G7 ITALIA 2024

S7 + SSH7

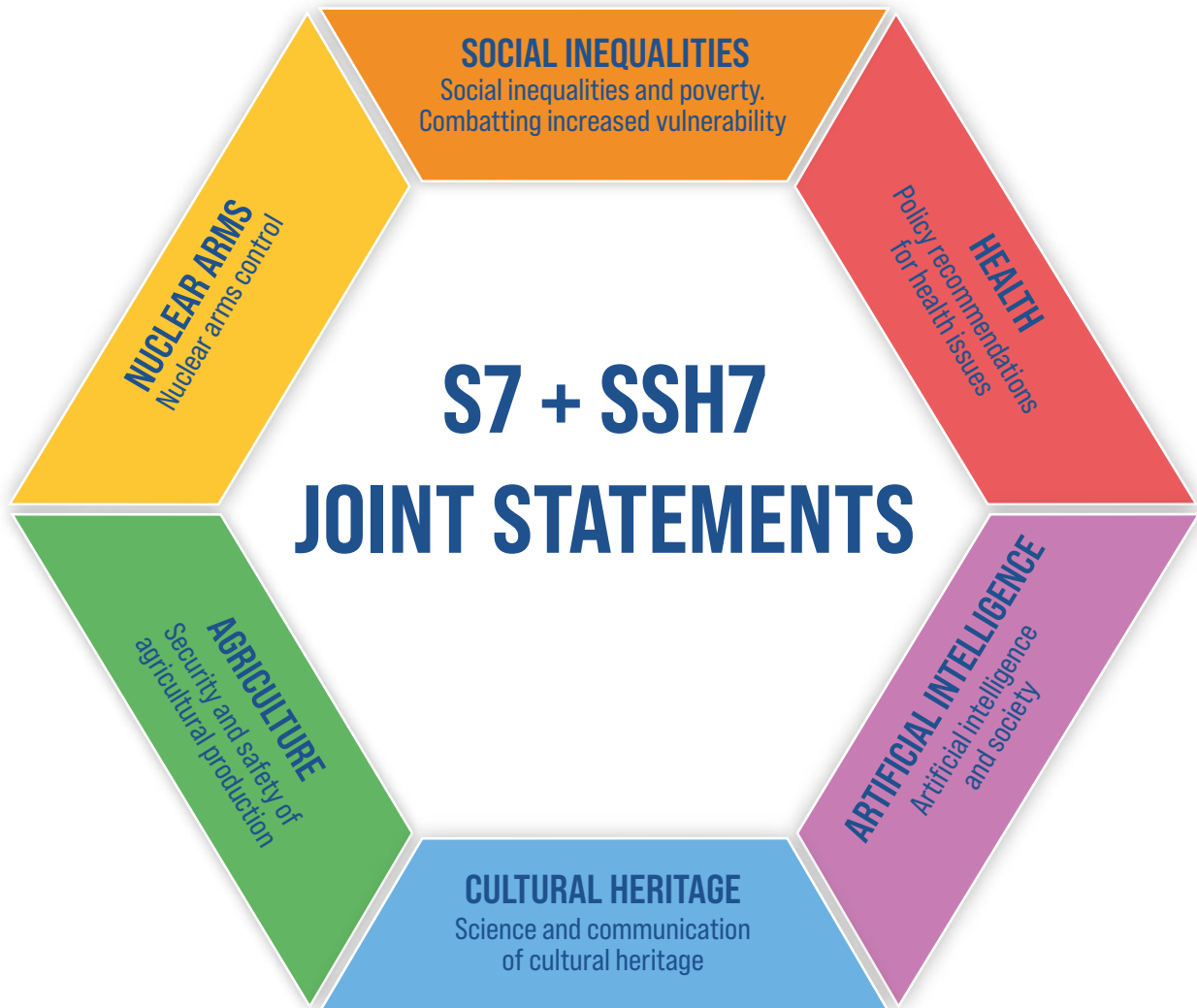# SCIENCE FOR THE FUTURE

CHALLENGES, RESPONSIBILITIES AND OPPORTUNITIES

SCIENCE 7 +
SOCIAL SCIENCES
& HUMANITIES 7
2024

S7 + SSH7 JOINT STATEMENTS

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and society

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Science and communication
of cultural heritage

ARTIFICIAL INTELLIGENCE AND SOCIETY

ARTIFICIAL INTELLIGENCE AND SOCIETY

Artificial Intelligence (AI) is reshaping our world, offering numerous benefits but also raising critical concerns to be addressed through globally coordinated and inclusive governance. In October 2023, the G7 leaders published the Hiroshima Process International Guiding Principles and its accompanying Code of Conduct for public and private organizations developing and using advanced AI systems. With the present joint statement, we express the position of the G7 Science Academies on the technical and societal concerns brought by AI with a list of recommendations to policymakers.

1. Powerful AI systems, posing potential risks to the public if misused, should be appropriately secured against cyber and physical attacks. For sensitive AI applications, data-protection frameworks (e.g., EU's General Data Protection Regulation) commensurate to the level of risk and the use of privacy-enhancing technologies are essential to protect personal data. When interacting with AI systems, users need clear data protection guidance on how and for how long their data will be used, reused, and stored.

2. As AI systems become more capable and present greater risks to human control, formal safety guarantees will be required before deployment can proceed. It is essential to adhere to strict standards for requirements verification, system validation and testing, and post-deployment monitoring, ideally by independent bodies that also check for hidden biases. Laws should be promoted to enforce the need for documentation, enabling users to understand capabilities, limitations, and appropriate domains of applications. The traceability of the underpinning data on which AI models are built is critical. As AI impacts crucial decisions in areas like medicine, the sciences, law, and finance, transparency and accountability are paramount. Clear avenues of accountability should be created as AI systems are developed and rolled out. Features like explainability, algorithmic recourse, and avenues for redress empower individuals to challenge AI decisions.

3. Trustworthiness in AI systems is vital. As humans spend more time interacting with AI systems and AI-generated content forms an increasingly large percentage of our information ecosystem, the risks to democracy, society, and human understanding become critical. Governments should promote legally enforced standards for AI-generated content. Institutional structures that promote

accuracy and authenticity will become increasingly important. Furthermore, raising the lifelong literacy of populations to understand how to identify and interact with AI-generated content will be key. Technology developers and online media platforms should consider the value of digital content provenance systems as well as the inclusion of domain experts in socio-technical evaluations (e.g., red teaming).

4. Generative AI offers vast potential in content creation and software development but raises questions about the protection of intellectual property rights when AI creates seemingly new content from existing works. The creative industries and scientific research are among the main sectors in which generative AI is having a significant impact. The existing legal framework for copyright, fair use, and IP protection needs an overhaul for the AI age. To address these issues a mix of clear legislation, industry self-regulation, and independent oversight is required.

5. Large-scale AI systems demand expensive computational resources, creating a barrier to entry. Widening global access to high-performance computing and establishing intergovernmental research hubs is vital for AI's equitable future. Expanding AI computational resources raises environmental concerns due to rising energy consumption. Sustainable design in data centres, strategic locations for efficient energy and cooling, together with novel energy-efficient AI techniques are crucial to aligning AI with environmental ethics.

6. Whereas open-sourcing of well-curated datasets free of copyright issues is generally a public good to be encouraged, large open-source AI models present a complex tradeoff between benefits (e.g., for public-sector researchers and small downstream developers) and risks from misuse that are borne by the public. Decisions on allowing or restricting open-source dissemination of powerful AI systems must be subject to democratic oversight, and safety regulations that apply to proprietary systems must also apply to all instances of open-source systems.

7. The rise of Autonomous Weapons Systems prompts urgent ethical and military concerns. Their autonomy could lower the threshold for conflict, spur an arms race, and risk misuse by rogue regimes or terrorists. While some advocate banning such weapons, others seek stringent regulations in line with International Humanitarian Law, ensuring human oversight. Quick action by society is key to addressing this important challenge. Public transparency and discussions are crucial to navigating these challenges, aiming to uphold human values and international norms, as well as physical security at personal, local, national, and international levels.

8. Aligning AI with human values and ethics is required as AI systems will gain influence. Cross-sector collaboration is crucial for implementing ethical AI, integrating both technical and socio-cultural aspects while also taking cultural diversity into account. Addressing near-term risks, which may negatively impact vulnerable social groups, is critical to maintain trust and encourage

the adoption of beneficial technologies. The economic and social costs of alignment should be transparent and included in the decision-making process regarding when and how AI systems are used.

9. Effective stewardship is pivotal for even AI benefits distribution. Increasingly capable AI systems will have a significant impact on labour markets, and a joint approach with governments, industry, educators, and civil society is essential for ensuring the equitable distribution of the benefits. Governments should consider incentives for socially useful AI systems that address unmet needs rather than simply replacing humans in existing roles. Policies should prioritize the development of AI systems that address the most important challenges for the planet, society, and the economy.

10. Cooperation between the public and private sectors enhances responsible AI development. While private entities innovate rapidly, public institutions offer regulatory and ethical frameworks and promote independent long-term research for the benefit of humanity. Exchanging talent merges best practices and goals. This synergy combines innovation with accountability, optimizing AI's societal benefits, and it is best served when society, through regulators and democratic processes, draws the red lines of what is acceptable or not, and developers take the onus to demonstrate that their systems do not cross these red lines.

11. The responsible and safe development and deployment of AI is not solely a scientific and technical matter: it requires a collaborative approach across different academic disciplines, including the humanities and social sciences, to understand and shape the complex socio-technical system within which AI operates and devise appropriate governance arrangements. By blending technical and non-technical views, we can address AI challenges like bias and fairness, ensuring inclusive, robust, transparent, and equitable deployment of AI.

12. Education should clarify AI's capabilities, debunk myths, and weigh its pros and cons. Citizens should be technically literate and aware of AI's social and ethical implications. Public dialogue, facilitated by various stakeholders, allows individuals to shape AI policies actively and align AI with the public interest. The risks and opportunities of integrating powerful AI systems into the educational framework should be carefully balanced.

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