to some centralized independent authority or entity, and governments should consider devising appropriate legal or regulatory frameworks for that purpose.
Translation	For transparency to be meaningful it must be intelligible to diverse audiences, regardless of their technological and legal knowledge. Technologists must translate relevant information regarding the development and deployment of NETs to ensure it is understandable and also accessible in terms of format and language. At a minimum, the process of translation requires technologists and other stakeholders to make themselves accessible to questions about technologies that they may develop or deploy and devise ways for such simplified translations. Stakeholders, by themselves or through collaboration with other stakeholders, can also engage in capacity building to improve technical literacy and skills amongst various actors to ensure intelligibility and meaningful transparency.

To be effective, other stakeholders must collaborate with technologists to create such translations. Consumers of NETs, government regulators, international organizations and standard-setting agencies, individual rights holders and their civil society representatives all have important roles to play in this process. First, they should of course progressively work to increase their own technical fluency with NETs, especially in the case of larger institutions that can afford to hire specialized resource persons. In dialogue with technologists and scientists, these outsiders can also work to promote the intelligibility of NETs to interested laypersons and affected communities. This is directly related to capacity building process described earlier under the empowerment principle of the HRBA@Tech model.

Participation

The HRBA@Tech model requires the owners, developers and deployers of NETs to solicit the active participation of those stakeholders who may be directly or indirectly affected by a NET and encourage their direct participation in crucial decisions about that technology. All people have the right to participate in any decision-making process affecting their human rights, and a human rights-based approach requires that such participation must be active, free and meaningful.[177] At the outset of a technology development process, participation can take the form of consultations with relevant rights-holders and stakeholders. As it may be virtually impossible to consult with all possible stakeholders in such a process, consultations should focus on the involvement of bona fide representatives and advocates of the relevant stakeholder groups, and stakeholders must make efforts to ensure that such representation reflects the true interests of the groups or communities being represented. For such participation and consultation processes to be meaningful, they must be structured in a way that they effectively facilitate bottom-up claims and adopt a collaborative approach to identifying and assessing needs. Participation is also truly meaningful when the inputs received in the process are meaningfully acted upon. Therefore, meaningful participation ensures for relevant rights-holders and stakeholders an active role and co-ownership over the processes that affect them. Participation, which in this sense is also directly related with the empowerment process, is crucial to achieving all the other principles of the HRBA@Tech.

Fostering participation requires an acknowledgment that power relations between the various stakeholders in a typical technological development process, left to themselves, are likely to be fundamentally unequal. In order to foster true participation, therefore, the balance of power must be actively pushed in favour of those stakeholders that would otherwise be less empowered absent a HRBA@Tech model approach.[178] To promote participation, duty-bearers or those with responsibilities towards the promotion of human rights (i.e., governments and private companies), must proactively seek out multi-stakeholder participation, both from external stakeholders (e.g., rights holders, communities) and also internally within the duty-bearing entity itself. We therefore again describe this as a "proactive" principle, not a reactive one. Proactive Participation requires that a range of stakeholders, including vulnerable and marginalised individuals and communities, be brought into decision making and consultation processes with a real potential to impact how an NET will be developed and deployed, not as a result of having been forced to do so but rather as a general ethical imperative.

Participation under the HRBA@Tech requires engagement with a range of stakeholders (for example the public sector, the private sector, civil society, academics, technical experts, industry interest groups, and international organisations and standard setting agencies). Moreover, this participation should span the entire technology life cycle, not just the most high-visibility points along that cycle (for example the moment when a technology company wishes to 'go public' and become a publicly traded company). Earlier, in our discussion of non-discrimination and equality (under the 'do-no-harm' pillar of the HRBA@Tech Model), we discussed the importance of harnessing the power of internal diversity in order to avoid bias. Proactive participation supplements such internal diversity, allowing for the fact that no organization, no matter how diverse its staffing patterns, can ever bring 'in house' the full range of stakeholder perspectives. It is particularly important in this context to seek the participation of vulnerable and marginalised communities in order to integrate cultural sensitivities and awareness into products and services, a process which has sometimes been referred to as 'diversity by design.'

Participation is crucial during the early stages of a NET's design phase (for example during an initial human rights due diligence audit or impact assessment). It is also important during later stages of a technology's lifecycle, where it can take the form of independent or third party audits, internal or external reviews, and other forms of accountability mechanisms. All of these processes provide avenues for the genuine participation of relevant stakeholders and communities that stand to be effected by an NET. Consultants, auditors, regulators, lawyers, and specialists tasked with conducting such reviews should make conscious efforts to incorporate participatory elements and processes throughout the NET lifecycle.

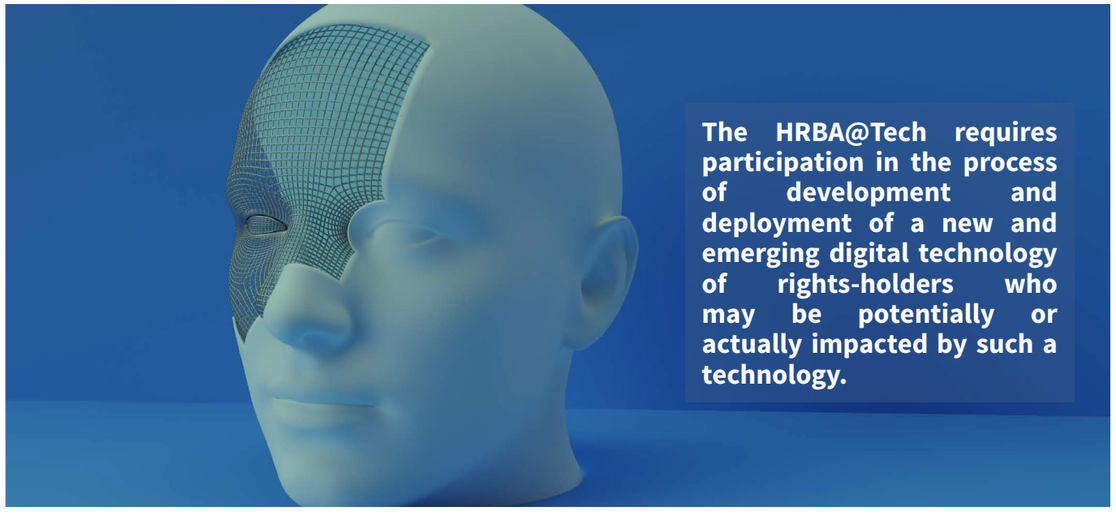
States should also encourage participation in the formation of their own regulatory approaches to NETs. Many states already rely on participatory process to craft policies, for example in environmental law. Applied to the HRBA@Tech model, participation requires public notifications of proposed new laws or policies pertaining to NETs, proactive solicitation of feedback on these policies from affected stakeholder groups, surveys, studies and interviews, consensus building, and other such related activities. In recent years, so called "regulatory sandboxes" (in which regulatory authorities partner with industries to co-craft meaningful regulatory frameworks that do not stymie the dynamism or creativity associated with NETs) have also been used to promote the participation of industry stakeholders in efforts to craft meaningful and regulatory frameworks.

Meaningful participation almost always requires expending significant efforts to overcome hurdles that otherwise prevent or chill effective participation. These include both "1.0 barriers" (such as language barriers, distrust of outsiders in many traditional communities, power differentials, and resentment about past instances of exploitation) as well as "2.0 barriers," mostly having to do with a lack of access to modern communication technologies or technical expertise. Overcoming 1.0 barriers requires a great deal of proactive effort, and dovetails with the strategies that have been honed by human rights and development experts over decades of hard-won experience. Here one things of "old-school" community engagement strategies, usually based on skilled experts actually consulting in person with affected communities. Overcoming the more modern 2.0 barriers tracks closely to our discussion of capacity building efforts associated with the principle of empowerment (see above). States, international organizations, civil society, educational institutions, and also the private sector can all join forces in efforts to overcome both 1.0 as well as 2.0 barriers to participation.

The private sector can also make efforts to engage with local stakeholders and communities that stand to be affected by their operations. Companies should do so from both a risk-management perspective (in order to avoid potentially costly or embarrasing lawsuits or public protests), but also in line with a commitment to "make the world a better place." This is particularly true in the case of tech companies behind transnational operations. Such companies have a particular obligation to ensure participation, even if that requires substantial efforts to engage in local languages or ensure that information about a NET is made available in formats that are understandable in the local context.

Achieving participation requires the formation of trust-based and collaborative partnerships across traditional stakeholder divides. Such multi-stakeholder (and multi-disciplinary) collaborations and partnerships, focused on dialogue, ensure that a plurality of perspectives are considered with regard to the development and deployment of NETs, and is vital for the HRBA@Tech Model to be truly holistic.

Processes Associated with Participation	
Consultation and Collaborative Needs Assessment	Participation requires consultations with rights-holders who may be potentially or actually impacted by an NET as well as other relevant stakeholders. Participatory consultation efforts can be initiated by those responsible for the development and deployment of NETs or the affected communities themselves. Regardless of who initiates the consultation process, they should be structured to facilitate bottom-up needs assessments. Furthermore, all who are involved in such consultation efforts should remain open to collaborative problem solving efforts. While such consultation processes must be open to traditionally vulnerable populations and their representatives, it can also include other individuals or groups based on local contexts and conditions. Participation should also include other forms of collaboration such as partnerships by public and private actors with educational institutions for participatory research and industry-wide or multi-stakeholder initiatives.
Representative Advocacy	Since it is usually impossible to involve all potential stakeholders in such participatory processes, usually there must be representatives and advocates who speak on behalf of affected stakeholder groups. Such representation can be ensured through the presence of advocates engaged in a participatory consultation effort (for example civil society representatives). It can also be ensured by increasing the diversity of the teams developing and deploying NETs within technology companies or scientific research teams. Regardless, all stakeholders have an ethical (and possibly also a legal or fiduciary) obligation to ensure that any such representatives remain accountable to the groups they represent and not the entities sponsoring or convening the consultation effort.
Multi-Stakeholder Dialogue	Multi-stakeholders dialogues are vital tools to ensure the holistic nature of the HRBA@Tech model. They must be designed to ensure the representation of a diverse set of perspectives in decisions pertaining to the development and deployment of NETs.



PROCEDURAL INTERVENTIONS (PIS)

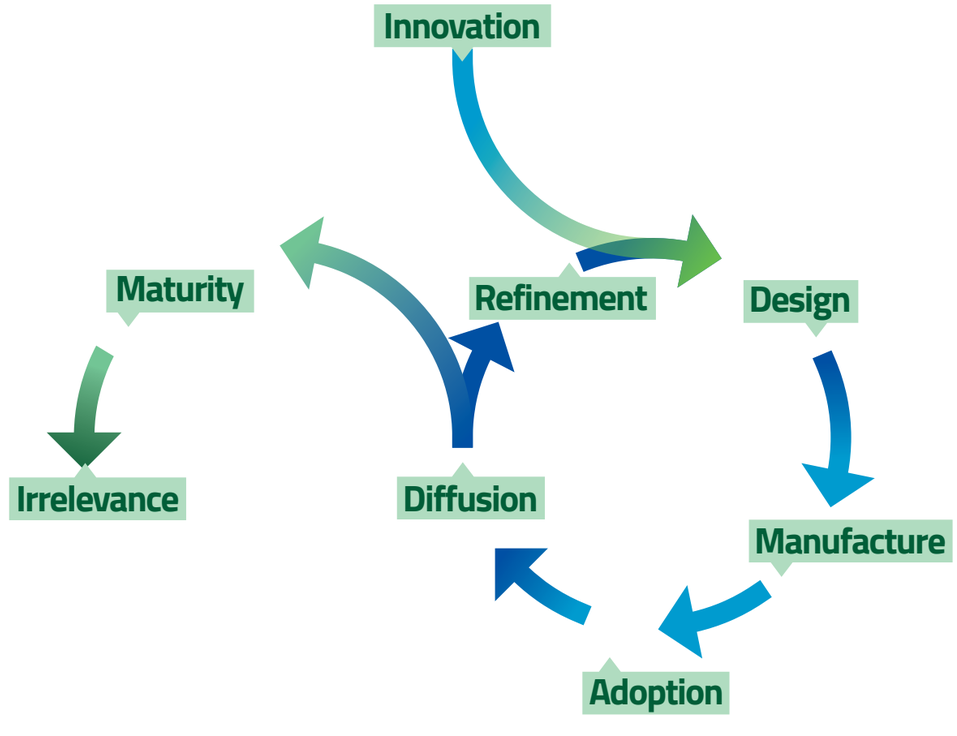
Legality	1A: Implementation of International Human Rights Norms
	1B: Policy Coordination
	1C: Mainstreaming Human Rights
Non-Discrimination and Equality	2A: Impact Assessment
	2B: Internal Diversity
Safety	3A: Guardrail Innovation
	3B: Use Safeguards
	3C: Standardisation
	3D: Meaningful Human Control
Accountability & Access to Remedies	4A: Access to the Formal Justice System
	4B: Development of Accessible Non-Judicial Grievance Mechanisms and Processes
	4C: Monitoring & Oversight
	4D: Constructive Problem Solving
	4E: Incentivization
	4F: Clearly Identified Responsible Entity
Empowerment of Vulnerable Populations	5A: Human Rights by Design
	5B: Community Mobilisation
	5C: Capacity Building
	5D: Technology Sharing & Transfer
Proactive Transparency	6A: Disclosure
	6B: Translation
Proactive Representation in Design and Implementation	7A: Consultation and Collaborative Needs Assessment
	7B: Representative Advocacy
	7C: Multi-Stakeholder Dialogue

CHAPTER 4
"THE HOW" OF THE HRBA@TECH MODEL

Chapter Summary:

This Chapter analyses "How" the HRBA can be applied throughout the lifecycle of an NET. Speaking in abstractions, we describe the lifecycle of an NET as being composed of eight phases: (1) innovation, (2) design, (3) manufacture, (4) adoption, (5) diffusion, (6) refinement, (7) maturity, and (8) irrelevance. The discussion in this Chapter highlights how the key principles and processes of the HRBA@Tech model can be actualized in the process of developing and deploying new and emerging technologies.

LIFECYCLE FOR NEW & EMERGING TECHNOLOGIES: FROM INNOVATION TO PRODUCT MATURITY



In analysing the 'How' of deploying our HRBA@Tech model across the entire lifecycle of an NET, we consider that there are eight phases to any NET lifecycle: (1) innovation, (2) design, (3) manufacture, (4) adoption or implementation, (5) diffusion or deployment, (6) refinement, (7) maturity, and (8) irrelevance. This model draws on traditional Technology Life Cycle (TLC) models, but adopts them from the perspective of the HRBA@Tech model, where the primary objective is to identify meaningful intervention points from which to 'nudge a technology into the direction of being more prone to support the realisation of human rights.

Not every technology passes through all eight phases of the TLC. Indeed, some (the majority, perhaps) go directly from innovation to irrelevance, either because they fail to attract the necessary start-up capital, or simply because they fail to convince those who would have to adopt the technology for it to become viable. Perhaps a technology is simply before its time, or – perhaps – it is simply not a very persuasive technology. Other technologies flourish, get adopted by numerous consumers, and then suddenly die off, either as a result of a changed market or simply because the initial psychological 'hype' that may have driven its take-off simply faded away again, for reasons that often have as much to do with the advent of a new technology as with the insatiable need of many to pursue the 'next big thing.' Finally, some technologies flourish but then they also evolve and mature into new cycles of innovation and technological development, perhaps fuelled by the initial success and the re-investment prowess of an innovator who understands that no technology –no matter how innovative– will last forever.

In this oversimplified model, the technology lifecycle typically begins with a flash of genius, an insight, or an innovation. This may, of course, be an oversimplification: in reality many such insights derive from or build on previous technologies (a process we describe as 'refinement' in the sixth phase of this model). Nonetheless there may be some technologies that literally start from zero. From this innovation phase, so-called 'founders' (the innovators, technologists, and entrepreneurs who originally own the idea) must first bring that product across the 'proof-of-concept' threshold. To do so typically requires a great deal of ingenuity, research, and marketing, which in turn requires resources. Hence, this period also usually requires a great deal of investment, since most new technologies are hardly economically viable. The classical TLC model describes this as the Research and Development Phase (R&D), but our model breaks it into three successive phases: (1) innovation, (2) design, and (3) manufacture. Particularly when it comes to the innovation and design phase of an NET, it matters a great deal if the founders' motivation is to make profits (a market-driven motive) or to make the world a better place (a socially-beneficial orientation). Depending on that baseline intention, different principles and different processes may apply to the development and deployment of a particular NET.

At this point our model reconnects with the classic S-curve model of the TLC, in that if and when a technology crosses the proof of concept threshold, it may enter the next phase of its lifecycle, which would be that of (4) adoption, where the demand for a technology skyrockets. Protected either by a temporary technological edge or by intellectual property (IP) protections (or both) the founders of profit-driven technologies generally tend to profit handsomely during this phase, and much of those profits go to grow the market. Founders of socially-beneficial technologies, on the other hand, begin to see the desired impacts of their NET during this adoption phase, when increasing numbers of users take up the technology. Eventually, however, competitors typically begin to offer credible alternatives to an NET, at which point the founders might need to focus either on diffusing the original technology into new areas of application or reducing the costs associated with bringing that original technology to new markets. We are referring to this phase as the (5) diffusion phase, since this is where some technology owners begin to explore joint ventures with other entities, expand the scope of what a technology can achieve, or focus on reducing the costs of the process used to generate that technology rather than the specifications of the technology itself.

At this point, our model (unlike many other TLC models) posits a fork in the cycle. Some founders are able to use the momentum, reputation, and potential profits of their earlier success to initiate a phase of (6) refinement, during which the company reflects on the presumed ageing and decline of its initial technology and identifies potential avenues for rejuvenated growth, perhaps premised on another new technological innovation. If successful, this refinement process then leads to a renewed TLC, leading back into the phases of (re)design, manufacture and so on.

Absent such a refinement phase, even the most exciting technologies tend eventually to (7) mature, at which point the technology returns to the initial innovation investment begin to flatten and taper, eventually leading to abandonment and finally (8) the complete irrelevance of a former technology.

The discussion in this Chapter highlights how the key principles and their associated processes in the HRBA@Tech model can be operationalised across each of these eight phases of the TLC.

INNOVATION

Every new technology begins with innovation - the sparks of scientific insight that come together after years of scientific research, the flash of ingenuity that strikes an entrepreneur, or the fruits of intense teamwork. Without innovation there can be no technological progress.

Innovation is also a fundamentally creative process. It relies on a determination that change can (and perhaps should) happen, and a self-assuredness that the inventor (or the technologist, entrepreneur, visionary etc.) can solve a confounding problem. This creativity can rarely be forced from above. While of course there are examples of State-run drives to accelerate innovation (for example the 'Manhattan Project' to develop the atom bomb during World War II, and the more recent 'Project Lightspeed' to develop an effective vaccine against the COVID-19 virus), those efforts tend to stand out as the exception rather than the rule. Moreover, a closer look at those State-driven efforts also reveals that they too relied on a rather permissive approach to innovation, recognising that success often depends on an embrace of non-conformist thinking, letting even 'crazy' ideas benefit from funding and support, even against the logic of typically conservative financial investment principles. For every vaccine created with the support of taxpayer funds, there were many others that never came to fruition. Notwithstanding, States can and sometimes do spearhead such scientific innovation drives, especially during a crisis situation, like a war or a pandemic, and are then particularly well-placed to help orientate innovation towards pro-social ends.

Typically, however, civilian technologies are not driven forward as a result of such a well-funded government push. Much more common is the approach of letting private innovators shoulder the risk of failure, but also incentivising them to do so by offering them the prospect of reaping the substantial rewards should their gamble yield fruit. Today's innovation is increasingly taking place in 'innovation hotspots', which are typically densely populated metropolitan areas in the Global North (including North America, Europe, South Korea, and Japan). Innovation hotspots usually depend on being open and interconnected with the rest of the world, and more specifically with other innovation hotspots. This collaboration and professionalisation is central to the process of innovation.[179]

WIPO reports that patents for new inventions and scientific papers are increasingly being co-authored by teams of international collaborators, stating that '[b]y 2017, lone wolf scientists had become half as important as they were 20 years before.'[180] The stereotyped image we may have in our minds of unkempt tinkerers, college dropouts, and non-conformist visionaries surviving on a diet of sugary drinks and cold pizza to create the next market-dominating technology is quickly becoming the stuff of legend and not reality. For the technology sector to sustain the same pace of innovation that has characterised the industry since the 1980s, it now needs to hire teams of researchers multiple times as large as would have been the case in previous decades.[181] At the centre of these networks are 'skilled individuals and innovative companies,'[182] buttressed by supportive policy environments and modern infrastructures, such as telecommunications networks and more traditional transportation infrastructures, that allow for easy access to global markets. They typically revolve around high-quality educational institutions churning out qualified workforces, and usually promise a decently high quality of life and open visa regimes to appeal to global workforces seeking jobs in the tech sector. This is not to say that 'lone wolf' entrepreneurs no longer exist. They do, but they too are now increasingly drawn to some of those same innovation hotspots where they can benefit from a critical mass of services that can help them realise their vision.

These innovations centres typically also draw a very significant portion of available investment. Venture Capitalists (VCs) concentrate the investing power of high-value investors and organisations into long-term support for entrepreneurs with a vision, usually on terms that would not be available from standard banks. VCs commit themselves to entrepreneurs ('founders') during the earliest stages of their path—when their ideas are still untested—and help them bring their ideas across the 'proof of concept' threshold. Individual founders benefit from the intellectual diversity and synergies that come about whenever a community of entrepreneurs conglomerate in one spot, thus, driving an ecosystem of innovation and invention. However, regardless of how dynamic and innovation-oriented such a hotspot may be, success is far from guaranteed for individual founders (or their investors). Overall, even after receiving grant funding, survival rates can be as low as eight per cent.[183] Done properly, VC investing requires a strong relationship, and a willingness on both sides of the investment equation to engage in open dialogue about how to successfully marry management considerations with the process of technological innovation.[184] The nature of this challenge requires VCs to carefully select the founders they work with, concentrating not only on the founders' ideas and business plans, but perhaps just as much on the kind of person they are working with.[185] Thus, VCs tend to spread their investments judiciously, prioritising quality over quantity. This same approach is also true for those VCs, often with a development mindset, operating outside of the 'innovation hotspots' mentioned above.[186]

Intervention Points:

Given the daunting nature of what it takes to bring scientific insight from the moment of innovation to 'proof of concept,' one might ask how reasonable it is for the human rights community to demand that human rights considerations be addressed already at this earliest phase of an NET's lifecycle. The answer depends on which of five categories a technology falls under, which can be determined by asking two separate but interrelated questions, summarised in the chart below.

<table>
<tr><th colspan="4">Categorisation of New & Emerging Technologies (Innovation Phase)</th></tr>
<tr><th rowspan="2">What purpose for the technology?</th><th colspan="3">Who bears the risk?</th></tr>
<tr><th>Individual innovators or scientists</th><th>Corporate sponsors</th><th>Government and non-profit academic sponsors</th></tr>
<tr><td>To make the world a better place:</td><td colspan="2">Category 1:
. Human rights should be at the heart of the business model, and founders should be held to a high standard to demonstrate how their technology will contribute to the promotion and protection of human rights.</td><td rowspan="3">Category 4:
. Human rights must be central to all government expenditures.
. Governments can experiment with technologies designed to harm people (e.g., military technologies), but only in line with human rights norms and consistent with an international normative presumption favouring the pacific resolution of all disputes.</td></tr>
<tr><td>To make money:</td><td>Category 2:
. Human rights considerations likely to be incentivised as part of a comprehensive risk-minimisation strategy for investors and founders.</td><td>Category 3:
. Human rights should be consistent with overall corporate ESG policies.
. Management has a duty to ensure early integration of ESG principles into all of its innovation investments.</td></tr>
<tr><td>To harm people:</td><td colspan="2">Category 5:
. Never justified without a government sponsor.
. Never justified if there is constructive or actual knowledge that the innovation will be used to violate human rights.</td></tr>
</table>

The first question is who (or what kind of an institution) is shouldering the principal risk of a potentially failed scientific or technological innovation process. From the perspective of lone wolf technologists and entrepreneurs (as well as the investors who support them), the innovation phase is a very fragile stage of an NET's lifecycle. Paramount during this phase for such 'founders' is the challenge, against great odds, of bringing an idea to fruition. While human rights considerations in such situations do not fall away entirely, it can be much less reasonable to expect founders to implement the full slate of human rights processes proposed in the HRBA@Tech model. Nonetheless, simple brainstorming processes around potential negative human rights impacts, designed to minimise the risk of a potentially disastrous public relations crisis, can make a tremendous difference in the ultimate viability of a technological innovation.

Meta (Facebook) is currently in the midst of a major corporate transition, renaming itself and reorienting its focus towards the Metaverse (an online social space designed to be more immersive than previous social media platforms). The company hopes this investment will ultimately pay major dividends, and by 2021 invested over 10 billion USD to develop the Metaverse. This period of 'innovation' could hardly be more starkly in contrast with the development of Facebook itself, which was started in 2004 by five college students working from their dormitories.

Even assuming that those five college students in 2004 might have dreamed that their invention might one day be used by 2.91 billion people, it would have been unreasonable to ask those initial innovators to conduct a full human rights impact assessment, consulting with (for example) millions of people from around the world to survey their needs and how social media might help support them. At most, one might have asked them how (for example) they might design a social media platform that would not obviously discriminate against or objectify its female users, or fall afoul of basic copyright or privacy protection laws.

Indeed, had Mark Zuckerberg and his fellow classmates had such conversations, they might have decided against an early version of Facebook based on a website called 'Hot or Not,' in which Harvard students were able to rank two randomly paired profile photos of their classmates against one another, generating cumulative 'scores' of who was most attractive in the class. This website, which was live for only a few hours but nonetheless caused major outrage among his classmates, also led to disciplinary proceedings that could have resulted in Mark Zuckerberg's expulsion from college.

Such early risk management conversations, however cursory, might also have dissuaded Facebook's founders from using data gathered by the website to hack into the private email accounts of journalists who had written critically about a business dispute Mark Zuckerberg had been involved in.

Such basic conversations, focusing on very predictable human rights vulnerabilities and privacy safeguards, could have prevented Facebook from committing those early blunders, and might also have set Facebook, as a whole, on a more socially-responsible trajectory in later decades, when it had grown into a global site linking billions of users.

Now, in 2022, Facebook (Meta) has grown to employ almost 78,000 employees. With Meta again investing in a new innovation period (this time into the Metaverse), the expectations of what Meta can reasonably do to ensure that its investments are in line with human rights standards are vastly greater than those that may have applied to Mark Zuckerberg and his college classmates in 2004. Today, Meta is leading discussions among civil society activists, academics, technologists, and policy makers around the world, asking them what they believe to be the biggest threats to Meta's investment plans and soliciting their input on how best to address those vulnerabilities. Meta presumably has small armies of lawyers checking compliance with every conceivable regulatory and legal standard that may apply to this NET, as well as specialised staff spanning the globe who can research local standards and interact with local stakeholders.

This example serves as a vivid illustration of how the size and capacity of the entity bearing the risk of a certain innovation matters in terms of how much can be expected of it within the HRBA@Tech model during the innovation phase.

This existential pressure is substantially mitigated when that innovation process is sponsored by a private corporation. In such cases, the risk facing individual technologists, scientists or entrepreneurs is much less acute, since they would be pursuing their work subject to a regular employment contract. Similarly, for the sponsoring corporation, the risk of any one scientific investment failing can be absorbed within a larger portfolio of similar investments, thus rendering the decision on whether to invest as a mere probabilistic investment exercise—part of a regular business cycle. For such larger and more established entities, the risks of failing to take the HRBA@Tech model seriously also grows more acute, since failure to do so risks tarnishing not just the NET but also the entire sponsoring organisation. Moreover, given the greater resources of such more established entities, it is also reasonable for society to have higher expectations of their ability to conduct a sophisticated human rights impact assessment as part of the regular NET innovation cycle.

The scenario changes again for governments and non-profit academic institutions, both of which can be expected to work towards the public good. Individual scientists, academics or students in such institutions are innovating in large part to further their personal career advancement process, incentivised to do so either because it is their job to do so, or (in a university environment) driven by brighter career prospects upon graduation or the promise of professional accolades as a long-term academic. For this latter category, society can again legitimately demand that their investment decisions should be driven not by the need to maximise profits, but rather by the desire to maximise socially beneficial outcomes.

Similarly relevant is the question of what purpose a proposed innovation might have. This report focuses on the development of technologies for civilian use, and so technically there should never (or only very rarely) be instances where a scientist or entrepreneur proposes an innovation whose intended purpose is to harm people or make them worse off. And yet, scientists often do contribute to efforts that – if successful – will very directly lead to the death or significant welfare destruction of certain intended victims. An early example might be Alan Turing's efforts during World War II to understand and decrypt Nazi Germany's 'enigma' enciphering machines. His efforts famously succeeded, leading the Allied war powers to more effectively target Nazi submarines and intercept military communications of German military planners more effectively. This technological innovation killed people, but of course it did so in the context of a national security crisis, and can therefore be justified as a matter of human rights and humanitarian law, as well as under most ethical codes. The same question arose in the context of the development of the atom bomb, where many scientists (including some who were involved in the Manhattan Project) began to question the ethics of the program once the strict military necessity of using the atom bomb became doubtful.

Drawing a sharp line between technologies that can be used by the military and civilian-use technologies is simply not possible. Technologies initially devised for civilian use may eventually trickle to military use and vice versa. Even today, many scientists and technologists receive irreplaceable funding and support from governments. Governments provide such funding as part of their efforts to secure their national security, attracting stakeholders from all sectors of the economy, including scientists and technologists who might not otherwise consider themselves to be members of the national security sector. In the United States, for example, the Defense Advanced Research Projects Agency (DARPA) reports that as a result of a 'half century' of investments into efforts to develop artificial intelligence, the US military has developed 'automated or machine-assisted surveillance and text understanding' capabilities.[187] The same publication also points out, however, that those same innovations are currently 'being operationalized by all major information technology companies (Google, Microsoft, Facebook, etc.) as the basis for new services and efficiencies, contributing significantly to their work with image recognition, speech translation, robotics, and facial recognition technologies.'[188] Google, Microsoft, and Facebook, as well as the individual scientists and technologists who later went on to develop those civilian-use AI technologies, are not typically thought to be part of the US national security apparatus, and yet their innovations are still inextricably intertwined with the State's national security initiatives.

Key in such discussions about the innovation of so-called 'dual use' technologies is whether the technologist knows or should have known that the technologies they are developing are being specifically to commit human rights violations (as distinct from merely 'normal' defensive or military applications for such technology). Under the HRBA@Tech model, individuals and corporations in such situations have a duty to decide for themselves if the government entities they are working to support respect human rights. This entails a basic level of due diligence, even at the earliest innovation phase. If an individual or corporate technology innovator 'know[s] that its actions will substantially assist the perpetrator in the commission of a crime or tort in violation of the law of nations,'[189] they can be found guilty of aiding and abetting in the violation of human rights. The bar for such aiding and abetting is fairly stringent, however, and would require showing not only that the technology is ultimately used in the commission of human rights violations, but rather that the individual innovator knew (or should have reasonably known) that the State sponsor would use it in such a way.

Of course, the vast majority of innovations—certainly in the civilian sector—presumably would not have as their primary or even indirect purpose to harm people. Instead, many technological innovations presumably would have as their purpose to generate profits, or perhaps to rethink existing processes to render them more efficient (which ultimately would also save money, even in organisations that are not devoted to profit generation, such as non-for-profit organisations or governments). Such innovations constitute a significant element of 'technological progress.' They contribute to wealth creation, and generate vast sums of profits, all of which can ultimately improve the livelihoods of those who produce and develop the technologies, as well as those who consume or use them. In that sense, the prevailing standard may be that they should be welcomed as long as they do not actively or inadvertently harm the human rights of vulnerable individuals or groups.

However, is it appropriate or prudent to insist on such safeguards already at the innovation phase? Opinions diverge, but the consensus among technologists as well as among investors seems to suggest that the primary means by which to introduce such terminology at this early stage might be through the language of 'risk mitigation.' In other words, the risks of a technological innovation failing are already so substantial—why would investors and founders compound that risk by ignoring potential human rights problems down the line, if those could potentially be avoided? Indeed—thinking more ambitiously, might it in fact decrease the risk of failure for an NET at the innovation phase if it were described not merely as 'not harming anyone's human rights,' but rather 'actively promoting human dignity and well-being?'

The final category of innovations, of course, are specifically focused on maximising social well-being. Here, the goal is not merely to 'do no harm,' but very explicitly to 'make the world a better place.' For such technologies to attract seed funding (from a VC or a sponsoring government), the innovators and entrepreneurs behind the technology would have to have a crisp and convincing logic of how their technology improves the well-being of target populations. In the case of for-profit venture capitalists, that case would have to be so convincing that the corresponding business plan to bring that technology to market would have to succeed not just despite its socially-virtuous focus, but perhaps precisely because of it. Thus, human rights considerations should be central to the innovation phase for such technologies, by for example, seeking inputs from the intended beneficiaries either through direct engagement with members of the target population or indirectly through their representatives such as civil society or any other relevant stakeholder

What then, are the primary strategies for encouraging the integration of human rights thinking at this earliest innovation phase? The chart on the following page illustrates the primary modalities, corresponding with each of the 5 categories described above.

DESIGN

During the design phase, technologists and entrepreneurs need to refine and bring the idea of a technology into fruition, such that it can realistically meet its objectives within the real-world environment where that technology is meant to operate (inter alia, the market, the natural environment, the human body, the sum-total of publicly available data on the internet). The design process seeks to maximise the chances that a product built on an NET will have sufficient appeal to the target audience such that they would be motivated to adopt it (in the case of process-based technological innovations) or buy it (in the case of new products built on an NET).

Intervention Points:

The design phase is one of the most important intervention points for injecting human rights considerations into an NET. At this point, after the kernel of a new technology has been developed but before the final form that a new technology will take has been ossified by virtue of a manufacturing process, human rights considerations can still be mainstreamed with relative ease into a new technology. The integration of human rights considerations directly into the design phase should happen for all types of technology (categories 1-5 in the chart above), regardless of the objective of a technology and regardless of who bears the ultimate risk for the development of that innovation. At a minimum, this design process should be focused on ensuring that the NET lives up to the 'do no harm' principle. As much as possible, designers should carefully consider how issues of security (see above, p.53) and non-discrimination and equality (see above, p.51) are mainstreamed directly into the design process.

Designers can do so by means of a futures thinking methodology, whereby they posit as a thought experiment that their technology has met all of its aspirational goals in the distant future (a 'what if' statement), and then reverse engineer the hypothetical progression of that technology from innovation to maturity (writing the 'history of the future').[190] Doing so enables the futurist designers to also posit what else would have to be true for a technology to meet those aspirational goals, and—in the process of doing so—identify potential human rights risks and hazards that might inadvertently or inherently be lurking in the technology's lifecycle, as well as potential human rights opportunities to leverage, especially for technologies seeking to "make the world a better place".

To sharpen their analysis from a human rights perspective, designers might start their analysis by thinking about the 'standard' categories of vulnerable populations, including individuals or communities who are vulnerable due to their tenuous economic status or geographic factors that make it difficult for them to access a certain new technology (for example poverty or extremely rural communities), age, poor health, or individuals who are physically or intellectually differently abled, individuals who face communication barriers with mainstream institutions they depend upon, and of course individuals and communities who face social or cultural discrimination based on, inter alia, their race, ethnicity, sex, gender preferences, political viewpoints, or health status, etc. This list is not exhaustive, and would need to be updated reasonably based on the particular dynamics of a community for which the technology is being designed.

For some technologies, especially those that promise to alter the way fundamental social, biological, cultural, or natural processes work, this futures methodology may also need to assess the impact of a technology on future generations of human beings. For example, in considering a project to develop general-level AI that exceeds human intellect and therefore would eventually eliminate the need for humans to become educated (since no matter how long we learn we will never outcompete the AI that will, from that moment forward, do all the thinking for all of humanity) a futures thinker might consider the intangible value of learning and discovery that future generations might no longer enjoy, and then (as a necessary second step) design safeguards into the technology itself to prevent those future generations from involuntarily being deprived of those fundamental aspects of what it means to be 'human.'[191] These are, of course, highly subjective discussions, which can greatly benefit from considerations of universal human rights norms.

If, for example, technologists decide to create a ride-sharing application in Abu Dhabi – the city with the highest foreign-born immigrant population in the world[192] – with the aim to eliminate all traditional taxi companies (a primarily profit-oriented technology falling into either categories 2 or 3 above), then a futures-thinking exercise might identify that travellers from foreign countries who have not previously installed the applications on their phones, those without online bank accounts or access to stable internet, and those who do not have or wish to have a mobile telephone would be virtually excluded from the market for taxi services in an entire urban area. This type of futures thinking (from a 'do-no-harm' perspective) would necessitate some consideration of how to address the rights of vulnerable populations (such as, immigrants, the poor, the elderly, and differently-abled persons who might be prevented from using cell phones) to continue accessing the services they depend upon to live in an urban environment.

This vulnerability analysis would of course also benefit from a proactive consultation process (and other forms of feedback loops), where those so-called 'vulnerable' communities are specifically consulted, either directly or through civil society representatives, to see how they might be impacted by a future technology. Assuming the technologists wish to not only 'do no harm,' but also 'make the world a better place', the designers can also consult openly with those vulnerable stakeholders on how the technology might even help them in the future, thereby increasing their level of well-being, not just leaving it the same. Of course, it is necessary that inputs from such vulnerability assessments and consultations are meaningfully considered and incorporated into the design and development of the technology. Having cross-functional and inter-disciplinary teams, as well as ensuring diversity of representation amongst the members of the team designing and developing the technology, can help integrate considerations of how the technology might impact various groups at an early stage.

The design phase is also when technologists can ensure that all aspects of security are considered including building relevant safeguards, to the extent possible, and in line with the potential risks of a new technology in the case of a lapse in security. At this stage, technologists must also be mindful of any relevant general or industry safety standards and ensure that the design of the technology complies with such standards. In case of automated systems such as AI tools, technologists should think about ensuring there is a "human-in-the-loop" and devise ways in which such human control can be meaningful. Similarly, designers can think of how to craft meaningful grievance processes that will ensure that individual rights holders can be assured of their right to a remedy if a new technology inadvertently does jeopardise their rights. Designers can also craft specific strategies (and proactive policies) detailing how and when their technology will be brought to underserved markets (technology transfer), either by virtue of licensing arrangements or proactive efforts by the company to extend those services even to areas where the market may not immediately make such an investment profitable.

HRBA@Tech Intervention Vectors in the Design Phase (For Technology Categories 1-5)	
Futures Thinking + Vulnerability assessment	How will a technology – if and when it reaches full maturity and adoption by all relevant audiences – impact the most vulnerable in society, and can those vulnerabilities be somehow lessened by means of concrete design innovations in the technology itself before it goes to manufacture? (Corresponds with 2A on p. 68: Impact Assessment)
Security Research	Careful stress-testing of the technology to ensure that there are no unintended consequences – even inadvertent or accidental ones – that could jeopardise the rights or well-being of impacted stakeholders. (Corresponds with 3A-D on p. 68: Guardrail Innovation, Use Safeguards, Standardization, and Meaningful human control)
Grievance Processes	Design of grievance processes that can accompany the technology and that can serve as 'hazard indicators' in cases when the technology does not meet its stated purposes or when the technology inadvertently leads to negative consequences for rights-holders. (Corresponds with 4B-D & F on p. 68: Development of Accessible Non-Judicial Grievance Mechanisms and Processes, Monitoring & Oversight, Constructive Problem Solving, & Clearly Identified Responsible Entity).
Technology Transfer	Technologists should already be thinking during the design phase how their technologies will be shared with underserved markets as part of the technology diffusion phase. This may be part of the company's future ESG strategy, but should be planned by design. (Corresponds with 5D on p. 68: Technology Sharing & Transfer).
Transparency	If the design team hopes to use the technology to actively empower vulnerable populations, it would need to first 'translate' the projected impact of that technology into terms that a vulnerable population can understand. (Corresponds with 6A & 6B on p. 68: Disclosure & Translation).
Consultation	Designers of NET should consult with vulnerable communities and any other potentially impacted groups to not only ensure that their technology 'does no harm' but that it also 'makes the world a better place.' (Corresponds with 7A-C on p. 68: Consultation & Collaborative Needs Assessment, Representative Advocacy & Multi-stakeholder dialogue).

MANUFACTURE (& REGULATORY APPROVAL)

The third phase of the TLC is the manufacturing phase. Each technology is different, and some technologies do not require physical manufacturing at all. Social media platforms, for example, might give rise to companies worth billions, but not manufacture a single product (except, perhaps, advertising t-shirts or other such merchandise with logos emblazoned on them). Other technologies are highly dependent on manufacturing, notably physical 'things' that we use to drive, fly, get healthy, play games, watch movies, listen to music, wear, or fight wars. For such physical objects, the logistics of the manufacturing process is a crucial element of bringing a product across the proof-of-concept stage. For still other technologies, notably the biotech industries, the 'manufacture' stage may also entail significant regulatory compliance and approval processes, which are often far more complicated than figuring out the logistics of manufacture.

Intervention Points:

The manufacturing stage is rife with numerous human rights intervention points, most of which are not unique to NETs at all. At the manufacturing stage, technologists must comply with the relevant laws and policies regulating various aspects of the manufacturing process including compliance with relevant quality control standards to avert potential product liability downstream, fair labour practices, responsible and ethical supply chain management, consumer protection regulations and supply chain human rights due diligence amongst others. Technologists must also ensure that there are internal policies in place to give effect to these regulatory safeguards, including incorporating requirements associated with ESG policies and procedures.

At this stage, companies can also make active efforts to ensure representation across supply-chains by diversifying suppliers and vendors. It is also necessary to ensure relevant monitoring and oversight mechanisms at the manufacturing stage to enable inspection of the manufacturing processes and avert any potential human rights abuses. Such a monitoring and oversight function can also be performed by civil society as independent observers, and technologists should therefore provide adequate channels of access to civil society. Companies must also establish internal grievance processes to enable employees working on such new and emerging technologies to file complaints or claims pertaining to any harm arising out of the process of developing such technologies and ensure access to meaningful remedy.

HRBA@Tech Intervention Vectors in the Manufacture Phase	
Environmental, Social, and Governance Policies	ESG policies and procedures should be built into the manufacturing phase of any NET. (Corresponds with 1C on p. 68: Mainstreaming Human Rights).
Supply Chain Management Policies	Responsible and ethical supply chain management policies need to be enacted in order to ensure that there are no negative human rights impacts at any stage of an NET's supply chain. (Corresponds with 1C, 2B, 4C-D, 5A-C & 7A-C on p. 68: Mainstreaming Human Rights, Internal Diversity, Monitoring & Oversight, Constructive Problem Solving, Human Rights by Design, Community Mobilization, Capacity Building, Consultation and Collaborative Needs Assessment, Representative Advocacy, & Multi-Stakeholder Dialogue).
Consumer Safety and Protection Policies	Policies protecting consumers are necessary for all NETs. (Corresponds with 3A-D on p. 68: Guardrail Innovation, Use Safeguards, Standardization, & Meaningful Human Control).
Fair Labour Practices	Companies developing NETs need to ensure that they have fair labour policies and that they are not violating the human rights of their employees. (Corresponds with 5A-C & 7A-C on p. 68: Human Rights by Design, Community Mobilisation, Capacity Building, Consultation & Collaborative Needs Assessment, Representative Advocacy, and Multi-Stakeholder Dialogue).
Establishment of Internal Grievance Processes	Internal grievance process for employees are necessary for any company working on an NET, so that its employees can file internal claims for issues such as discrimination or unlawful practices. (Corresponds with 4B & 4D on p. 68: Development of Accessible Non-Judicial Grievance Mechanisms and Processes, & Constructive Problem Solving).
Independent Monitoring	There should be independent monitoring of the manufacturing stage of all NETs, both internally and externally. (Corresponds with 4C on p. 68: Monitoring & Oversight).
Civil Society Involvement	Civil society should be consulted and involved in the manufacturing stage, whether as independent observers or other types of participants. (Corresponds with 5B & 7A-C on p. 68: Community Mobilization, Consultation and Collaborative Needs Assessment, Representative Advocacy, and Multi-Stakeholder Dialogue).

ADOPTION & MARKETING

Assuming the founders successfully clear the first three phases of the TLC process, they will have crossed the proof-of-concept threshold. At that point, assuming their planning was successful, their technology (or product(s) built on that technology) will be ready to be released into the real-world target environment. For many such technologies, this will be the market, where the founders hope to earn profits that will allow them to pay off their creditors and grow their business. For other technologies – those with a social mission for example – this may not be an open market but rather an environment where the technology will hopefully 'solve' a particular social or environmental problem.

Initially, only innovators and early adopters will use a new technology. At this point, the adoption of that new technology may be relatively sluggish, with only modest growth. Eventually, however, these earlier influencers and their (hopefully positive) experience with the new technology will then spur a much larger number of users (the 'majority') to adopt the new technology. At this point, the rate of adoption will skyrocket, with accelerating (exponential) growth. That phase is unlikely to last forever, however, since eventually competitors will crop up, new entrants will dwindle, and the technological adoption process will again level off and slow, with only a few remaining 'laggards' still adopting the technology. This start 'slow > accelerate > decelerate > stagnate' cycle is often described as the S-Curve of the TLC.

Intervention Points:

The adoption and marketing phase of the TLC also opens up numerous fairly obvious opportunities to intervene from a human rights standpoint. Some of these mechanisms can still be driven internally by the company or agency promoting the new technologies. Such processes include conducting ongoing due diligence and impact assessments, embracing ethical marketing strategies, engaging in outreach and consultation processes (including the active monitoring and oversight of internal grievance procedures), and adjusting technologies to ensure (as much as possible) that they are not used by unscrupulous third-parties for unjust ends, including by incorporating procedural or other use safeguards.

Given that the technology at this point will be very much out in the open, these internal safeguards will also be supplemented by various external human rights processes. These include various monitoring activities by civil society activists, regulatory scrutiny, and of course also judicial accountability in cases of illegal wrongdoing or negligence.

HRBA@Tech Intervention Vectors in the Implementation Phase	
Due Diligence	Developers of NETs should conduct ongoing due diligence to protect from (and correct) negative human rights of their product(s). (Corresponds with 2A on p. 68: Impact Assessment).
Ethical Marketing	Ethical marketing requires a focus on not only how the NET benefits customers, but also how it 'makes the world a better place,' by, for example, benefiting socially or environmentally responsible causes. It includes avoiding false or misleading claims or representations of the product. (Corresponds with 1C, 3B, & 6A-B on p. 68: Mainstreaming Human Rights, Use Safeguards, Disclosure & Translation).
Outreach & Maintenance of Grievance Procedures	Companies should conduct outreach to potentially affected communities and groups and maintain grievance procedures for anyone negatively affected by their products. (Corresponds with 6A-B, 4B, 4D & 4F on p. 68: Disclosure, Translation, Development of Accessible Non-Judicial Grievance Mechanisms and Processes, Constructive Problem Solving & Clearly Identified Responsible Entity).
Adjustments to Prevent Distortion	The necessary adjustments need to be made by those creating and marketing technologies to prevent distortion. (Corresponds with 3B on p. 68: Use Safeguards).
Naming & Shaming	Stakeholders such as civil society have the responsibility to disclose negative human rights impacts of NETs. (Corresponds to 5B-C, 7A-C, 4A-B & 4F on p. 68: Community Mobilization, Capacity Building, Consultation & Collaborative Needs Assessment, Representative Advocacy, Multi-Stakeholder Dialogue, Access to the Formal Justice System, Development of Accessible Non-Judicial Grievance Mechanisms and Processes & Clearly Identified Responsible Entity).
Regulatory Enforcement	Regulators must create appropriate frameworks for scrutiny of adoption and marketing processes and ensure adequate enforcement mechanisms and processes are in place. (Corresponds with 1A-C, 2A, 4C, 4E-F & 6A-B on p. 68: Implementation of International Human Rights Norms, Policy Coordination, Mainstreaming Human Rights, Impact Assessment, Monitoring & Oversight, Incentivization, Clearly Identified Responsible Entity, Disclosure & Translation).
Judicial Accountability	There must be judicial accountability for victims who suffer human rights violations at the hands of NETs. (Corresponds with 1A, 1C, 4A & 4F on p. 68: Implementation of International Human Rights Norms, Mainstreaming Human Rights, Access ot the Formal Justice System, & Clearly Identified Responsible Entity).

DIFFUSION

Numerous TLC models posit that at the point when a technology is about to reach maturity – in other words when the exponential growth of new users adopting a technology begins to level off – companies might have stronger incentives to enter into novel licensing agreements whereby they allow others to extend the technologies into new markets, perhaps adapting those technologies to serve new corporate agendas. For profit-driven technologies (categories 2 & 3 above), this process makes business sense, in that it allows the technology owners to enter into new and lucrative partnerships at the precise moment when their own profits from independently marketing the technology may be beginning to wane. For social entrepreneurs, on the other hand, such subcontracting and licensing arrangements might always make sense if it means that the impact of the new technology will be multiplied.

Intervention Points:

The diffusion phase also presents several opportunities for interventions from a human rights standpoint. In continuation of the previous stages, it is necessary for companies to conduct ongoing due diligence and impact assessments of the new and emerging technology. At this stage, it is also relevant for companies to carefully vet potential licensees, including governments, and take all other precautionary and reasonable safeguard measures prior to entering into a licensing agreement to ensure the technologies are put to uses as intended and not used to harm or commit human rights violations.

HRBA@Tech Intervention Vectors in the Diffusion Phase	
Vetting of Potential Licensees	Potential licensees of NETs must be thoroughly vetted to ensure that they will not use the licensed technology to harm others or commit human rights violations. While an 'owner' of any particular NET cannot ensure with complete certainty that a licensee will not use the NET in a harmful manner, licensors should engage in practices such as reviewing the human rights records of potential licensees (e.g., in the example of a government licensee, examine the government's human rights record) and the licensee's stated desired use of the NET. (Corresponds with 2A, 3B, 4E, & 7A-C on p. 68: Impact Assessment, Use Safeguards, Incentivization, Consultation and Collaborative Needs Assessment, Representative Advocacy, & Multi-Stakeholder Dialogue).
Due Diligence	After licensing or otherwise diffusing an NET, the owner (as well as the licensee) should conduct ongoing due diligence to ensure that the technology is not having any potential negative human rights impacts. (Corresponds with 4C-E on p. 68: Monitoring & Oversight, Constructive Problem Solving & Incentivization).
Installation of Technological Safeguards to Prevent Abuse	As detailed in Chapter 3, guardrails should be installed within any NET to prevent negative human rights impacts. (Corresponds with 3A on p. 68: Guardrail Innovation).

REFINEMENT

After a new technology has matured, the TLC, like all lifecycles, predicts the eventual demise of even the most exciting and revolutionary novel technologies. However, while the demise of one specific technology may be inevitable, a technology company (or an organisation making use of a particular technology) can stave off its own corresponding fading out by engaging in a process of reflexive self-analysis and refinement. The company formerly known as Facebook, for example, when faced with the gradual decline of its business model, decided to initiate (and is currently in the midst of) a major rebranding and refinement exercise, where it changed its name to Meta, developed a new product line of virtual reality headsets, and invested billions of dollars into the creation of worlds in the Metaverse, which it hopes will lead to a rejuvenation of the company.

Intervention Points:

Such refinement processes again offer up some unique opportunities for human-rights focused intervention points. Quite unlike the earlier Implementation and Diffusion phases, when technology companies (certainly those in category 4) tend to be focused primarily on the active promotion and marketing of their new technologies, during a refinement process companies tend to be very receptive to input, consultation and critical reflection. This is a time when technology companies tend to be openly welcoming of 'constructive feedback' from the human rights community, especially if that feedback suggests ways they might re-energise their product line and thereby also re-establish themselves as market innovators.

Thus, two primary vectors of influence present themselves, the first focused on internal efforts to solicit information, and the second focused on vetting those new ideas for their consistency with those human rights objectives, similarly to what one might have asked of a social entrepreneur promoting a category 1 technology during the innovation phase (with the crucial difference that as a well-resourced corporations one can expect much higher levels of sophistication during this phase of innovation than one might of a start-up).

HRBA@Tech Intervention Vectors in the Refinement Phase	
Renewed Round of Proactive Transparency and Consultation	Continue (and improve) transparency processes within the 'owner' of the NET, and engage in open and inclusive consulting with affected communities, and the human rights community in general, on how to improve the human rights impacts of the NET. (Corresponds to 5A-C, 6A-B, 7A-C & 4D on p. 68: Human Rights by Design, Community Mobilization, Capacity Building, Disclosure, Translation, Consultation and Collaborative Needs Assessment, Representative Advocacy, Multi-Stakeholder Dialogue, & Constructive Problem Solving).
Due Diligence	Due diligence must continue to be carried out during this phase to ensure that not only is the NET not having negative human rights impacts, but also whether there will be negative human rights impacts stemming from any potential or actual refinement of the NET. (Corresponds to 2A-B, 3A-D, 4B-D & 4F on p. 68: Impact Assessment, Internal Diversity, Guardrail Innovation, Use Safeguards, Standardization, Meaningful Human Control, Development of Accessible Non-Judicial Grievance Mechanisms and Processes, Monitoring & Oversight, Constructive Problem Solving & Clearly Defined Responsible Entity).

MATURITY

Assuming that a technology or the company or institution promoting that technology cannot reinvent itself by refining its technology, the adoption of a new technology will eventually peak and the product or technology will reach its maturity. If the technology is being promoted by a corporation, at this point the company will stop growing, and therefore begin to lose its appeal to investors and shareholders. Such companies might often seek to merge with other companies (to capture economies of scale or reduce inefficiencies), shrink their workforces, or otherwise try to cut costs in order to keep their profits growing. Eventually, however, the TLC model would predict that the technology's adoption rates will continue to shrink and eventually drop off altogether, oftentimes just as precipitously as they once grew.

In such situations, all an ethical technology company can do to remain consistent with the HRBA@Tech model is to plan for that downsizing in ways that do minimal harm to the human rights of those who stand to be impacted.

Intervention Points:

As always, companies in such situations should continue to engage in due diligence monitoring. Are there certain communities that stand to be disproportionately impacted by the gradual erosion of a technology, and strategies should be developed that will minimize these anticipated harms. Can the disruptions to the business model be mitigated somehow, perhaps by virtue of transparent communication strategies, gradual workforce reductions, and ethical re-investment strategies to ensure that the negatively impacted communities can invest in reskilling activities? These are some of the difficult questions that managers of such technology companies should ask themselves as they reach the maturity phase of a technology.

HRBA@Tech Intervention Vectors in the Maturity Phase	
Due diligence	As with other phases, due diligence must continue to be carried out, and also adapted to the Maturity Phase. (Corresponds with 2A & 7A-C on p. 68: Impact Assessment, Consultation & Collaborative Needs Assessment, Representative Advocacy & Multi-Stakeholder Dialogue).
Ethical re-investment strategies	When considering ways to reinvest re-invest resources (whether financial or other), companies or other 'owners' of NETs must evaluate the ethical implications of that reinvestment and carry out ethical investment strategies. (Corresponds with 1C, 4E, 5C, 5D on p. 68: Mainstreaming Human Rights, Incentivization, Capacity Building & Technology Sharing & Transfer).
Transparent communication	Companies and other 'owners' of NETs must engage in a transparent manner with stakeholders and the public in general. (Corresponds with 6A-B on p. 68: Disclosure & Translation).

IRRELEVANCE

Finally, at the very end of the TLC, a given technology will eventually become irrelevant. At this phase, the company will have either reduced significantly or gone out of business entirely, and most of its workforce will have likely already moved on to other industries.

Intervention Points:

At this point, the HRBA@Tech model suggests only that a company can still engage in planned obsolescence and redundancy planning.

Managers should ask themselves what they can do to help transition departing workers from a gradually decaying company to other industries. What can be done to help sustainably recycle any old and no-longer-relevant physical products that relied on the increasingly irrelevant technologies? Is there data or other irretrievable goods that need to be salvaged or be lost as one underlying technology fades into the past? From a human rights perspective, these considerations must not be neglected as part of the final wrapping up process of an enterprise associated with a dying technology.

HRBA@Tech Intervention Vectors in the Irrelevance Phase	
Planned Obsolescence & Redundancy Planning	Consider any potential negative human rights impacts from the obsolescence of an NET, as well as how to sustainably recycle or salve any goods or technologies. (Corresponds to 5A, 1C & 7A-C on p. 68: Human Rights by Design, Mainstreaming Human Rights, Consultation and Collaborative Needs Assessment, Representative Advocacy, & Multi-Stakeholder Dialogue).

CHAPTER 5
"THE WHO" OF THE HRBA@TECH MODEL

Chapter Summary:

This Chapter highlights the role that different stakeholders play within the HRBA@Tech model. It explores the rights, obligations and responsibilities of these actors, and also discusses the sources of influence or leverage that they can wield or enjoy as they apply the model through the TLC described in Chapter 4.

This Chapter describes the HRBA@Tech model through the lens of stakeholders. It describes the rights and obligations, as well as the roles and responsibilities that each of these categories have across the TLC, as well as the ways that multi-stakeholder coalitions can form to ensure that NETs serve to respect, protect and fulfil human rights.

The Chapter is framed at an abstract level. A technologist might, for example, see a major distinction between the CEO of a corporation and an individual engineer employed by that corporation, and yet both of those individuals would be described in this chapter as falling under the umbrella term "private sector." Similarly, all of us are individual rights holders, not only the CEO and the engineer, but also a worker at a technology factory, a consumer of an innovative technology-based product, and also an indigenous person in a community that barely has access to NETs. Moreover, individual rights holders often also have some notion of 'community rights,' for example related to a community's right to development or the right of a marginalized community not to be harassed or exposed to representational harm by unchecked hate speech on social media or biased AI systems.

The chapter is organised with the State and the individual arrayed at the edges of a spectrum. This model is taken from introductory political philosophy, which theorises the reciprocal social contract between States and individuals as the basis for political society. Thomas Hobbes (1588-1679) theorized States (Sovereigns) and individuals entering into a mutual contract – the individuals ceding their unfettered freedom and agreeing to respect the Sovereign's authority in exchange for the State (Sovereign) providing a sense of safety to all of its subjects (individuals). Thus—so the theory goes—States work to protect and promote the rights of its citizens in exchange for their allegiance and taxes. In a healthy political system, the individual's expectation of safety (having his or her individual human rights protected) is matched by a corresponding State obligation to safeguard those rights. Similarly, the individual owes the State a duty to respect laws and regulations and generally behave in a more 'civilized' manner than would have been customary in the State of Nature. In the more modern language of our current era, this reciprocal relationship between a State and an individual also requires individuals to assume a personal duty of care (ethics) towards the plight of others with whom they share a community. Thus, the language and logic of rights and State obligations, which exists primarily between a State and an individual, is supplemented by a parallel and complementary language of responsibilities, which flow like a supportive ether between private individuals, groups of individuals (communities), and other entities and institutions.

In societies, a number of institutions have come to intermediate these relationships, most at the behest of those original two stakeholders. States, for example, created international organisations like the United Nations, thus delegating some of their State functions to these international institutions. Similarly, individual rights holders also sometimes transfer some of their authority to civil society organisations in an effort to better claim their rights, have their interests represented or take action on their sense of responsibility towards others. Individuals, in order primarily to earn a sustainable living, cede personal freedoms to private employers, who – in an echo of the original Hobbesian contract between a State and an individual – again owe their employees a certain duty of care (and a salary). Educational institutions educate a future generation of scholars and professionals, but also feel a sense of responsibility to inculcate pro-social and sustainable values into its students. Each of those institutions "in the middle" have some mix of rights, responsibilities, and obligations flowing towards other stakeholders in this matrix.

In this chapter, we highlight only four such institutions:

1. The UN and other International Organisations;
2. Civil society;
3. The Private Sector, including Technology Companies;
4. Educational institutions.

Surely, more categories could be imagined, and these existing ones could be subdivided into a near-infinite kaleidoscope of increasing complexity. We will leave such exercises to analysts with a more specific focus on certain technologies, access to certain points within the Technology LifeCycle (TLC), and a better idea of potential resources they might mobilise in favour of the HRBA@Tech model. Any more detailed stakeholder analysis will likely need to push beyond these rudimentary six categories, breaking some down further according to the functions played by different sub-groupings. This analysis, by necessity, would be more context specific than the one contained in this chapter.

STATES

States are traditionally at the centre of the international human rights framework. They are the primary duty-bearers who are vested with the obligation to respect, protect and fulfil human rights. This obligation entails that States must not only refrain from directly interfering with the enjoyment of human rights (i.e., do no harm), but also ensure protection from interference in the enjoyment of human rights by third parties. States act as the indirect enforcers of private actors' moral and ethical responsibilities towards one another. However, a State's commitment to human rights also entails the important obligation to proactively facilitate the enjoyment of human rights. A State cannot simply rest idly in the knowledge that its citizens' enjoyment of human rights is not getting worse; it must actually work proactively to make that situation better. This constant striving to protect and promote human rights is not a sign of a dysfunctional state, but rather the sign of a healthy one that functions as it should. As we have repeatedly stressed throughout this report, this means States also have a duty to harness the enormous potential of NETs to improve human well-being. Unlike private companies, States have always had the duty to "make the world a better place" through the steady and determined promotion of human rights.

With regard to NETs, States must ensure adequate and effective protection of human rights by devising relevant legal and policy frameworks that reflect the changing realities of ongoing technological developments. This requires States to constantly build their own capacities as duty-bearers in order to better meet their obligations to respect, protect and fulfil human rights in the context of NETs. They can do so by fully implementing relevant recommendations from international human rights mechanisms, establishing National Mechanisms for Implementation, Reporting and Follow-up (NMIRFs), and actively engaging in dialogue and cooperation at international level to share best practices in addressing the human rights implications of NETs.

States must establish and adopt appropriate frameworks that translate international human rights norms into locally-relevant laws, policies and practices for the promotion and protection of human rights during the development and deployment of NETs. This includes devising strategies to regulate or otherwise incentivise private companies to prioritize a focus on human rights throughout all stages of a TLC. Regulatory approaches can take the form of mandating human rights due diligence or impact assessment requirements, including requirements for such due diligence to be ongoing throughout the TLC as well as instituting transparency and disclosure requirements and corresponding mechanisms to track compliance. It also includes developing robust and accessible accountability mechanisms to redress grievances related to the development and deployment of NETs.

To do this, some States may wish to create new institutions. Others may prefer to strengthen existing institutions and regulatory bodies (for example data protection authorities or national human rights institutions). Ensuring accountability requires States to have in place accessible formal judicial mechanisms as well as informal or quasi-judicial dispute resolution, monitoring and oversight mechanisms and processes. States can also ensure accountability through a range of additional regulatory and governance efforts, including a mix of mandatory and voluntary measures. These might include the creation of incentive structures designed to raise the costs of non-compliance with human rights principles while offering tangible benefits for those actors who attempt to hard-wire human rights priorities into NETs (for example by embracing an HRBA@Tech model). States can create such incentives, by providing financial support to explicitly pro-social entrepreneurs or by easing the administrative burdens on NETs with a promise to 'make the world a better place'. Ensuring effective accountability also requires taking proactive steps to capacitate civil society actors to perform their crucial monitoring and accountability function.

States increasingly recognise their responsibility to protect their populations from influential corporate actors, especially those responding only to market-based incentives. To craft truly effective regulatory frameworks based on the HRBA@Tech model, States must proactively engage and build the capacity of all stakeholders (including civil society) to promote knowledge of, and buy-in to, the HRBA@Tech model, and to ensure that there is sufficient technical expertise at all levels of society to promote and protect human rights in the context of NETs. For this to happen, all stakeholders (not just States) will need to overcome a trust deficit that tends to posit the interests of one stakeholder category against those of the others. States, however, are in a unique position to convene multi-stakeholder dialogues and coalitions that offer the best chance for building that trust and creating a more collaborative and multi-stakeholder approach to NETs.

Additionally, States themselves frequently make use of NETs for various purposes, for example to improve the functioning of government systems, improve the quality and accuracy of public services, advance national security, and advance the realisation human rights. In this capacity, States themselves can play an important precedent-setting role when they embrace the HRBA@Tech model whenever they develop or deploy NETs as many States already do. These are welcome developments that can greatly improve State capacities to improve the well-being of their populations. The HRBA@Tech model provides a viable roadmap for States to hold themselves to the same high standards they should also expect of private actors operating in their territories.

In order to implement not just the "do no harm" pillar of the HRBA@Tech model but also the "make the world a better place" pillar, States must actively facilitate and promote socially-beneficial technologies. They can do so by providing various forms of assistance, including regulatory, financial, promotional, or other forms of support. States should promote socially beneficial technologies after carefully vetting how such NETs would work to "make the world a better place," and only upon ensuring that such technologies do not, even inadvertently, harm people or violate human rights standards. One promising way to do so can be through the creation of "regulatory sandboxes," which promote innovation while enabling entrepreneurs to test their potential technologies for any issues including safety or bias, thus preventing human rights harms while also specifically promoting technological and regulatory dynamism.

States must also build their own capacity to embrace a holistic understanding of technology (embracing both the promise of NETs while simultaneously guarding against unintended human rights downsides) as well as a holistic approach to human rights (embracing both classical human rights concepts, language and institutional strategies while also engaging with other communities with their own established ethical standards). Whenever possible, states should adopt a learning mindset (as per the recommendation of the UNSG's High-Level Panel on Digital Cooperation in 2019). Such a commitment requires that States engage in multi-stakeholder cooperation, as was also recommended by the Advisory Committee. This can mean leveraging technical expertise internally by facilitating coordination between various departments or ministries within the government, and bridging gaps between centres of technological and human rights expertise. This can also mean engaging externally with other stakeholders, particularly the tech community, international organisations, civil society, and educational institutions. Governments can incentivize collaborations, partnerships or multi-stakeholder dialogues. They can (and should) hire experts to close any potential knowledge gaps which may prevent them from effectively crafting appropriate policies to 'nudge' NETs towards the direction of human rights. Finally they should open their inward-focused capacity-building efforts also to other stakeholders to promote awareness about the language and logic of human rights as well as the specifics of the technology sector.

States must also cooperate to develop, at the international and regional levels, binding as well as non-binding normative frameworks for the protection and promotion of human rights in the context of NETs. They can do so by creating new instruments or expanding and clarifying the scope and application of existing ones to NETs. The Human Rights Council provides an ideal forum for such human rights normative development, and States should fully leverage this space to consider the human rights implications of NETs in a manner that minimises selectivity and politicisation.

One of the recurring themes throughout this policy paper has been the inherent potential of some NETs to have disparate impacts on differently situated populations, often by entrenching and accentuating existing social inequalities. States have the primary obligation to address such inequalities. In the context of NETs, States should assess and systematically mitigate these direct and indirect discriminatory effects. This requires, as an initial matter, having laws in place that prohibit discrimination on the basis of traditionally protected characteristics or any other characteristic as per local contexts or conditions. It might also require adding additional protected classes of individuals to be shielded from discrimination, such as whether one has access to certain technologies or whether one wishes to exempt oneself from using a particular NET. States must ensure equitable access to the benefits that NETs provide by bridging the digital divide at various levels. Governments must ensure that vulnerable population groups and entities such as financially weak private actors or small enterprises with limited resources or civil society organisations nonetheless have access to opportunities that NETs provide, and that they can harness the benefits that flow from them. Governments can do so by engaging in capacity-building, securing equitable access to digital infrastructure, and by promoting literacy and technical skill-building for rights-holders to better claim and enjoy their rights in relation to NETs. Governments must also work to deploy NETs in order to improve their own functioning as well as the quality and access of public service delivery and dispensation.

In doing so, governments must ensure that they embrace the HRBA@Tech model into its own development and deployment processes for those NETs.

In an interstate context, States, especially developed, middle-income or upper-income States should consider actively supporting technology transfers and engage in genuine efforts to share the benefits of scientific progress internationally. This can be done in the context of bilateral or multilateral development aid, and might involve capacity building, technology transfer, as well as a reformed approach to Intellectual Property protections that often serve to prevent such knowledge transfer. As the world painfully witnessed during the global COVID-19 pandemic, failures to equitably share the fruits of scientific knowledge (i.e. vaccine nationalism) ultimately made everyone worse off.

States also have an obligation to ensure the general safety of NETs. States can frame relevant laws and policies for that purpose, drawing appropriate ethical "red lines" where applicable, for example by strictly restricting or banning the development and deployment of certain technologies that may be especially high-risk. This obligation requires states to create institutions designed to promote transparency and engagement. States must also encourage standard-setting efforts at the national, regional and international levels to guide the design, development and deployment of such technologies. Such standards should be crafted in a form that technologists can use to evaluate their NETs, complementing abstract standards with concrete processes and quantifiable metrics. States must establish relevant regulatory authorities to monitor and oversee the development and manufacturing of such NETs in adherence with relevant standards and ensure quality control. States especially can ensure that the discussions over how to craft these regulatory standards embrace a holistic approach to technology, human rights, and governance.

THE UNITED NATIONS AND OTHER INTERNATIONAL ORGANISATIONS

The UN and other international organisations play a key role in advancing the global development of human rights norms and standards in relation to NETs. Such institutions convene the world's expertise and diplomatic voice and facilitate the gradual emergence of authoritative and widely embraced norms, policies and better practices. While such normative development processes tend to be slow, sometimes frustrating, and subject to the interests of States, the importance of international organisations lies in their convening power. They can take up an important issue like this one and consistently bring together various stakeholders to systematically identify consensus positions on how best to address global challenges. The UN and other international organisations provide key platforms for multi-stakeholder engagement and cooperation, which are crucial for devising and informing holistic strategies on how to balance competing interests in the field of NETs and human rights. International organisations have a particular obligation to ensure that traditionally vulnerable or marginalized communities are represented in these multi-stakeholder discussions, either directly or indirectly through civil society actors. International organisations should actively build the capacity of such vulnerable communities, either by themselves through their development activities or in collaboration with relevant local stakeholders such as governments and civil society. Finally, as with all other operations, international organisations should be mindful of geographic representation in this field, drawing expertise not only from the developed world but also the Global South.

International organisations like the UN and others are often noted for their complex bureaucratic structures, many of which seemingly duplicate functions in several different organs. In some situations this can be confusing, but in others it can also be an asset, as different organs competitively jostle for relevance and gradually drive forward a cross-sectoral discussion on important issues. The labyrinthine institutional structures of the UN can drive forward a range of discussions on the human rights implications of NETs. This should include the international human rights mechanisms and in particular, the Human Rights Council, which is tasked with coordinating the UN's human rights activities. The Special Procedures falling under the mandate of the HRC and the various Treaty Bodies are key drivers of human rights normative development. To-date, however, the international human rights mechanisms have not always been able to effectively translate the human rights normative framework into clear policy prescriptions to address the implications of NETs (though significant progress has been made). While this may require the normative development of human rights law (a question far beyond the scope of this report), it certainly implies strengthening the capacity of existing human rights mechanisms to clarify the application of human rights law to various technological contexts.

Efforts must also be made to mainstream human rights, its language and logic, within international organisations and agencies dealing with aspects of NETs. Certainly several Treaty Bodies and some Special Procedures have addressed the human rights implications of technological developments. Nonetheless, these mechanisms, along with others like the Universal Periodic Review, could begin to work to develop more actionable recommendations related with regard to human rights and technology. International organisations must also integrate the expertise of international human rights mechanisms, including the OHCHR and other technical bodies, to ensure greater policy coordination of activities amongst the various organs and agencies. Doing so will close potential knowledge gaps (or prevent them from opening) and ensure that human rights and NETs are handled holistically at the international level. Standard setting organisations, in particular, can play a key role in developing relevant safety and other standards to guide the design, development and deployment of new and emerging technologies and to ensure they are directed towards the protection and promotion of human rights. In doing so, they should draw on the expertise and insights of international human rights mechanisms and bodies.

The international community should consider the establishment of a new Special Procedure, such as Special Rapporteur or a Working Group, with the mandate to explore the paradox of technology and human rights in greater detail and further delineate concrete recommendations for the better protection and promotion of human rights in the context of NETs. Various Special Procedures, Treaty Bodies, and other human rights mechanisms have discussed aspects of NETs, they have done so within their usually more narrow thematic focus, and have rarely engaged with the human rights implications of NETs in a more general and overarching way. This could only be achieved, we argue, by means of a designated mandate to that effect. Such a mandate for NETs would give a qualified expert or set of experts access to channelized resources, logistical and diplomatic support to undertake research and consultative activities, as well as the opportunity to undertake extensive fact-finding, consultation and consensus-building processes with various stakeholders. The outcome of such a mandate – at least in the short term – could be to elaborate a human-rights based approach (perhaps building upon the HRBA@Tech model presented in this report) to the development and deployment of NETs.

The UN and other international organisations can also act as vital sources of information for states and other stakeholders. Relatively small teams of substantive experts, supported by a small but competent secretariat, can stay abreast of the rapid developments and complex science that usually characterises technological innovation, and dedicate themselves to the sharing and promotion of knowledge as well as any best practices of how best to deal with associated human rights challenges (or capture human rights opportunities). They can disseminate information to provide guidance to private actors/companies, especially the tech community, to better incorporate and operationalise human rights in the development and deployment of new and emerging technologies. The work of the OHCHR's B-Tech Project is very relevant in this regard, as it already provides guidance on the application and implementation of the UNGPs in the technology context.

International organisations can also engage in capacity building by means of directly providing technologies or supporting digital infrastructure, technical know-how, expertise, and other forms of resources and assistance to various actors for them to better leverage and harness the benefits of NETs while also mitigating associated human rights risks. International organisations can facilitate technology sharing and transfer arrangements amongst countries to promote equitable access to socially-beneficial technologies. This is especially true less-developed and low-income countries, where such activities would actively promote progress with regard to the Sustainable Development Goals (SDGs).

Lastly, international organisations, including the UN, can also better leverage NETs to improve their operations in the achievement of their mandates and "make the world a better place." In doing so, international organisations must themselves also embrace the HRBA@Tech model.

CIVIL SOCIETY

Civil society includes a range of organisations and entities at various levels of governance, including general human rights organisations as well as specialised non-profit groups focused on technology and human rights. It also, of course, includes less explicitly human-rights or technology-oriented groups that nonetheless engage with these themes based on their particular institutional orientation. Civil society plays a key role in the advancement of human rights, particularly as a bridge between rights-holders and duty-bearers. Civil Society plays a crucial role in representing the interests of vulnerable communities and ensuring that the voices of their constituencies, who may face countless barriers to effectively articulate their needs or participate in decision-making processes, are nonetheless heard by decision makers. In the context of new and emerging technologies, this can include engaging with both public (State) actors, but also private actors, such as tech companies and various other stakeholders.

Civil society must actively participate in multi-stakeholder efforts to govern and regulate new and emerging technologies for the better protection and promotion of human rights. Civil society often already does (and should continue to) actively forge networks, partnerships and collaborations bridging the Global North and Global South divide. Civil society actors already do (and should continue to) engage with all possible mechanisms where the development and deployment of NETs are discussed in order to better represent their constituencies and interests. In doing so, civil society must ensure they advocate for the interests of the constituencies they represent, and that they work towards the realisation of those communities' goals. This requires civil society to make itself accountable to its constituencies. It also requires that they embrace a community-centric approach where communities are involved in the co-design of advocacy goals, empowerment strategies and intervention approaches.

Civil society must also actively engage with all other stakeholders through relevant partnerships and collaborations. This requires, of course, that other stakeholders (such as governments, companies and international organisations) must ensure the open access of civil society into the institutions, mechanisms, processes, and fora where decisions with respect to the development and deployment of new and emerging technologies are made. This requires the creation of participatory platforms and processes, including the frequent use of open-ended consultations, the inclusion of civil society representatives into policy making processes or directly into regulatory and governance frameworks, opportunities for monitoring, oversight, and active engagement in human rights due diligence and impact assessment processes, amongst other initiatives.

Finally, Civil Society organizations should seek out the support of other stakeholders in order to themselves benefit from NETs so that they too may better secure their operations and harness the power and efficiency of NETs, putting them in the service of their constituencies and their interests. Civil society, subject to their resource constraints, can leverage NETs to improve their operations while ensuring adequate safeguards, such as robust privacy and data protections for the communities they represent.

PRIVATE SECTOR INCLUDING TECHNOLOGY COMPANIES

The private sector is the primary driver of technological and scientific innovation today, and is therefore central to the development and deployment of NETs. This includes "tech-giants"—major corporations often with annual profits rivalling GDPs of mid-sized developed economies—but also other tech companies of various sizes including start-ups. The ecosystem of private actors associated with NETs also includes other entities, including commercial banks, wealth managers, venture capital firms and international development organizations. As digital technologies have transformed virtually all sectors and areas, NETs are increasingly an integral component of the business models of a range of companies, not just tech companies. Private actors are compelled by market pressures to 'out-innovate' their competitors and keep churning out 'the next big thing', as failure to do so can lead to the decline and eventual obsolescence of even the most innovative of businesses.

Private actors typically exist to generate profits. The HRBA@Tech model in this report is built with this reality in mind, and attempts to balance these competing interests while ensuring that the development and deployment of new and emerging technologies is nonetheless better positioned to protect and promote human rights. While private actors do not have direct obligations under international human rights law, over the years there has been growing recognition of the crucial role they play in the advancement and realisation of human rights and the need for corresponding responsibilities leading to efforts to accommodate private actors within the international human rights framework. In this regard, the UNGPs provide an authoritative framework for the corporate responsibility to respect human rights and a reference point for companies involved in the development and deployment of new and emerging technologies.

In light of the truly transformative potential that new and emerging technologies hold, this report suggests that a "do no harm" approach is no longer sufficient. The HRBA@Tech model described in this report suggests moving beyond the UNGPs to embrace the possibility of actively crafting NETs to put them in service of human rights, or – to put it simply – to "make the world a better place." The HRBA@Tech model recognises the interests and constraints faced by private actors, and acknowledges that the promotion of human rights must always be weighed against the prerogative to continue generating profit. The HRBA@tech model need not be antithetical to the interests of private actors and companies or incompatible with most existing business models.

Private enterprises can incorporate various processes within the HRBA@Tech model directly into the TLCs of NETs, either on their own or jointly with other stakeholders. At the outset, private actors must comply with the processes structured on the UNGPs and must have human rights policies in place making formal and explicit commitments to relevant human rights standards. For those enterprises intending to develop socially-beneficial technologies, human rights policies should also highlight the intended human rights objectives of such a technology and the proposed roadmap for achieving them. Entrepreneurs promoting such technologies should embrace a "human rights by design" process. The HRBA@Tech model recommends conducting human rights due diligence and impact assessments to ensure that the new and emerging technologies do not, even inadvertently, harm people. It also requires paying special attention to those constituencies that may be particularly vulnerable to the impacts of NETs, including those who may wish to opt out of its use. Private actors must conduct human rights due diligence right from the initial stages of the innovation and design of NETs. Impact assessments are important at the early stages of an NET's development in order to anticipate potential human rights impacts of the technology, but also essential later on its TLC to assess the actual impact of that technologies once it has been embraced more widely. Such assessments should focus in particular on whether there has been any disparate impact of an NET on vulnerable or marginalized groups and communities.

It is necessary for companies to adopt a futures thinking mindset throughout the development and deployment of new and emerging technologies. This is particularly important during the earlier phases of a TLC, when the impacts of a technology are still relatively unknown. Private actors at this phase can devise and adopt appropriate risk mitigation measures for upstream prevention of human rights harms. This requires that private actors ensure the safety of proposed NETs by ensuring the incorporation of safeguards or guardrails including "emergency brakes" during the design stage.

Private actors must also be cognizant of relevant general or industry standards, including voluntary codes of conduct, and ensure that any NETs they promote have been designed and developed in adherence to such standards. In case of technologies involving automated systems such as AI systems, private actors must also ensure that human control over the technology remains meaningful, even while embracing the considerable upsides of such technologies. Subsequently, companies should also ensure that the technologies they develop are also used by others (subcontractors, clients, consumers, and licensees) in ways that are consistent with their intended use. Private actors can achieve this through both legal (contractual) as well as technological means. Companies should carefully vet potential licensees, including government clients, and take reasonable measures to ensure that such users are not obviously seeking to use the technologies to harm or commit human rights violations. While no actor could ever guarantee that an NET would not be misused by another user, it is reasonable to expect that they conduct basic due diligence to that effect..

Private actors must also make proactive efforts to be transparent about NETs (and their expected impacts on other stakeholders) throughout the various stages of the TLC. Private actors must be willing to openly share their knowledge with all relevant stakeholders seeking to gain a more holistic understanding of the potential human rights impacts of NETs, including those who might potentially be impacted by such technologies. Private actors should proactively seek to close knowledge gaps with respect to NETs and regularly disclose information (to the maximum extent possible under applicable laws and standard business practices) about technologies they develop and deploy.

Private actors must work towards making transparency meaningful by translating relevant information to ensure it is understandable and that it is particularly accessible by those potentially or actually vulnerable to the impacts of a technology. In so doing, they should work with other stakeholders, such as educational institutions and civil society organisations. Transparency efforts are most meaningful when private actors have put in place feedback loops to solicit inputs from relevant stakeholders. Such processes are especially relevant at the earlier and refinement stages of a TLC. In addition to technical and operational aspects, such transparency should also extend to the trail of human-decision making surrounding the development and deployment of a new and emerging technology. Companies must always ensure that someone is designated to answer questions and handle potential complaints regarding the development or deployment of an NET.

Companies must also have in place grievance mechanisms structured in line with the principles detailed in the UNGPs, in addition to other monitoring and oversight avenues. This will help companies track the processes associated with the development and deployment of NETs. Such monitoring must be ongoing throughout the TLC, and should always be connected to mechanisms that can alter or (if necessary) completely suspend the function of an NET if monitoring suggests that serious human rights impacts are occurring as a result of an NET. Private entities should be open to the role of other stakeholders, including the State, civil society organisations, educational institutions and other right-holders that also play important roles in those monitoring, oversight and accountability functions.

EDUCATIONAL INSTITUTIONS

Few other institutions in society are structurally as well-positioned to engage with a variety of stakeholders in a range of collaborations and partnerships as are educational institutions. Educational institutions tend to fall between the cracks of the other stakeholder categories. They can be state-run or private, but are generally spaces where independence of thought is prioritized. Educational institutions provide a service (education) that serves the public interest, and yet they cannot typically be classified as civil society. Education institutions are, thus, distinct stakeholders. Moreover, they play a key role under the HRBA@Tech model.

Academic institutions—including but not limited to institutions of higher education—provide optimal environments for multi-disciplinary engagement. It is here where disciplinary gaps between professional cultures are most likely to be bridged. Educational institutions can address structural issues relating to systemic knowledge gaps, where different professions simply lack the proper terminology and technical understanding to understand what is being asked of them by another stakeholder. If engineering students, for example, never take a human rights class during university, it becomes much more difficult for them to later think about how the technologies they are working on may one day contribute to (or undermine) human rights. Similarly, if law students never get an opportunity to learn about technologies or engineering during university, it can lead them also to lack a holistic understanding of the technologies and issues involved in this discussion.

Educational institutions should make active efforts to break free from disciplinary silos and encourage cross-disciplinary engagement. This can help narrow the knowledge gap between the human rights community and the tech community. In addition, universities can act as social connectors, bringing together students (decision-makers of the future), the private sector, and policy makers. They can also cultivate international networks with peer institutions, engage with government actors and civil society representatives. Educational institutions are optimally suited to facilitate knowledge sharing and fruitful discussions, especially across various stakeholder groups. In service of "learning" and education, such venues also constitute an important catalyst for consensus building. Educational institutions with diverse student populations can ensure that various perspectives are represented in these discussions about human rights and new and emerging technologies.

Interdisciplinary opportunities for research, collaboration, and partnerships are crucial to ensure that ethical and human rights concerns migrate "upstream" into the research and innovation process that gives birth to NETs. As one group of medical ethicists described in the context of 3D bioprinting (promising the 3D printing of human organs), "the way in which science policy and research funding are stimulating biofabrication in general, and specific lines of research within bioprinting in particular is fundamental."[193] These authors described a trend towards Responsible Research Innovation (RRI),[194] which consisted of the alignment of "research and innovation to the values, needs and expectations of society, which requires that all actors, including civil society are responsive to each other and take shared responsibility for the processes and outcomes of research and innovation."[195] Specifically, this "means that scientists and their social sciences and humanities counterparts are working together in research projects or centres to continuously interact and influence each other's thinking and the framing of the new technologies and their applications, while also connecting to societal actors and different users and publics."[196] Educational institutions must adopt such a responsible research approach with respect to NETs and think about how the research might be potentially used (or misused) by various other actors. Educational institutions should consider adopting a precautionary approach vis-à-vis particularly controversial technologies (as many have done with regard to geoengineering), and drawing red-lines around others (for example imposing strict limits on certain types of research, for example genetic engineering on human embryos).

Education institutions can contribute to both the "do no harm" and "make the world a better place" pillars of the HRBA@Tech model through their research initiatives and agendas. Educational institutions produce vital research to inform the development and deployment of new and emerging digital technologies, right from the initial stages of the TLC. Universities are also frequently interdisciplinary places, allowing a built in mechanisms for multi-stakeholder and multi-disciplinary discussion that is usually absent in other institutions.

Universities are also optimally suited to generate socially beneficial technologies, since many students are highly idealistic and not yet driven by a profit-motive. Faculty and researchers at such educational institutions can provide skilful guidance and research advice to promote a 'human rights by design' mindset among students and young entrepreneurs.

Other stakeholders can partner with educational institutions to design and develop NETs, taking advantage of these dynamics in a mutually beneficial exchange between young students hoping to gain experience and more established institutions hoping to benefit from their energy and passion. This process can lead to technological innovations, but it can also inform new legislative proposals, policies, and processes with respect to these technologies. States and technology corporations can include educational institutions in crucial monitoring and oversight mechanisms, drawing on their independent expertise as a crucial safety guardrail. They can structure co-design strategies where technologists collaborate or partner with education institutions at the very outset to design and develop an NET.

Educational institutions can also play a key role in devising relevant technical standards, benchmarks, metrics, indicators or other tools of measurement to properly assess the human rights impacts of new and emerging technologies. They are also particularly well-situated to contribute to capacity-building in terms of providing education and training to improve digital literacy and skills and can directly engage in capacity-building activities themselves or support various other stakeholders in their capacity-building efforts.

INDIVIDUAL(S)

The final category deals with individuals. In classic political theory, "individuals" are typically equated either to citizens or potential human rights claimants (as "rights-holders").

Under the HRBA@Tech model, a rights-based understanding of an individual's role would only describe half of an individual's role. The other half has to do with an examination of the reasonable responsibilities that individuals also play in the context of new and emerging technologies.

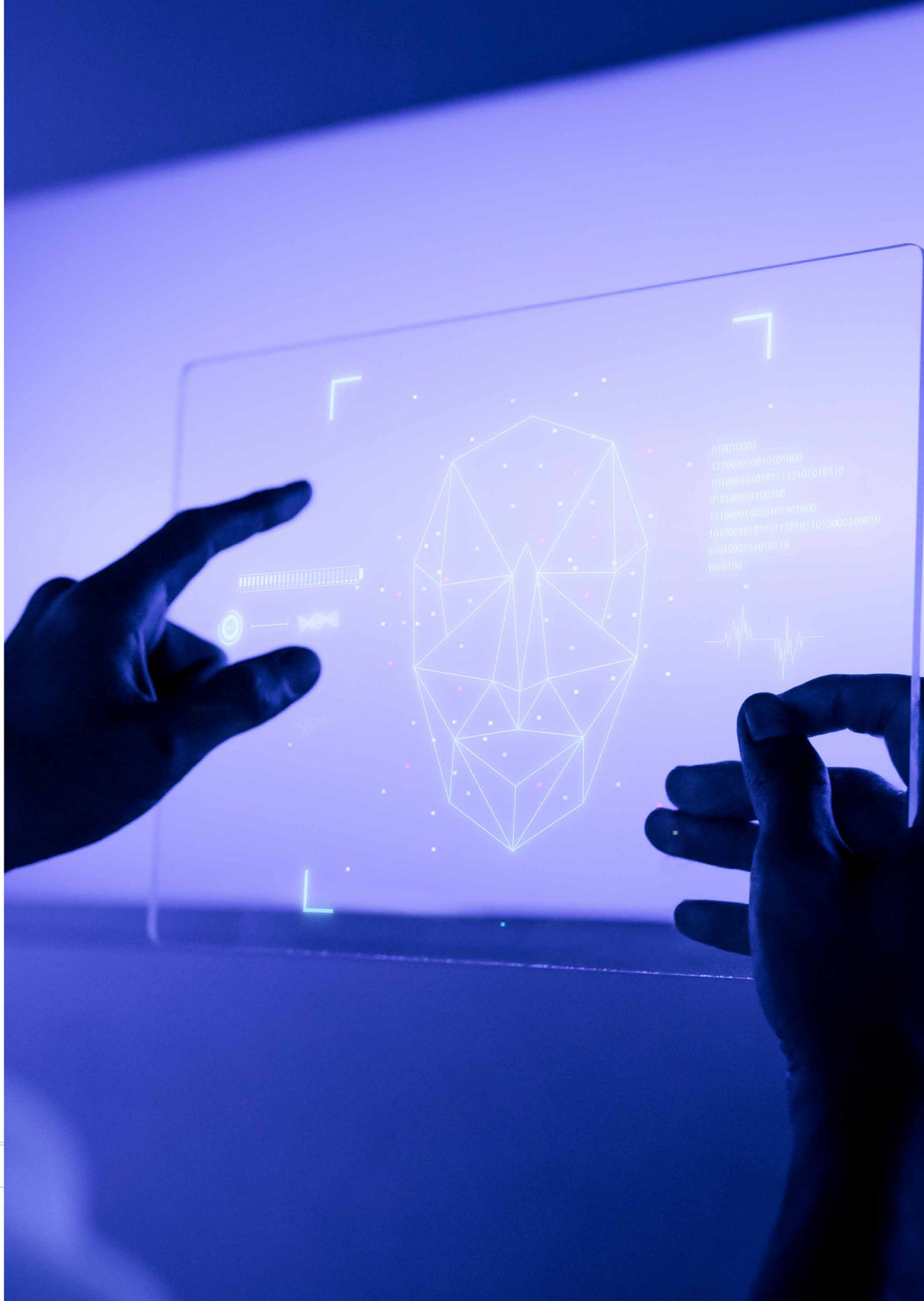
A person, as a user of a particular technology, may be impacted by it (perhaps in ways unknown to them). In such cases they would qualify as a "rights-holder," entitled to seek remedy. That same person may also, however, be a compliance officer at the local technology company, in which case she also has concrete responsibilities, either within the corporate structure as a fiduciary of the company, or as an ethical citizen. Therefore, individuals are endowed with both rights and responsibilities, often at the same time. Moreover, some situations (most situations, in fact) pit individuals with certain inalienable rights in opposition to other individuals with certain responsibilities.

A "responsibility" is notably not the same as a "duty" or an "obligation." Responsibilities are accountability relationships in which one party can and should be held accountable for his or her actions. This idea is related to but distinct from a duty (or an obligation) in which there is a specific legal or moral code that compels certain pre-defined behaviour. There are, of course, many duties that flow from responsibilities, and many responsibilities that flow from duties, and yet there can be (and often are) responsibilities that exist without a corresponding legal duty. Responsibilities may merely suggest (but not dictate) appropriate patterns of behaviour. Duties, on the other hand, are more specific and can be enforceable.

While some human rights scholars are sceptical of the responsibilities discourse, concerned that it may be deployed as an effort to weaken the international human rights framework,[197] other scholars see the responsibilities discourse as a way to expand and operationalise the toolbox towards the realisation and advancement of human rights and improve human dignity and wellbeing.[198]

At the outset, the HRBA@Tech model requires an individual to be conscious of the rights and/or responsibilities they might wield in the context of new and emerging technologies and their impacts. Additionally, it requires individuals as rights-holders to actively assert their rights and claim their entitlements while also exercising responsible behaviour. Incentivizing such responsible behaviour is particularly vital for individuals who wield decision-making or effective control or power in processes associated with the development and deployment of new and emerging technologies. While this includes a "do no harm" approach to ensure individuals do not contribute to human rights harms, the "make the world a better place" approach would also require individuals play a more positive and proactive role towards taking the necessary actions to live up to that objective.

Human rights actors are more familiar—and perhaps more comfortable—using an exclusively rights-based frame when thinking about NETs. For the HRBA@tech model to succeed, they also crucially need to develop greater fluency with responsibility-based narratives, modes of advocacy, and mobilization strategies. This will be a challenge for all other stakeholders, but will likely prove to be transformative for individuals operating in this space as both rights holders and responsible members of a shared community.



CHAPTER 6
THE HRBA@TECH MODEL AND AI: AN EXAMPLE

Chapter Summary:

Chapters 3 – 5 explored various aspects of the HRBA@tech model. In this final chapter of Section II, we illustrate the HRBA@tech model in the case of a realistic example of an NET. The scenario is that of a government that decides to deploy an AI system to help address the occurrence of a particularly insidious human rights problem. In our case, the human rights problem under discussion is child abuse, but it might just as well be another social issue (such as sexual and gender-based violence (SGBV), human trafficking, elder abuse, etc.). We describe this scenario as though it were a backward-looking narrative of how the government went about designing and deploying that technology. The scenario is fictitious, and yet is also based on numerous real-life examples of precisely such initiatives taking place in a number of countries, and informed by policy makers, entrepreneurs, AI specialists and technologists who assure us that these are realistic and implementable strategies, not unrealistic demands by human rights dreamers. Through this description we show how various elements of the HRBA@tech model fit together to 'nudge' this technology in the direction of human rights.

In 2021, *333 ("Lelandia's" designated emergency hotline) received a call from a mother who claimed that her child, Kate, fell and suddenly "stopped breathing." When the police arrived they found Kate and, after checking her vital signs, pronounced her dead. The police forensic examiners later found multiple bruises on the child's body that had occurred at different times, whereupon the police subsequently arrested the parents. Kate was eight years old when she died. Her height was 110cm and weight 13kg. An average 8-year-old girl's height and weight should be 125cm and 26kg. In addition to her multiple wounds and bruises, Kate had been deprived of food for multiple days prior to her death. Police later discovered that her parents had physically abused her for 'lying' or for having urinary incontinence.

Looking back, there were a few opportunities when external involvement or interventions might have saved Kate's life. In Lelandia, the schools need to confirm the children's safety in cases of unexcused absences of three days or more. If the school cannot confirm the safety of the child or his/her whereabouts, they are required to immediately report this to the police. In Kate's case, the parents had notified the school that their son Kurt had a lung problem, and that their daughter Kate had a bone tumour and had therefore requested for their absences to be excused. The parents never provided any medical evidence to support their claims. They also refused home visits from school officials sent to check up on the welfare of the children, claiming variably that "the children had gone to their grandparents' house," or that "they are too sick to see anyone," or a bevy of other such excuses. Teachers in such situations lack the authority to force their way into a home to verify such claims. As a result, the schoolteachers did not see Kate for an entire year in 2020.

Every time a tragic child abuse fatality comes to light, there is a huge public outcry demanding that we as a society need to do more to protect our children. The public tends to be outraged that children are left unprotected from such heinous criminal abuse. Lelandia's Child Protective Services (CPS) social workers in such situations also face enormous scrutiny and criticism for not having been able to prevent such a tragedy from occurring. This is especially true in cases (like Kate's) where CPS had already previously had contact with the victim, and where popular outrage soon turns into calls for criminal prosecution – a dynamic that is not lost on the already embattled social workers. Such moments often prompt governments to respond by promising institutional reforms and other policy changes. In this case, the government responded to the popular outcry over Kate's death by proposing "Kate's law." This law announced a fast-track programme to develop a machine-learning AI system that would identify child protection "blind spots." This AI system, it was proposed, could be used to target resources towards those households most likely (statistically speaking) to be unsafe for children.

The Lelandian government already has experience developing such AI-based systems focused on other social issues, specifically a program that identifies households that might qualify for social welfare support services about which they may not have known. This kind of programming—even though it relies on a potentially invasive analysis of massive amounts of data—has generally been popular with the Lelandian public since it provided at least a partial solution to otherwise very difficult-to-solve social problems.

At the heart of such programs is an analytic procedure for identifying such households called Predictive Risk Modeling (PRM). This process requires the development of models that generate a risk score for households based on the data that has been utilized for the analysis. Individuals are stratified based on their level of risk to a particular negative outcome (for example extreme levels of poverty). Those with the highest risk scores are then selected for further counselling and intervention, usually by a qualified human case worker. In an ideal situation, those who are the most likely to experience an adverse life situation will be identified before this experience even occurs, or at least during the very early stages of that adverse situation and will be provided with the resources and services necessary to help them resolve or ameliorate the situation.

In Lelandia so far, the performance of such PRM models to identify blind spots has been controversial. Proponents claim that it has been useful for discovering new welfare cases and helping the underserved who may otherwise not have known about applicable welfare policies. Detractors have claimed that there are too many false positives (i.e., system errors where an individual or household is flagged as being "high risk" when in fact they are not). Regardless of such ongoing debates, the Lelandian government is pleased with the progress it has made establishing and developing administrative processes through such e-government initiatives.

Kate's law promised to utilize big data to identify at-risk children and their families. According to the politicians who spearheaded the initiative, such a new system would draw on similar sources of data as existing PRM models. Relevant information would include a family's welfare status, its internal structure (i.e., marital status, divorces, etc.), the employment status of individuals in a household, information about any economic hardships they may have suffered (for example a delayed payment for an insurance premium or a disconnection from the municipal water, electricity or gas system), and public insurance payments. This existing data set can then be supplemented with additional data drawn from the children's school records, childcare records, medical and disability records, and of course any relevant CPS records. Information such as whether a child's immunizations are up-to-date, whether the parents took them to their recommended paediatric development check-ups, whether they have large numbers of unexcused absences from school or childcare, whether the family has applied for a child allowance, and whether CPS was ever called upon to intervene on behalf of a given child will all be analysed by this proposed system. If a family has ever been reported to the CPS for any reason, information collected during the ensuing CPS investigation, as well as any final decision and interventions made (e.g., separation, criminal charges, case management), would also be included in this system's algorithmic analysis. Combining all this data, it is claimed, would provide relatively comprehensive information about the child and his or her family.

The PRM system also deployed a machine learning processes, such that data feedback about the PRM's accuracy (basically whether children flagged as being at "high risk" of resubstantiation were, in fact, later resubstantiated). This resulted in modifications of the PRM's analytical standards over time. As the AI system was being trained on this dataset, certain risk factors began to emerge as playing a particular role in its parameters, including whether a child was living with disability and/or suffered from behavioural issues, whether there had been a history of family violence or alcohol abuse in the household, whether the alleged abuser was living with disability, whether the child had previously lived in a residential facility (orphanage), and whether the alleged perpetrator is unmarried but cohabiting with a significant other. Human rights activists and scholars from the field of social work pointed out that some of these indicators also constituted hallmarks of vulnerability, and warned that the AI system may be inadvertently perpetuating harmful stereotypes against, for example, orphans, or persons living with disability.

What follows is a brief description of how "Kate's law" and the associated PRM was designed and deployed in this hypothetical context, with a particular emphasis on the processes and principles highlighted in this paper to "annotate" that description. It is a hypothetical description, specifically drafted to illustrate some of the core principles and processes of the HRBA@Tech model.

Like any technology, the PRM in this scenario is appropriate for some, but not all, of the 24 processes described in this paper. This is a non-exhaustive description of what we argue can and should be done in such technology development projects.

By way of background, it should be noted that this scenario is taking place in Lelandia, a country that has signed and ratified all nine core international human rights instruments along with several of the associated optional protocols.[199] Lelandia engages actively with the international community and engages domestically to ensure that human rights discussions are mainstreamed throughout society. In 2021, for example, the Lelandian Government, amended a provision in its Civil Code that made it unambiguous that parents could not claim corporal punishment as a legitimate disciplinary "parenting" method. This reform was the direct result of a large-scale public advocacy campaign spearheaded by Lelandian civil society organizations. The Lelandian government, civil society, and the international community had, in other words, done significant advance legwork to ensure that human rights thinking was mainstreamed throughout society. The concept of 'human rights' is not novel in Lelandia, nor would it come as a surprise to government agencies and private actors that the new PRM should be consistent with international and domestic human rights standards.

1A: Implementation of International Human Rights Norms

1B: Policy Coordination

1C: Mainstreaming Human Rights

The Lelandian government also has a number of standards in place that govern any AI system. Those standards apply not just to private actors but also internally to any government agencies intending to deploy AI systems. These regulations provided important safeguards, many of which are described below and many of which flowed directly from the need to satisfy those regulations and standards.

3C: Standardisation

Turning now to the development of the PRM itself, the government announced the launch of the new PRM on November 20th, which is celebrated as World Children's Day. In a televised speech on this occasion, Lelandia's Prime Minister recalled Kate's tragic passing and announced that the Lelandian government would be launching this innovative system. The Prime Minister clearly stated that the purpose of this new system would not be to cut costs or social workers at CPS, but rather to liberate them to do the parts of their jobs that only humans could do: counselling, consoling, empathizing, and caring.

1C: Mainstreaming Human Rights

6A: Disclosure

Paperwork and document management, the Prime Minister argued, should be safely left to machines to do. Much more importantly, the Prime Minister proclaimed, this initiative should help protect the lives of innocent children and also empower socially and economically vulnerable families to be better able to care for their children.

Since AI systems are inherently difficult to understand, the Prime Minister's office also announced a major nationwide effort to explain how AI works, what data would be used, what protections would be in place to prevent data misuse or breaches, and most innovatively a portal where users could raise their concerns about this system and have them answered within 72 hours by a (human) case manager. This hotline, which had multiple access points, also had experts on staff who could explain AI in simple and intuitive ways, trained as both social workers and technology experts.

6A: Disclosure

4B: Development of Accessible Non-Judicial Grievance Mechanisms and Processes

6B: Translation

In subsequent weeks, the Prime Minister's Office created a special task force to study this issue and make recommendations about the PRM's roll-out. This task force was staffed with a well-known industry expert on AI systems, a professor of social work from one of Lelandia's premier universities, two experienced social workers (one from a rural area and one from the capital city), two representatives of civil society (a parent's rights group as well as a child rights non-profit organization), and two representatives from Lelandia's Ministry of Health and Welfare, which employ many of the country's social workers and also oversees the National Health Service (as well as the datasets that the proposed PRM system would draw upon).

7C: Multi-Stakeholder Dialogue

4D: Constructive Problem Solving

The civil society organizations that played a role in this process began an intensive nationwide consultation process, each spearheading the development of so-called "dialogue committees" tasked with soliciting input from their respective constituencies using a variety of methodologies to do so. The child rights non-profit partnered with a prominent local university to help it develop this consultation process, designed specifically to compile a comprehensive assessment of the needs of children in economically and socially vulnerable households.

7B: Representative Advocacy

7A: Consultation and Collaborative Needs Assessment

The task force conducted regular open-door meetings, soliciting input from a broad set of stakeholders, often travelling to different parts of the country also ensure that diverse viewpoints were represented (rural, urban, minority communities, etc.).

The task force, in partnership with some of its university contacts, began to develop a range of educational materials about artificial intelligence as well as a "know your rights" briefing tool for families impacted by this new system. They did this even before the system

5C: Capacity Building

began to operate in order to articulate clearly the rights that families would have, working either through the formal judicial system or informal grievance processes, and the process they could use to correct incorrect (allocative) harms that may or may not have been caused by the AI system. These materials helped to alleviate the concerns of some on the outside of this process who might otherwise have worried that the AI system leaves impacted families with no means of redress.

4A: Access to the Formal Justice System

4B: Development of Accessible Non-Judicial Grievance Mechanisms and Processes

After an initial round of consultations, the task force concluded that the benefits of such a system outweighed the potential risks and presented a report to the Prime Minister's office of for approval.

6A: Disclosure

Next, the task force created a subcommittee of private sector engineers with expertise in the development of AI systems as well as a group of experienced social workers. This task force included women and men, older and younger members, as well as some with expertise working with comparatively more disempowered migrant labourers in Lelandia's rural areas. The logic behind this was that the technologists would have to work together with the social workers to understand their professional reality, and hopefully use that experience to identify strategies to support those social workers with the use of smart technology.

2B: Internal Diversity

7A: Consultation and Collaborative Needs Assessment

Since one of the primary concerns associated with the project was the concern that families would be targeted by a non-transparent and potentially flawed AI system, a separate subcommittee, composed of civil rights lawyers, technologies, and dispute systems designers began to brainstorm strategies to mitigate those harms. They began not with the assumption that a perfect system could be designed, but rather with the assumption that any false-positive identifications of a household as "prone to child abuse" could be perfectly rectified. This subcommittee, therefore, set about designing a remediation process for any failings of the AI system. Further, to ensure that such a remediation system would respond to real-time input, they also designed a series of ongoing impact assessments that would need to be funded by the Ministry of Health and Welfare to accompany the system.

4C: Monitoring & Oversight

2A: Impact Assessment

4B: Development of Accessible Non-Judicial Grievance Mechanisms and Processes

4C: Monitoring & Oversight

A third and final subcommittee was convened to study the technological safety of such a proposed system. This subcommittee was composed of technologists and data security activists. Their task was to design systems that would account for the known risks of bias in the AI and privacy breaches due to insecure handling of the data. This committee recommended, and later received approval for, a limited beta-test of an advance version of the PRM, where social workers in two similarly situated provinces would "stress-test" the PRM. To test for bias, one of those provinces convened a task force of specially trained (human) social workers to analyse caseloads from that province using only their human skills. The other province beta-tested an advance version of the PRM. The results of the AI PRM and the human specialists were then compared according to a pre-defined list of criteria measuring for bias. Social workers in those provinces were also carefully tracked to see what they were able to accomplish with their extra time (having been 'liberated' from mountains of paperwork by the new AI system), and the impacts of those additional services were carefully monitored. These findings gave rise to new models of how to deploy the considerable talents of social workers given their reduced administrative workload, allowing for new expansions of services in the 'beta' provinces.

2A: Impact Assessment

3A: Guardrail Innovation

5A: Human Rights by Design

Another test involved hiring a crack-crew of professional data security experts whose sole job it was to try to "crack" the data in some way.

3A: Guardrail Innovation

With both "stress tests" passed, the team had invaluable inputs on how to strengthen the overall security of the AI system, as well as strategies to make its use more intuitive to non-technologically inclined social workers. These strategies also included so-called "PICNIC" (Problem In Chair, Not In Computer) safeguards. Such PICNIC safeguards may have seemed laughable to tech-savvy engineers, but the stress tests showed how without such safeguards, the PRM risked succumbing to preventable safety breaches.

3B: Use Safeguards

After the three subcommittees had reported back to the task force on their progress, the Prime Minister's office commissioned the design of the PRM to a private technology contractor. Re-iterating the social welfare objectives of the project, the Prime Minister's office demanded to see evidence that the system would be designed specifically to facilitate the empowerment of socially and economically vulnerable communities, and to be designed to minimize the potential for potential harms flowing from the use of an AI system.

5A: Human Rights by Design

The designers returned with a proposal for an AI system that included not only mechanisms to check the machine-learning parameters themselves, but also robust process recommendations to prevent any representational harm from being done. For example, the designers proposed a model where specialized data teams would be embedded within the Ministry of Health and Welfare who would compile the lists of "households of concern," but that these lists would not be marked specifically as "AI-generated" suggestions when they were forwarded to the local social workers' offices. Individual social workers would thus receive only a notice to visit a certain household, but would not know which cases came to her based on an AI system (as opposed to some other more traditional entry point, including reports by

neighbours, a call to a hotline, school reports, etc.). This was intended as a safeguard to prevent social workers from inadvertently placing too much faith in the "inviolability" of an AI-generated suggestion, as opposed to other forms of less-automated leads.

3D: Meaningful Human Control

The families, of course, would continue to enjoy the right to know how their household was identified, and would also be given clear and accessible opportunities to contest any determinations they considered to be unjustifiable.

4A: Access to the Formal Justice System

Furthermore, the AI system was programmed not to produce a single "score" (as was originally proposed), but rather a 'heat map' for each family with specific issues highlighted for the case worker to pay particular attention to. Thus, for example, a case worker would not receive a notation to visit a household because they received a "36" or a "49" on some AI-generated risk assessment, but rather to visit that household because of "financial concerns that may be relevant to look into," all of which would be colour coded instead of numerically scored to give a more holistic picture to the individual caseworker. These mechanisms also served to leave the human in control of any decisions relating to individual households, services provided to those households, or any potential further remedies, even while it also greatly facilitated processes that used to consume large percentages of an average social worker's workday.

4B: Development of Accessible Non-Judicial Grievance Mechanisms and Processes

5A: Human Rights by Design

Those same designers, drawing on comparative best practices literature reviews of similar models being tested in other countries, found that a key human rights consideration was not just the functioning of the system itself, but rather the implications of that system. Whether an alert would trigger a visit by a police officer in tactical riot gear, versus a more casual visit by a community social worker makes a difference, not in the way the AI system is designed, but certainly in the way the AI system is received in the community. Likewise, whether the AI is geared more to prompt enforcement and punitive remedies, versus another model of the same AI system designed to produce paperwork a family can use to apply for available welfare benefits, can make a huge difference in terms of how receptive a community or individuals may be towards that AI system. The design committee recommended a policy that would prioritize visits by social workers, equipped with a full toolbox of social support services that have been statistically shown to reduce instances of child abuse without breaking apart socially or economically marginalized families.

3D: Meaningful Human Control

7A: Consultation and Collaborative Needs Assessment

5A: Human Rights by Design

After another round of public commentary, which attracted a good deal of attention due to the active efforts of government and civil society actors to promote discussions about the system, the Prime Minister's Office announced the gradual roll-out of the PRM, first in the nation's rural areas and then moving into the urban centres. The logic was that in small rural areas the social workers would be far more connected with their communities and could therefore better see any problems that may be associated with the new PRM and raise the alert to correct it.

7A: Consultation and Collaborative Needs Assessment

3A: Guardrail Innovation

Civil society groups accompanied the roll-out of a series of initiatives designed to mobilize communities (child rights activists, parental rights activists, etc.) to make use of this new technology to empower themselves. Much of this mobilization focused on ways to harness the system to obtain additional badly-needed social welfare supports for families that qualified, but also ways to use the system (especially its AI-generated metrics) to argue for a resumption of parental rights (for example if parents lost custody of their children due to alcoholism, but have since managed to become sober in a specialized programme).

5B: Community Mobilisation

Five years after the successful rollout of the PRM across all of Lelandia, the Lelandian International Cooperation Agency (LICA) began to offer capacity building support to countries in the global south, especially in Southeast Asia and the Pacific Islands, wishing to implement a similar programme according to the "Lelandian model."

5D: Technology Sharing & Transfer

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The above description is fictional, and should certainly not be described as a "best practice." It includes all but two of the processes highlighted in Chapter 3 of this paper.

- **4F: Clearly Identified Responsible Entity**, since it is assumed that the "Lelandian" government (in this scenario) would remain responsible for a PRM that it develops, deploys, and implements, and
- **4E: Incentivisation**, since it is assumed that no government will need to be "incentivized" to work towards the protection and promotion of human rights. Furthermore, in our hypothetical, the passage of "Kate's law" was also precipitated by a popular outcry that presumably incentivised the government to take action in light of its own desire to seek democratic legitimacy.

The example shows how intuitive it can be to craft a relatively efficient strategy, drawing on all 24 processes described in this paper, that will collectively serve to 'nudge' a technology – in this case a technology that shares attributes with some of the most heavily critiqued AI systems in the literature (predictive policing models, etc.) – in the direction of being a force for the protection and amplified enjoyment of human rights.

PART III
CONCLUSION AND RECOMMENDATIONS

Moving beyond the 'do no harm' paradigm to guide efforts towards 'making the world a better place'

As central actors in the field of new and emerging technologies, greater attention should be paid to the role of corporate actors in the promotion and protection of human rights. The UN Guiding Principles on Business and Human Rights provide an authoritative and increasingly authoritative framework that must nonetheless be better implemented by both States and business enterprises to prevent and remedy corporate human rights abuses. Nonetheless, it is also important to develop a more positive framing that encourages private actors to wield their positions of influence to improve the world we live in and not simply avoid doing harm.

This is not a call to return to the early days of corporate social responsibility. It is, however, a recognition that we all have a responsibility to make the world a better place, especially when the externalities of our actions can and do make a difference in the world. This is especially true in the case of NETs being developed by States, which are bound by human rights law, or entrepreneurs who make explicit their intention to develop a technology that they claim will 'make the world a better place.'

Many technologists genuinely believe that they are at the vanguard of efforts to 'make the world a better place', and in many instances, can be shown to have done precisely that. Accordingly, the human rights community should refocus some of its energies towards guiding such efforts to meaningfully improve the realisation of human rights for all.

Recommendation 1:

The international human rights community should work collaboratively with the business and technology communities to ensure that new and emerging technologies do no harm, and moreover that they are also actively hard-wired to 'make the world a better place' (human rights by design).

Developing a more nuanced analysis of technological contexts to design more holistic intervention strategies

Any efforts to incite or compel greater respect for human rights should take into consideration the particular characteristics of the stage of the lifecycle of a given technology, as well as the nature of the actor being held accountable. For example, a small or medium enterprise cannot be held to the same standards as a multinational corporation, and the human rights considerations in the design of a new technology may not be the same as those during its manufacturing. Such an approach can facilitate the identification of practical and effective intervention strategies that can result in the intended positive impact on the enjoyment of human rights, without stifling innovation or creating undue market asymmetries.

Recommendation 2:

In order to improve the effectiveness of their strategies through targeted and realistic interventions, stakeholders seeking to promote and protect human rights in the context of new and emerging technologies should take a more nuanced approach that considers the stage of maturity of a given technology, as well as the nature (i.e., size and stakeholder type) and underlying objective of the actor developing or deploying that technology.

Developing an ethic of mutual trust and joint learning to deliver on the promise of multi-stakeholder dialogue and action

NETs are extremely complex, but so too is society. The inherent complexity of the societal and technical contexts in which new and emerging technologies are developed and deployed requires a refined understanding of the complementary and mutually-reinforcing roles played by different stakeholders as they jointly address the impacts of NETs on individuals, communities and their rights. Any credible efforts to grapple with these complex interrelationships must be grounded in multi-disciplinary and multi-stakeholder dialogue. To be truly effective, such dialogue must embrace an ethic of collaboration, and be premised on the non-hierarchical and non-exclusionary nature of that discussion. In other words, no one stakeholder in this constellation can "own" the discourse, but also none should be excluded.

To start, such multi-stakeholder dialogue must overcome the trust deficit between States, the private sector, and human rights actors. Old narratives of abusive regulators, uncompromising bureaucrats, amoral technologists, profit-obsessed or opportunistic managers, and never-satisfied human rights activists must be set aside as unhelpful caricatures, even if in some instances there remains some truth to them. To succeed in the HRBA@Tech model, all stakeholders must learn to cultivate an ethic of constructive engagement and consensus-building in addition to performing their traditional roles.

Technologists, policy makers and human rights experts need to build more bridges towards one another and between their respective disciplines. Doing so requires translating the fundamental and universal principles underlying human rights into a language that can be readily understood and applied in the context of business operations, while conversely rendering intelligible the technicalities of law and new and emerging technologies.

By acting as neutral conveners, well-respected 'norm-translators', and specially mandated capacity-builders, international organisations and intergovernmental fora, such as the Human Rights Council, can play an essential role in fostering such an ethic of mutual trust, understanding and collaboration. Educational institutions are equally well-placed to drive multi-disciplinary thinking and understanding of the complex inter-relationships between new and emerging technologies and their impacts on communities, individuals, and human rights.

Recommendation 3:

Stakeholders should recognise the importance of multi-stakeholder dialogue and engage in a constructive process of co-learning and expertise-bridging, anchored in mutual respect for each other's complementary roles and responsibilities.

Learning new justice terminologies

Speaking in broad generalizations, many human rights actors are familiar with justice terminologies steeped in rights language, whereby rights holders demand to have their rights respected. Technologists and business ethicists speak in terms of science and quantifiable outcomes, as well as some operational and ethical principles that govern how certain technologies are managed. Politicians speak in terms of aggregate social welfare, and their duty to live up to popular expectations. Finally, some philosophers (including faith-based philosophers) think in terms of human responsibilities towards one another and perhaps towards fellow sentient beings.

Regardless of one's perspective, it must also be acknowledged that none of these discourses command a monopoly over the 'how' of thinking about the impact of new and emerging technologies. To truly motivate all stakeholders into meaningful action, a combination of all four discourses will need to emerge, mixing an unshakable commitment to human rights principles with new and energizing narratives designed to elicit action.

Hybridizing these various justice languages is complex, and will require openness towards different ways of thinking, and multi-stakeholder collaborations to agree on terms and concepts.

Recommendation 4:

Human rights actors must learn to embrace the discourse of responsibilities and technological ethics, as well as the metrics of scientific inquiry and business development, as part of any holistic strategy to motivate action on new and emerging technologies and human rights. At the same time, there is a need to better explain and convince of the practical added-value of using human rights norms to guide the development and deployment of NETs.

Establishing a new special procedure tasked with the development of a Human Rights-Based Approach to New and Emerging Technologies

The United Nations and its human rights machinery, in particular, is uniquely-placed to develop norms in this field, since it brings into one place the diplomatic representatives of the world, technical experts from a wide range of disciplines, social activists and civil society actors.

To date, efforts to develop a unified human rights-based approach to NETs, while comprising an important part of discussions on human rights and NETs, have been rather fragmented and technology-specific.

This may be the inevitable by-product of the thematic mandates of existing human rights mechanisms.

Recommendation 5:

The international community should strengthen the capacity of the international human rights system to address the human rights implications of new and emerging technologies and consider the establishment of a newly-minted Special Procedure, either in the form of a thematic Special Rapporteur or, given the breadth of the topic, a better resourced and capacitated Working Group, mandated to address the human rights implications of all new and emerging technologies.

Moving beyond human rights principles to address their real-world procedural applications

While human rights norms are universally recognised, there is an increasing tendency towards the politicisation of the language and logic of human rights. This reality is magnified in the inherently novel space of new and emerging technologies, in which the application of human rights norms is often viewed with scepticism by actors who fear that the language and logic of human rights will be used as a proxy argument to stifle innovation, development and competition.

That being said, NETs still threaten to disrupt established livelihoods, established economies, established ecosystems, established biological systems – in both welcome and unwelcome ways – and almost always in ways where differently situated stakeholders will inevitably disagree about how to weigh those benefits and risks. Moreover, it is an undeniable reality that NETs are being increasingly deployed to repress, censor, harass or surveil.

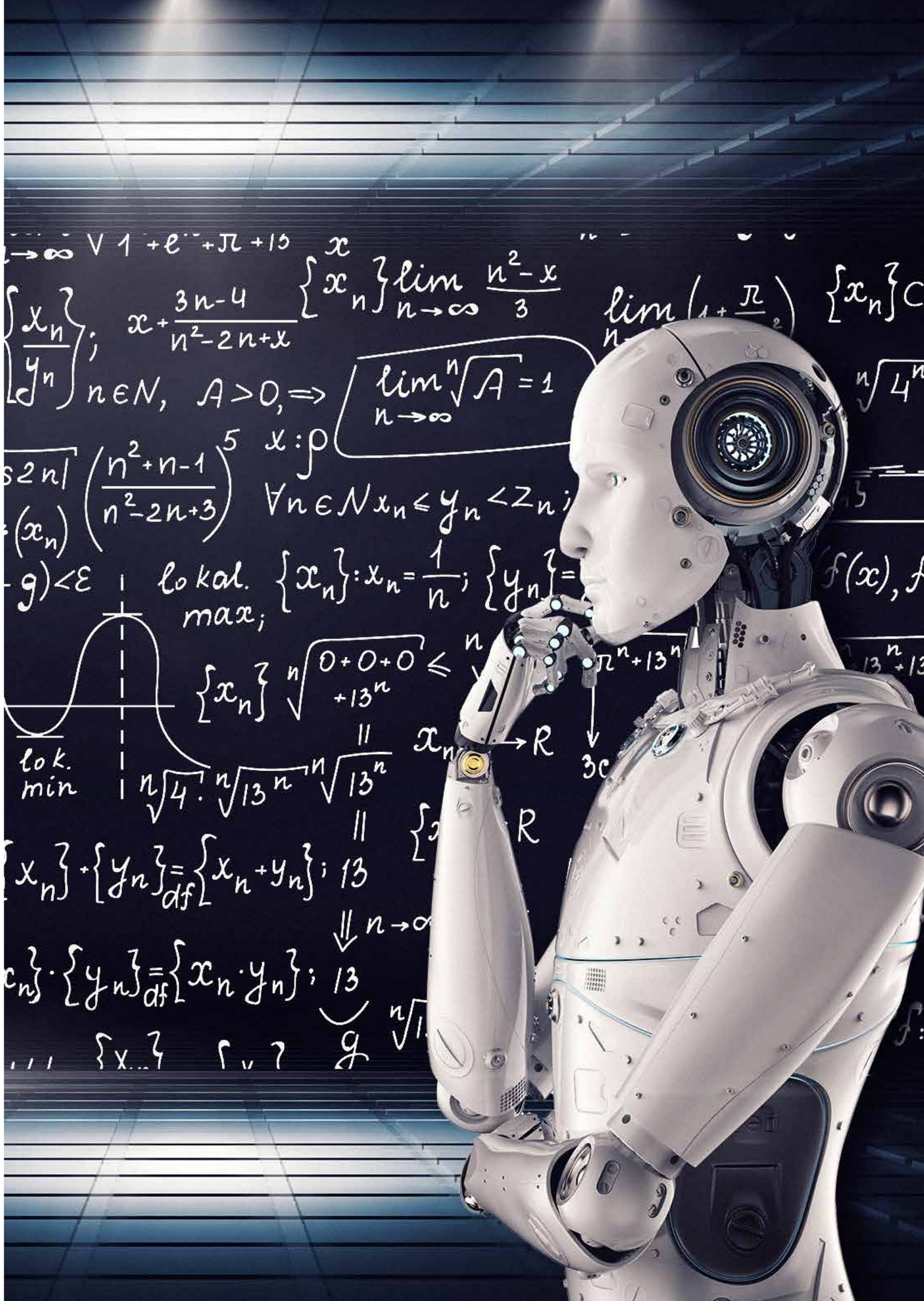
This dualism of technology is a true universal reality that faces us all, regardless of where we live and where we are situated in life.

There is therefore an urgent need for the development of authoritative guidance on the application of human rights standards to new and emerging technologies. This guidance must not only be articulated in the classic language of human rights, but also harness the spirit and intent of the human rights corpus, oriented (it its essence) towards promoting and protecting both individual rights and human dignity.

To succeed, the authors of this report recommend an exploration by human rights experts of concrete processes designed to "nudge" new and emerging technologies in the direction of the human rights agenda, rather than a renewed effort to identify universal norms that will bridge the inescapable dualism of new technologies. The focus of any potential future Special Procedure, following in the footsteps of the former Special Rapporteur on Business and Human Rights, should be on distilling the hallmarks of "legitimate" processes from less-legitimate or illegitimate "box-checking" exercises.

Recommendation 6:

The international community, and in particular its human rights system, should not only clarify the application of established human rights norms to new and emerging technologies, but also focus on specific processes that – in the aggregate – will 'nudge' technologies in the direction of the human rights agenda and thereby improve the enjoyment of human rights by everyone, everywhere.



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