

## CRWIA Stage 1

### [Screening](#) - key questions

(Hyperlink will only work within SG)

#### 1. Name the policy, and describe its overall aims.

This **draft** document is an **initial assessment** of the impact of Scotland's Artificial Intelligence (AI) Strategy and the Scottish Government will continue to review and update this document where required during the implementation process. Any future iterations will reflect an increased understanding of these impacts as the amount of data and research available continues to grow.

This impact assessment should be read in conjunction with the Equalities Impact Assessment, Fairer Scotland Duty Assessment and the Island Communities Impact Assessment (Screening).

The purpose of Scotland's AI Strategy is to support the development and use of trustworthy, ethical and inclusive AI in Scotland.

This will enable AI to contribute to making Scotland:

##### **Fairer**

Ensuring that our Values are embedded in our approach to adoption of AI

##### **Greener**

Enabling us to make better use of resources and develop new, low carbon industries

##### **More Prosperous**

Empowering innovation with confidence building on a foundation of public trust, empowering our workforce and creating high value jobs

##### **Outward Looking**

Engaging with global partners that share our values, forging partnerships and contributing to tackling shared challenges

#### 2. What aspects of the policy will affect children and young people up to the age of 18?

While descriptions abound, we define AI as:

*Technologies used to allow computers to perform tasks that would otherwise require human intelligence, such as visual perception, speech recognition, and language translation.*

AI is a broad discipline. It is a group of complementary technologies, including data-driven techniques, which are evolving constantly. For this reason, our Strategy will not focus on any individual trends or innovations. However, one of the most discussed areas of AI are algorithms, which we define as:

*A series of instructions for performing a calculation or solving a problem, especially with a computer. They form the basis for everything a computer can do, and are therefore a fundamental aspect of all AI systems.*

The Strategy will look beyond the technology itself to focus more closely on AI's role in our society. Much of what we take for granted today happens because AI is working behind the scenes, driving change and technological innovation on an unprecedented scale. However, the use and adoption of AI should be on our terms if we are to build trust between the people of Scotland and AI.

We recognise that AI presents specific challenges and opportunities for children. They interact with AI in many ways, but these systems are often not designed with their specific needs in mind. Today children live in a world where AI can help to improve their lives and, at the same time, has the potential to become a negative influence.

AI is cross-cutting in nature, and our Strategy will reflect this. Therefore, nearly all aspects of the Strategy will affect children and young people.

**3. What likely impact – direct or indirect – will the policy/measure have on children and young people?**

Today's children are going to live much of their lives in a world where AI is everywhere – at home, at school, at work. AI is and will be used to influence what books children should read, what friends they should make, what they should study, whom they should go out with, what jobs they should apply for and how they are selected for these. AI impacts children's lives even before they are born, because it also impacts the lives of their parents.

Those complex and interrelated issues will be discussed in more detail in other parts of this CRWIA.

**4. Which groups of children and young people will be affected?**

All children and young people will be affected individually to some extent, directly or indirectly. But AI will not affect equally different groups of children and young people. AI has the potential to make a positive impact on everyone's life, but also to exacerbate existing inequalities. A successful, fair and inclusive Strategy will therefore require sustained attention to its impact on different groups, including intersectionality considerations, both in its development and implementation.

**5. Will this require a CRWIA?**

Yes.

**CRWIA Declaration**

**CRWIA required**

**CRWIA not required**

X

**Authorisation**

**Policy lead**

Jeremy Darot, Head of Data Innovation, Data and Digital Identity Division

**Date**

11<sup>th</sup> May 2022

**Deputy Director or equivalent**

Albert King, Chief Data Officer, Data and Digital Identity Division

**Date**

11<sup>th</sup> May 2022

## CRWIA Stage 2

### The CRWIA – key questions

(Hyperlinks will only work within SG)

#### 1. Which UNCRC Articles are relevant to the policy?

The impact of AI on children’s rights is a vast topic, and a detailed analysis is beyond the scope of this CRWIA. We will highlight some of the key issues, and refer the reader to selected publications which will contain references to primary literature.

In UNICEF’s *Memorandum on Artificial Intelligence and Child Rights* (May 2019) (<https://www.unicef.org/innovation/reports/memoAIchildrights>), the Human Rights Centre at the University of California’s Berkeley School of Law carried out a detailed analysis of which children’s rights (as defined in the UNCRC) are most likely to be affected by AI. These include (with direct quotes from the *Memorandum* in italics):

#### **- Freedom from Discrimination (Article 2)**

AI is increasingly used in both public and private sectors to assist or automate potentially life-changing decisions affecting children and young people. The data used to train AI algorithms is likely to reflect existing or past biases against various groups of people (e.g. gender, ethnic, socio-economic). If this bias (including its intersectionality component) is not adequately accounted for as part of the design and implementation of AI algorithms, the decisions they will make risk perpetuating, reinforcing, and even legitimising those discriminations. On the other hand, if done correctly, AI offers an opportunity to understand and address past discrimination. A few specific examples are given further down.

#### **- Freedom of Expression (Article 13)**

AI can be used as an enabler of state and private surveillance, for instance in public places and schools, with a potential chilling effect on freedom of expression of children and young people. In addition, much of what children write or express online is recorded, for instance in private databases of large social media companies, and might be used by AI algorithms to make decisions about them (for instance, what type of ads are presented to them). In jurisdictions where is no “right to be forgotten”, that personal information also has the potential to remain stored and used for the duration of their entire life. This could incentivise children and young people to restrict their own freedom of expression to avoid negative consequences in a future, in a way that did not exist prior to the advent of the internet and AI technologies.

#### **- Privacy (Article 16)**

Many uses of AI rely on the use of personal data, and “[...] *potential violations of this right are likely. This concern is underscored by the fact that children are also more vulnerable to intrusions into their privacy as their capacity to understand the long-term impacts of sharing personal data is still developing. Additionally, parents have a role to play in protecting their children’s right to privacy. As explained by Kay Firth-Butterfield, “[i]t is difficult (for children) to exercise that right, once you have sufficient mental capacity to do so, if your parents—by having devices that*

*listen and record in your home from your birth—have given away your childhood privacy.”*

**- Education (Article 28)**

*“One of the most important and basic skills that must be learnt at school by children is how to write. It is considered a key competency that is not only an important factor in the job market, but also an important ability for achieving the full development of the human rights personality. AI can have a positive impact on attaining that skill, for example, through the use of automated grading systems to provide feedback that is essential to improving writing in places where there is a lack of quality education. Nonetheless, these technologies will also impact access to education, as biased and discriminatory machine learning devices may determine who is admitted, as well as who is granted scholarships.”*

During the COVID-19 pandemic in the UK, the use of algorithms to help estimate what an individual child’s school exam results might have been, had those exams not been disrupted or cancelled by the pandemic, attracted considerable controversy. In addition, access to the network infrastructure and devices required to benefit from the positive impacts of AI for education is not even, and therefore bridging the “digital divide” is essential. This is all the more important given that AI is set to disrupt the world of work in major ways, so that children (and adults) will need to acquire the right skills and retrain when necessary to make the most of the opportunities offered by AI.

**- Rest and Leisure (Article 31)**

AI is an increasingly important component of children’s games and (to a lesser extent) toys, and influences the quality and developmental benefits of play. Children also spend a large amount of time in front of screens, and AI is used to attract and maintain their attention, which can lead to addictive behaviours. The internet and associated AI are also increasingly used to mediate play interactions with other children, at the expense of face-to-face interactions. This may have both negative and positive impacts on the quality, variety, safety and emotional benefits of those play interactions.

We also believe the following Rights to be relevant:

**- Access to Information (Article 17)**

AI algorithms are used to target advertising and news to an intended audience, including children. This might comprise sources of disinformation, for instance around health and COVID-19. More broadly, the use of AI algorithms can lead to continuous reinforcement of prior opinions and beliefs, by preferentially presenting information “tailored” to a specific child or group of children, or focusing discussion within “echo chambers” of individuals with shared beliefs. Conversely, AI can be used to help protect children from materials that could harm them, for instance around body image or suicide.

**- Protection from All Forms of Violence (Article 19)**

AI can be used as a tool to help protect children from violence, injury or abuse, (neglect or negligent treatment, maltreatment or exploitation), in both physical and online worlds. For example, AI can be used to help identify children at risk of physical abuse based on patterns of interactions with health and social services. In

the online world, services such as Report Remove (<https://www.childline.org.uk/info-advice/bullying-abuse-safety/online-mobile-safety/remove-nude-image-shared-online/>) allow children to report their own intimate images or videos so that a unique digital fingerprint can be generated for search and removal of so-called “revenge pornography”.

**- Children with Disabilities (Article 23)**

AI has the potential to support a child’s right to enjoy a full and decent life in revolutionary ways. This includes AI-enabled aids for disabilities related to cognition, perception, and mobility. Moreover, adopting a social perspective of disability, AI can be used to improve the physical and social environment itself to be more inclusive and supportive of everyone, including children with disabilities.

**- Health and Health Services (Article 24)**

AI is increasingly used to support research (a recent example being the design of COVID-19 vaccines), planning and delivery of health care, both physical and mental, with a huge potential to enable transformative, positive change. On the other hand, AI-assisted decision-making based on biased data can perpetuate discrimination in access to health care services, as documented for instance for black people in the USA (Millions of black people affected by racial bias in health-care algorithms, <https://www.nature.com/articles/d41586-019-03228-6>). And as with education, the health benefits of AI are not shared equally.

**- Review of treatment in care (Article 25); Social Security (Article 26)**

AI can be used to inform decision-making relating to child social care, and individual or family social security benefits. As in other areas, it is essential to consider the risk of bias and discrimination, and to ensure human oversight and accountability for decisions.

**- Children of minorities/indigenous groups (Article 30)**

There is currently a marked lack of diversity in the population of designers and developers of AI systems, and major AI companies tend to focus their services on large markets, catering to the majority. Many AI services require large training datasets, which might not exist outside the world’s most spoken languages. As a result, several countries, such as Denmark, Italy, and Malta, are investing in the development of AI resources in their national language.

**- Drug abuse (Article 33); Sexual exploitation (Article 34); Abduction, sale and trafficking (Article 35)**

AI can be used as a tool to detect and disrupt criminal networks, and support law enforcement more broadly. For example, AI can help detect online images of child sexual exploitation.

**- Juvenile Justice (Article 40)**

AI can be used to assist decision-making in the justice system, including juvenile justice. As in other areas, it is essential to consider the risk of bias and discrimination, and to ensure human oversight and accountability for decisions.

## 2. What impact will the policy will have on children's rights?

The Strategy aims to have a positive impact on all children's rights listed above, by supporting the development and use of trustworthy, ethical and inclusive AI in Scotland.

To achieve this aim, we will work on three levels:

### **1. Strategic**

Scotland is to become the first devolved nation in the world to directly incorporate the United Nations Convention on the Rights of the Child (UNCRC) into domestic law.

Recognising the specific challenges and opportunities AI presents for children, we will also adopt UNICEF's policy guidance on AI for children (<https://www.unicef.org/globalinsight/reports/policy-guidance-ai-children>), whose nine recommendations draw on the UNCRC:

1. Support children's development and well-being  
*Let AI help me develop to my full potential.*
2. Ensure inclusion of and for children  
*Include me and those around me.*
3. Prioritise fairness and non-discrimination for children  
*AI must be for all children.*
4. Protect children's data and privacy  
*Ensure my privacy in an AI world.*
5. Ensure safety for children  
*I need to be safe in the AI world.*
6. Provide transparency, explainability, and accountability for children  
*I need to know how AI impacts me. You need to be accountable for that.*
7. Empower governments and businesses with knowledge of AI and children's rights  
*You must know what my rights are and uphold them.*
8. Prepare children for present and future developments in AI  
*If I am well prepared now, I can contribute to responsible AI for the future.*
9. Create an enabling environment  
*Make it possible for all to contribute to child-centred AI.*

This will provide a foundational, enabling framework to embed children's rights across the entire strategy.

## 2. Operational

We will take action to put those principles into practice. AI policies and systems should aim to protect children, provide equitably for their needs and rights, and empower them to participate in an AI world by contributing to the development and use of AI.

For example, the Data for Children Collaborative, a joint partnership between UNICEF, the Scottish Government and the University of Edinburgh's Data Driven Innovation Programme, was established to investigate ways of using data to improve the lives of children around the world

(<https://www.dataforchildrencollaborative.com/>)

The group is running a project in Mozambique that uses sustainable machine learning models to improve current population estimates. Census data is not collected frequently enough to account for rapid population change in many emerging economies and is also found to lack precision, particularly in semi-urban and rural areas. UNICEF needs a more accurate understanding of the number of children in each community to better plan and deliver key services, such as vaccination programmes. A multi-disciplinary team from the University of Edinburgh is using state-of-the-art machine learning tools to extract features from satellite images that are relevant to population density estimation, such as building footprints. Micro census data from UNICEF is used to train and validate the machine learning models, providing a user's perspective on the sustainability of these tools. Ultimately, it is hoped that UNICEF will apply the optimal model identified from the project in other countries to improve their programming capabilities and provide better healthcare services to children.

By supporting UNICEF in this initiative, academics and researchers in Scotland are making a global impact by applying their expertise to solve a problem that has existed for decades.

In Scotland, AI is also used to help young people manage their mental health.

Alli-chat (<https://www.voxsio.com/>) is an AI powered chatbot, delivered through mobile apps on iOS and Android, which helps young people manage their mental health. Developed by Voxsio in collaboration with young people, educational psychologists and the NHS, Alli-chat gives users a safe space to talk about their mental wellbeing – a place free from stigma, where they can open up about their feelings and emotions.

Alli-chat uses natural language understanding (NLU) to engage young people in interactive conversations, which are personalised to each user and based on their issues and circumstances. This resource helps young people understand their mental health and how it is affecting them. Alli-chat allows individuals to explore relevant information, drawn from trusted sources, to help them self-manage their mental wellbeing and provides access to tools and activities to help them build mental strength and resilience.

Engaging young people in conversations about their mental health has enormous benefits. Crucially, it is helping to develop a generation of young people who have the vocabulary and the tools to understand and manage their mental wellbeing.

The public sector will continue to lead by example. We will make targeted investments to explore in detail specific challenges relating to children and AI, and develop practical solutions. Our first challenge will focus on giving children understanding and agency over how AI is being used by government to make decisions about them. We will share lessons learned and best practice as part of the Scottish AI Playbook, which will be an open and practical guide to how we do AI in Scotland, so that other sectors can benefit.

We will encourage the public, including children, to develop their understanding of AI using open online resources, and lead a skills plan to ensure everyone has access to AI learning opportunities in our education system.

We will expand international collaboration on AI and children, so that we can learn from good practice elsewhere and influence the global development of AI that respects children's rights by organising international events dedicated to AI and children.

We will build on the success of our AI Climate Emergency Challenge and establish an AI for Good Programme to help solve some of the most significant challenges facing the society and planet that children live in.

### **3. Governance**

We will ensure sustained, meaningful input from children and young people into the strategy's implementation, as key stakeholders, and based on their lived experience, by participating in the Scottish AI Alliance, an open-to-all stakeholder group with representation from across society. The Alliance will provide a focus for dialogue, collaboration and, above all, action on all things AI in Scotland, allowing businesses, economists, trade unions and our UK and international partners to come together and help to shape our AI future. Above all, we will adopt the "Scottish Approach" and create a vehicle for everyone to have their say and be heard – and this includes children. The mechanisms required to achieve this will be co-designed with children, young people, and their representatives and advocates.

#### **Risk management**

We will consider the risks and put in place mitigations in greater detail as each element of the strategy is delivered, and we will involve children and young people in those discussions.

### **3. Will there be different impacts on different groups of children and young people?**



All children and young people will be affected individually to some extent, directly or indirectly. But AI will not affect equally different groups of children and young people. AI has the potential to make a positive impact on everyone's life, but also to exacerbate existing inequalities. A successful, fair and inclusive Strategy will therefore require sustained attention to its impact on different groups, including intersectionality considerations, both in its development and implementation.

**4. If a negative impact is assessed for any area of rights or any group of children and young people, what options have you considered to modify the proposal, or mitigate the impact?**

See section 2.

**5. How will the policy contribute to the wellbeing of children and young people in Scotland?**

Successful implementation of the strategy will support public bodies in Scotland to meet their duties to safeguard, support and promote the wellbeing of children in their area, including:

**Safe** - Protected from abuse, neglect and harm by others at home, at school and in the community.

**Healthy** - Having the highest attainable standards of physical and mental health, access to suitable healthcare, and support in learning to make healthy and safe choices.

**Achieving** - Being supported and guided in their learning and in the development of their skills, confidence and self-esteem at home, at school and in the community.

**Nurtured** - Having a nurturing place to live, in a family setting with additional help if needed or, where this is not possible, in a suitable care setting.

**Active** - Having opportunities to take part in activities such as play, recreation and sport which contribute to healthy growth and development, both at home and in the community.

**Respected** - Having the opportunity, along with carers, to be heard and involved in decisions which affect them.

**Responsible** - Having opportunities and encouragement to play active and responsible roles in their schools and communities and, where necessary, having appropriate guidance and supervision and being involved in decisions that affect them.

**Included** - Having help to overcome social, educational, physical and economic inequalities and being accepted as part of the community in which they live and learn.

#### [6. How will the policy give better or further effect to the implementation of the UNCRC in Scotland?](#)

Our strategy will incorporate UNICEF's nine recommendations for AI and children, which are based on UNCRC. Please see section 1.3 above on how we will engage with children as part of delivering the strategy.

#### [7. What evidence have you used to inform your assessment? What does it tell you?](#)

We have been able to draw upon a wide range of high-quality evidence. In particular, we are grateful for the excellent research made publicly available by UNICEF and the Generation AI initiative (<https://www.unicef.org/innovation/GenerationAI>), a partnership led by UNICEF and including the World Economic Forum, the Government of Finland and others.

Key publications includes:

A review of national AI strategies from a children's perspective:  
*National AI strategies and children - Reviewing the landscape and identifying windows of opportunities*

<https://www.unicef.org/globalinsight/media/1156/file>

*Adolescent Perspectives on Artificial Intelligence - A Report on Consultations with Adolescents Across the World*

<http://tinyurl.com/ai4childrenreport>

Workshop materials:

<https://drive.google.com/drive/folders/1IVh4DTNnFpNeLTLY1c3dX0LmAuO3y6Tu?usp=sharing>

Policy guidance on AI for children:

<https://www.unicef.org/globalinsight/reports/policy-guidance-ai-children>

Designing for Children's Rights Guide (developed with LEGO and other partners)

<https://childrensdesignguide.org/>

And since the publication of the strategy:

*The Case for Better Governance of Children's Data: A Manifesto*

<https://www.unicef.org/globalinsight/reports/better-governance-childrens-data-manifesto>

Other useful resources include:

UK Centre for Data Ethics and Innovation - Review of Online Targeting:

<https://www.gov.uk/government/publications/cdei-review-of-online-targeting/online-targeting-final-report-and-recommendations>

UK Government Online - harms white paper:

<https://www.gov.uk/government/consultations/online-harms-white-paper>

Pineapple Report, commissioned by the European Youth Forum and funded by Google:

<https://www.youthforum.org/new-pineapple-report>

And since the publication of the strategy:

EU Strategy on the Rights of the Child and the European Child Guarantee

[https://ec.europa.eu/info/policies/justice-and-fundamental-rights/rights-child/eu-strategy-rights-child-and-european-child-guarantee\\_en](https://ec.europa.eu/info/policies/justice-and-fundamental-rights/rights-child/eu-strategy-rights-child-and-european-child-guarantee_en)

Additional evidence was gathered through conversations with a range of organisations including UNICEF, the World Economic Forum and the 5 Rights Foundation, and online conferences including:

CogX - How can government policies unlock the potential of AI for children – 9 June 2020

<https://cogx.live/programme-items/how-can-government-policies-unlock-the-potential-of-ai-for-children/>

ITU AI4Good webinar – Keeping our Children Safe with AI – 6 October 2020

<https://aiforgood.itu.int/event/keeping-our-children-safe-with-ai/>

UNICEF Webinar: Children's Voices in AI - Roundtable Discussion – 25 February 2021

<https://www.youtube.com/watch?v=0IRZs2NNajM>

Next generation municipalities offering vulnerable children a future they deserve - 9 March 2021

<https://www.netcompany.com/int/events/2021/Vulnerable-children>

And since the publication of the strategy:

ITU AI4Good webinar - Developing girl's digital and AI skills for more inclusive AI for all – 25 May 2021:

<https://aiforgood.itu.int/event/developing-girls-digital-and-ai-skills-for-more-inclusive-ai-for-all/>

UNICEF Webinar: Children's Data Governance – 22 June 2021

[https://www.youtube.com/watch?v=g309A5Gd2\\_s](https://www.youtube.com/watch?v=g309A5Gd2_s)

Westminster eForum policy conference - Next steps for protecting children online – 29 June 2021

**[8. Have you consulted with relevant stakeholders?](#)**

As part of the development of the Strategy, we conducted a public consultation, which received 83 responses:

<https://www.scotlandaistrategy.com/s/The-AI-Of-The-Possible-Developing-Scotlands-Artificial-Intelligence-AI-Strategy-Final-Consultation-R.pdf>

To seek input from the broadest possible range of stakeholders, we also commissioned Democratic Society to undertake a series of public engagement activities:

[https://www.scotlandaistrategy.com/s/DS\\_The-AI-Of-The-Possible-Engagement-Report.pdf](https://www.scotlandaistrategy.com/s/DS_The-AI-Of-The-Possible-Engagement-Report.pdf)

This included family workshops to increase participation from young people, with the youngest participant aged 12.

At the same time, Democratic Society developed free and easily accessible online materials, including reusable resources for educators, parents and guardians working with different age groups.

<https://www.scotlandaistrategy.com/get-involved>

#### **9. Have you involved children and young people in the development of the policy?**

Yes, see above. But this is only the first stage. As discussed above, we will give children a real say in how our AI strategy is going to be put into action over the next five years, by participating in the Scottish AI Alliance.

## CRWIA – Stage 3

<b>CRWIA title: Scotland’s AI Strategy – Trustworthy, Ethical and Inclusive</b> <b>Publication date:</b>	
<b>Summary of policy aims and desired outcomes</b>	<p>The purpose of Scotland’s Artificial Intelligence (AI) Strategy is to support the development and use of trustworthy, ethical and inclusive AI in Scotland.</p> <p>This will enable AI to contribute to making Scotland:</p> <p><b>Fairer</b> Ensuring that our Values are embedded in our approach to adoption of AI</p> <p><b>Greener</b> Enabling us to make better use of resources and develop new, low carbon industries</p> <p><b>More Prosperous</b> Empowering innovation with confidence building on a foundation of public trust, empowering our workforce and creating high value jobs</p> <p><b>Outward Looking</b> Engaging with global partners that share our values, forging partnerships and contributing to tackling shared challenges</p>
<b>Executive summary</b>	<p>Today’s children are going to live much of their lives in a world where AI is everywhere – at home, at school, at work. AI is and will be used to influence what books children should read, what friends they should make, what they should study, whom they should go out with, what jobs they should apply for and how they are selected for these. AI impacts children’s lives even before they are born, because it also impacts the lives of their parents.</p> <p>Therefore, AI can help improve children’s lives and, at the same time, has the potential to become a negative influence.</p> <p>The Strategy aims to have a positive impact on all children’s rights, by supporting the development and use of trustworthy, ethical and inclusive AI in Scotland.</p> <p>To achieve this aim, we will work on three levels:</p> <p><b>1. Strategic</b></p> <p>Scotland is to become the first devolved nation in the world to directly incorporate the United Nations Convention on the Rights of the Child (UNCRC) into domestic law.</p> <p>Recognising the specific challenges and opportunities AI presents for children, we will also adopt UNICEF’s policy guidance on AI for children (<a href="https://www.unicef.org/globalinsight/reports/policy-guidance-ai-children">https://www.unicef.org/globalinsight/reports/policy-guidance-ai-children</a>), whose nine recommendations draw on the UNCRC.</p> <p><b>2. Operational</b></p> <p>We will take action to put those principles into practice.</p> <p>The public sector will continue to lead by example. We will make targeted investments to explore in detail specific challenges relating to children and AI, and develop practical solutions. Our first challenge will focus on giving children understanding and agency over how AI is being used by government to make decisions about them. We will share lessons learned and best practice as part of the</p>

	<p>Scottish AI Playbook, which will be an open and practical guide to how we do AI in Scotland, so that other sectors can benefit.</p> <p>We will encourage the public, including children, to develop their understanding of AI using open online resources, and lead a skills plan to ensure everyone has access to AI learning opportunities in our education system.</p> <p>We will expand international collaboration on AI and children, so that we can learn from good practice elsewhere and influence the global development of AI that respects children’s rights by organising international events dedicated to AI and children.</p> <p>We will build on the success of our AI Climate Emergency Challenge and establish an AI for Good Programme to help solve some of the most significant challenges facing the society and planet that children live in.</p> <p><b>3. Governance</b></p> <p>We will ensure sustained, meaningful input from children and young people into the strategy’s implementation, as key stakeholders, and based on their lived experience, by participating in the Scottish AI Alliance, an open-to-all stakeholder group with representation from across society.</p> <p>The mechanisms required to achieve this will be co-designed with children, young people, and their representatives and advocates.</p> <p><b>Risk management</b></p> <p>We will consider the risks and put in place mitigations in greater detail as each element of the strategy is delivered, and we will involve children and young people in those discussions.</p>
<p><b>Background</b></p>	<p>While descriptions abound, we define AI as:</p> <p><i>Technologies used to allow computers to perform tasks that would otherwise require human intelligence, such as visual perception, speech recognition, and language translation.</i></p> <p>AI is a broad discipline. It is a group of complementary technologies, including data-driven techniques, which are evolving constantly. For this reason, our Strategy will not focus on any individual trends or innovations. However, one of the most discussed areas of AI are algorithms, which we define as:</p> <p><i>A series of instructions for performing a calculation or solving a problem, especially with a computer. They form the basis for everything a computer can do, and are therefore a fundamental aspect of all AI systems.</i></p> <p>The Strategy will look beyond the technology itself to focus more closely on AI’s role in our society. Much of what we take for granted today happens because AI is working behind the scenes, driving change and technological innovation on an unprecedented scale. However, the use and adoption of AI should be on our terms if we are to build trust between the people of Scotland and AI.</p> <p>We recognise that AI presents specific challenges and opportunities for children. They interact with AI in many ways, but these systems are often not designed with their specific needs in mind. Today children live in a world where AI can help to improve their lives and, at the same time, has the potential to become a negative influence.</p>

**Scope of the CRWIA, identifying the children and young people affected by the policy, and summarising the evidence base**

AI is cross-cutting in nature, and our Strategy will reflect this. Therefore, nearly all aspects of the Strategy will affect children and young people.

Today's children are going to live much of their lives in a world where AI is everywhere – at home, at school, at work. AI is and will be used to influence what books children should read, what friends they should make, what they should study, whom they should go out with, what jobs they should apply for and how they are selected for these. AI impacts children's lives even before they are born, because it also impacts the lives of their parents.

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**Evidence base:**

To carry out this CRWIA, we have been able to draw upon a wide range of high-quality evidence. In particular, we are grateful for the excellent research made publicly available by UNICEF and the Generation AI initiative (<https://www.unicef.org/innovation/GenerationAI>), a partnership led by UNICEF and including the World Economic Forum, the Government of Finland and others.

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<https://www.unicef.org/globalinsight/media/1156/file>

*Adolescent Perspectives on Artificial Intelligence - A Report on Consultations with Adolescents Across the World*  
<http://tinyurl.com/ai4childrenreport>

Workshop materials:  
<https://drive.google.com/drive/folders/1IVh4DTNnFpNeLTLY1c3dX0LmAuO3y6Tu?usp=sharing>

Policy guidance on AI for children:  
<https://www.unicef.org/globalinsight/reports/policy-guidance-ai-children>

Designing for Children's Rights Guide (developed with LEGO and other partners)  
<https://childrensdesignguide.org/>

And since the publication of the strategy:  
*The Case for Better Governance of Children's Data: A Manifesto*  
<https://www.unicef.org/globalinsight/reports/better-governance-childrens-data-manifesto>

Other useful resources include:

UK Centre for Data Ethics and Innovation - Review of Online Targeting:  
<https://www.gov.uk/government/publications/cdei-review-of-online-targeting/online-targeting-final-report-and-recommendations>

UK Government Online - harms white paper:  
<https://www.gov.uk/government/consultations/online-harms-white-paper>

	<p>Pineapple Report, commissioned by the European Youth Forum and funded by Google:  <a href="https://www.youthforum.org/new-pineapple-report">https://www.youthforum.org/new-pineapple-report</a></p> <p>And since the publication of the strategy:  EU Strategy on the Rights of the Child and the European Child Guarantee  <a href="https://ec.europa.eu/info/policies/justice-and-fundamental-rights/rights-child/eu-strategy-rights-child-and-european-child-guarantee_en">https://ec.europa.eu/info/policies/justice-and-fundamental-rights/rights-child/eu-strategy-rights-child-and-european-child-guarantee_en</a></p> <p>Additional evidence was gathered through conversations with a range of organisations including UNICEF, the World Economic Forum and the 5 Rights Foundation, and online conferences including:</p> <p>CogX - How can government policies unlock the potential of AI for children – 9 June 2020  <a href="https://cogx.live/programme-items/how-can-government-policies-unlock-the-potential-of-ai-for-children/">https://cogx.live/programme-items/how-can-government-policies-unlock-the-potential-of-ai-for-children/</a></p> <p>ITU AI4Good webinar – Keeping our Children Safe with AI – 6 October 2020  <a href="https://aiforgood.itu.int/event/keeping-our-children-safe-with-ai/">https://aiforgood.itu.int/event/keeping-our-children-safe-with-ai/</a></p> <p>UNICEF Webinar: Children’s Voices in AI - Roundtable Discussion – 25 February 2021  <a href="https://www.youtube.com/watch?v=0IRZs2NNajM">https://www.youtube.com/watch?v=0IRZs2NNajM</a></p> <p>Next generation municipalities offering vulnerable children a future they deserve - 9 March 2021  <a href="https://www.netcompany.com/int/events/2021/Vulnerable-children">https://www.netcompany.com/int/events/2021/Vulnerable-children</a></p> <p>And since the publication of the strategy:</p> <p>ITU AI4Good webinar - Developing girl's digital and AI skills for more inclusive AI for all – 25 May 2021:  <a href="https://aiforgood.itu.int/event/developing-girls-digital-and-ai-skills-for-more-inclusive-ai-for-all/">https://aiforgood.itu.int/event/developing-girls-digital-and-ai-skills-for-more-inclusive-ai-for-all/</a></p> <p>UNICEF Webinar: Children's Data Governance – 22 June 2021  <a href="https://www.youtube.com/watch?v=g309A5Gd2_s">https://www.youtube.com/watch?v=g309A5Gd2_s</a></p> <p>Westminster eForum policy conference - Next steps for protecting children online – 29 June 2021</p>
<p><b>Children and young people’s views and experiences</b></p>	<p>The evidence base described above includes testimonials from a wide range of children and young people, and detailed analyses of their views and experiences.</p> <p>In addition to reviewing existing evidence and speaking with experts, we conducted a public consultation, which received 83 responses:  <a href="https://www.scotlandaistrategy.com/s/The-AI-Of-The-Possible-Developing-Scotlands-Artificial-Intelligence-AI-Strategy-Final-Consultation-R.pdf">https://www.scotlandaistrategy.com/s/The-AI-Of-The-Possible-Developing-Scotlands-Artificial-Intelligence-AI-Strategy-Final-Consultation-R.pdf</a></p> <p>To seek input from the broadest possible range of stakeholders, we also commissioned Democratic Society to undertake a series of public engagement activities:  <a href="https://www.scotlandaistrategy.com/s/DS_The-AI-Of-The-Possible-Engagement-Report.pdf">https://www.scotlandaistrategy.com/s/DS_The-AI-Of-The-Possible-Engagement-Report.pdf</a></p> <p>This included family workshops to increase participation from young people, with the youngest participant aged 12.</p>



	<p>At the same time, Democratic Society developed free and easily accessible online materials, including reusable resources for educators, parents and guardians working with different age groups.  <a href="https://www.scotlandaistrategy.com/get-involved">https://www.scotlandaistrategy.com/get-involved</a></p> <p>But this is only the first stage. As will be discussed below, we will give children a real say in how our AI strategy is going to be put into action over the next five years, by participating in the Scottish AI Alliance.</p>
<p><b>Key Findings, including an assessment of the impact on children’s rights, and how the measure will contribute to children’s wellbeing</b></p>	<p>The impact of AI on children’s rights is a vast topic, and a detailed analysis is beyond the scope of this CRWIA. We will highlight some of the key issues, and refer the reader to selected publications which will contain references to primary literature.</p> <p>In UNICEF’s <i>Memorandum on Artificial Intelligence and Child Rights</i> (May 2019) (<a href="https://www.unicef.org/innovation/reports/memoAIchildrights">https://www.unicef.org/innovation/reports/memoAIchildrights</a>), the Human Rights Centre at the University of California’s Berkeley School of Law carried out a detailed analysis of which children’s rights (as defined in the UNCRC) are most likely to be affected by AI. These include (with direct quotes from the <i>Memorandum</i> in italics):</p> <p><b>- Freedom from Discrimination (Article 2)</b>  AI is increasingly used in both public and private sectors to assist or automate potentially life-changing decisions affecting children and young people. The data used to train AI algorithms is likely to reflect existing or past biases against various groups of people (e.g. gender, ethnic, socio-economic). If this bias (including its intersectionality component) is not adequately accounted for as part of the design and implementation of AI algorithms, the decisions they will make risk perpetuating, reinforcing, and even legitimising those discriminations. On the other hand, if done correctly, AI offers an opportunity to understand and address past discrimination. A few specific examples are given further down.</p> <p><b>- Freedom of Expression (Article 13)</b>  AI can be used as an enabler of state and private surveillance, for instance in public places and schools, with a potential chilling effect on freedom of expression of children and young people. In addition, much of what children write or express online is recorded, for instance in private databases of large social media companies, and might be used by AI algorithms to make decisions about them (for instance, what type of ads are presented to them). In jurisdictions where is no “right to be forgotten”, that personal information also has the potential to remain stored and used for the duration of their entire life. This could incentivise children and young people to restrict their own freedom of expression to avoid negative consequences in a future, in a way that did not exist prior to the advent of the internet and AI technologies.</p> <p><b>- Privacy (Article 16)</b>  Many uses of AI rely on the use of personal data, and “[...] <i>potential violations of this right are likely. This concern is underscored by the fact that children are also more vulnerable to intrusions into their privacy as their capacity to understand the long-term impacts of sharing personal data is still developing. Additionally, parents have a role to play in protecting their children’s right to privacy. As explained by Kay Firth-Butterfield, “[i]t is difficult (for children) to exercise that right, once you have sufficient mental capacity to do so, if your parents—by having devices that listen and record in your home from your birth—have given away your childhood privacy.</i>”</p> <p><b>- Education (Article 28)</b>  <i>“One of the most important and basic skills that must be learnt at school by children is how to write. It is considered a key competency that is not only an important factor in the job market, but also an important ability for achieving the full development of the human rights personality. AI can have a positive impact on attaining that skill, for example, through the use of automated grading systems to</i></p>

*provide feedback that is essential to improving writing in places where there is a lack of quality education. Nonetheless, these technologies will also impact access to education, as biased and discriminatory machine learning devices may determine who is admitted, as well as who is granted scholarships.”*

During the COVID-19 pandemic in the UK, the use of algorithms to help estimate what an individual child's school exam results might have been, had those exams not been disrupted or cancelled by the pandemic, attracted considerable controversy. In addition, access to the network infrastructure and devices required to benefit from the positive impacts of AI for education is not even, and therefore bridging the “digital divide” is essential. This is all the more important given that AI is set to disrupt the world of work in major ways, so that children (and adults) will need to acquire the right skills and retrain when necessary to make the most of the opportunities offered by AI.

**- Rest and Leisure (Article 31)**

AI is an increasingly important component of children's games and (to a lesser extent) toys, and influences the quality and developmental benefits of play. Children also spend a large amount of time in front of screens, and AI is used to attract and maintain their attention, which can lead to addictive behaviours. The internet and associated AI are also increasingly used to mediate play interactions with other children, at the expense of face-to-face interactions. This may have both negative and positive impacts on the quality, variety, safety and emotional benefits of those play interactions.

We also believe the following Rights to be relevant:

**- Access to Information (Article 17)**

AI algorithms are used to target advertising and news to an intended audience, including children. This might comprise sources of disinformation, for instance around health and COVID-19. More broadly, the use of AI algorithms can lead to continuous reinforcement of prior opinions and beliefs, by preferentially presenting information “tailored” to a specific child or group of children, or focusing discussion within “echo chambers” of individuals with shared beliefs. Conversely, AI can be used to help protect children from materials that could harm them, for instance around body image or suicide.

**- Protection from All Forms of Violence (Article 19)**

AI can be used as a tool to help protect children from violence, injury or abuse, (neglect or negligent treatment, maltreatment or exploitation), in both physical and online worlds. For example, AI can be used to help identify children at risk of physical abuse based on patterns of interactions with health and social services. In the online world, services such as Report Remove (<https://www.childline.org.uk/info-advice/bullying-abuse-safety/online-mobile-safety/remove-nude-image-shared-online/>) allow children to report their own intimate images or videos so that a unique digital fingerprint can be generated for search and removal of so-called “revenge pornography”.

**- Children with Disabilities (Article 23)**

AI has the potential to support a child's right to enjoy a full and decent life in revolutionary ways. This includes AI-enabled aids for disabilities related to cognition, perception, and mobility. Moreover, adopting a social perspective of disability, AI can be used to improve the physical and social environment itself to be more inclusive and supportive of everyone, including children with disabilities.

**- Health and Health Services (Article 24)**

AI is increasingly used to support research (a recent example being the design of COVID-19 vaccines), planning and delivery of health care, both physical and mental, with a huge potential to enable transformative, positive change. On the other hand, AI-assisted decision-making based on biased data can perpetuate discrimination in access to health care services, as documented for instance for

black people in the USA (Millions of black people affected by racial bias in health-care algorithms, <https://www.nature.com/articles/d41586-019-03228-6>). And as with education, the health benefits of AI are not shared equally.

**- Review of treatment in care (Article 25); Social Security (Article 26)**

AI can be used to inform decision-making relating to child social care, and individual or family social security benefits. As in other areas, it is essential to consider the risk of bias and discrimination, and to ensure human oversight and accountability for decisions.

**- Children of minorities/indigenous groups (Article 30)**

There is currently a marked lack of diversity in the population of designers and developers of AI systems, and major AI companies tend to focus their services on large markets, catering to the majority. Many AI services require large training datasets, which might not exist outside the world's most spoken languages. As a result, several countries, such as Denmark, Italy, and Malta, are investing in the development of AI resources in their national language.

**- Drug abuse (Article 33); Sexual exploitation (Article 34); Abduction, sale and trafficking (Article 35)**

AI can be used as a tool to detect and disrupt criminal networks, and support law enforcement more broadly. For example, AI can help detect online images of child sexual exploitation.

**- Juvenile Justice (Article 40)**

AI can be used to assist decision-making in the justice system, including juvenile justice. As in other areas, it is essential to consider the risk of bias and discrimination, and to ensure human oversight and accountability for decisions.

The Strategy aims to have a positive impact on all children's rights listed above, by supporting the development and use of trustworthy, ethical and inclusive AI in Scotland.

To achieve this aim, we will work on three levels:

**1. Strategic**

Scotland is to become the first devolved nation in the world to directly incorporate the United Nations Convention on the Rights of the Child (UNCRC) into domestic law.

Recognising the specific challenges and opportunities AI presents for children, we will also adopt UNICEF's policy guidance on AI for children (<https://www.unicef.org/globalinsight/reports/policy-guidance-ai-children>), whose nine recommendations draw on the UNCRC:

1. Support children's development and well-being  
*Let AI help me develop to my full potential.*
2. Ensure inclusion of and for children  
*Include me and those around me.*
3. Prioritise fairness and non-discrimination for children  
*AI must be for all children.*
4. Protect children's data and privacy  
*Ensure my privacy in an AI world.*
5. Ensure safety for children

*I need to be safe in the AI world.*

6. Provide transparency, explainability, and accountability for children  
*I need to know how AI impacts me. You need to be accountable for that.*

7. Empower governments and businesses with knowledge of AI and children's rights  
*You must know what my rights are and uphold them.*

8. Prepare children for present and future developments in AI  
*If I am well prepared now, I can contribute to responsible AI for the future.*

9. Create an enabling environment  
*Make it possible for all to contribute to child-centred AI.*

This will provide a foundational, enabling framework to embed children's rights across the entire strategy.

## **2. Operational**

We will take action to put those principles into practice. AI policies and systems should aim to protect children, provide equitably for their needs and rights, and empower them to participate in an AI world by contributing to the development and use of AI.

For example, the Data for Children Collaborative, a joint partnership between UNICEF, the Scottish Government and the University of Edinburgh's Data Driven Innovation Programme, was established to investigate ways of using data to improve the lives of children around the world (<https://www.dataforchildrencollaborative.com/>)

The group is running a project in Mozambique that uses sustainable machine learning models to improve current population estimates. Census data is not collected frequently enough to account for rapid population change in many emerging economies and is also found to lack precision, particularly in semi-urban and rural areas. UNICEF needs a more accurate understanding of the number of children in each community to better plan and deliver key services, such as vaccination programmes. A multi-disciplinary team from the University of Edinburgh is using state-of-the-art machine learning tools to extract features from satellite images that are relevant to population density estimation, such as building footprints. Micro census data from UNICEF is used to train and validate the machine learning models, providing a user's perspective on the sustainability of these tools. Ultimately, it is hoped that UNICEF will apply the optimal model identified from the project in other countries to improve their programming capabilities and provide better healthcare services to children.

By supporting UNICEF in this initiative, academics and researchers in Scotland are making a global impact by applying their expertise to solve a problem that has existed for decades.

In Scotland, AI is also used to help young people manage their mental health.

Alli-chat (<https://www.voxsio.com/>) is an AI powered chatbot, delivered through mobile apps on iOS and Android, which helps young people manage their mental health. Developed by Voxsio in collaboration with young people, educational psychologists and the NHS, Alli-chat gives users a safe space to talk about their mental wellbeing – a place free from stigma, where they can open up about their feelings and emotions.

Alli-chat uses natural language understanding (NLU) to engage young people in interactive conversations, which are personalised to each user and based on their issues and circumstances. This resource helps young people understand their mental health and how it is affecting them. Alli-chat allows individuals to explore relevant information, drawn from trusted sources, to help them self-manage their mental wellbeing and provides access to tools and activities to help them build mental strength and resilience.

Engaging young people in conversations about their mental health has enormous benefits. Crucially, it is helping to develop a generation of young people who have the vocabulary and the tools to understand and manage their mental wellbeing.

The public sector will continue to lead by example. We will make targeted investments to explore in detail specific challenges relating to children and AI, and develop practical solutions. Our first challenge will focus on giving children understanding and agency over how AI is being used by government to make decisions about them. We will share lessons learned and best practice as part of the Scottish AI Playbook, which will be an open and practical guide to how we do AI in Scotland, so that other sectors can benefit.

We will encourage the public, including children, to develop their understanding of AI using open online resources, and lead a skills plan to ensure everyone has access to AI learning opportunities in our education system.

We will expand international collaboration on AI and children, so that we can learn from good practice elsewhere and influence the global development of AI that respects children's rights by organising international events dedicated to AI and children.

We will build on the success of our AI Climate Emergency Challenge and establish an AI for Good Programme to help solve some of the most significant challenges facing the society and planet that children live in.

### **3. Governance**

We will ensure sustained, meaningful input from children and young people into the strategy's implementation, as key stakeholders, and based on their lived experience, by participating in the Scottish AI Alliance, an open-to-all stakeholder group with representation from across society. The Alliance will provide a focus for dialogue, collaboration and, above all, action on all things AI in Scotland, allowing businesses, economists, trade unions and our UK and international partners to come together and help to shape our AI future. Above all, we will adopt the "Scottish Approach" and create a vehicle for everyone to have their say and be heard – and this includes children. The mechanisms required to achieve this will be co-designed with children, young people, and their representatives and advocates.

#### **Risk management**

We will consider the risks and put in place mitigations in greater detail as each element of the strategy is delivered, and we will involve children and young people in those discussions.

Successful implementation of the strategy will support public bodies in Scotland to meet their duties to safeguard, support and promote the wellbeing of children in their area, including:

	<p><b>Safe</b> - Protected from abuse, neglect and harm by others at home, at school and in the community.</p> <p><b>Healthy</b> - Having the highest attainable standards of physical and mental health, access to suitable healthcare, and support in learning to make healthy and safe choices.</p> <p><b>Achieving</b> - Being supported and guided in their learning and in the development of their skills, confidence and self-esteem at home, at school and in the community.</p> <p><b>Nurtured</b> - Having a nurturing place to live, in a family setting with additional help if needed or, where this is not possible, in a suitable care setting.</p> <p><b>Active</b> - Having opportunities to take part in activities such as play, recreation and sport which contribute to healthy growth and development, both at home and in the community.</p> <p><b>Respected</b> - Having the opportunity, along with carers, to be heard and involved in decisions which affect them.</p> <p><b>Responsible</b> - Having opportunities and encouragement to play active and responsible roles in their schools and communities and, where necessary, having appropriate guidance and supervision and being involved in decisions that affect them.</p> <p><b>Included</b> - Having help to overcome social, educational, physical and economic inequalities and being accepted as part of the community in which they live and learn.</p>
<p><b>Monitoring and review</b></p>	<p>This <b>draft</b> document is an <b>initial assessment</b> of the impact of Scotland's Artificial Intelligence (AI) Strategy and the Scottish Government will continue to review and update this document where required during the implementation process. Any future iterations will reflect an increased understanding of these impacts as the amount of data and research available continues to grow.</p> <p>This impact assessment should be read in conjunction with the Equalities Impact Assessment, Fairer Scotland Duty Assessment and the Island Communities Impact Assessment (Screening).</p>
<p><b>CRWIA Declaration</b></p>	
<p><b>Authorisation</b></p>	
<p><b>Policy lead</b></p> <p>Jeremy Darot, Head of Artificial Intelligence, Data Division</p>	<p><b>Date</b></p> <p>11<sup>th</sup> May 2022</p>
<p><b>Deputy Director or equivalent</b></p> <p>Albert King, Chief Data Officer, Data Division</p>	<p><b>Date</b></p> <p>11<sup>th</sup> May 2022</p>