

Artificial Intelligence, Big Data and Fundamental Rights

Country Research Estonia

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¹ Report prepared by Ecorys and the University of Tartu. While every effort has been made by the FRA contractor to refer to relevant national institutions, policy developments and law relating to the field of AI and fundamental rights, given the wide reach of AI developments and the quickly evolving nature of the field there may be omissions or recent developments at national level that are not referred to in this country research.

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Abbreviations

AECM	Association of Estonian Cities and Municipalities
AI	Artificial Intelligence
CAHAI	Ad Hoc Committee on Artificial Intelligence
CARICOM	Caribbean Community and Common Market
CIO	Chief Information Officer
CJEU	Court of Justice of the European Union
COE	Council of Europe
DEI	Digitising European Industry
DN	Digital Nations
EAS	Entreprise Estonia
EC	European Commission
ECHR	European Convention on Human Rights
EEC	European Economic Community
EGA	e-Governance Academy
EHRC	Estonian Human Rights Centre
EU	European Union
FRA	Fundamental Rights Agency
GDPR	General Data Protection Regulation
ICT	Information and Communications Technology
IT	Information Technology
ITL	Estonian Association of Information Technology and Telecommunications
MOOC	Massive Open Online Course
NATO	North Atlantic Treaty Organization
NATOCCDCOE	NATO Cooperative Cyber Defence Centre of Excellence
NGO	Non-Governmental Organization
OECD	Organisation for Economic Co-operation and Development
PDPA	Personal Data Protection Act
PIA	Public Information Act
STOA	Panel for the Future of Science and Technology
UK	United Kingdom
UN	United Nations
USA	United States of America
VAT	Value Added Tax
WTO	World Trade Organization

Constitutional and institutional context

1.1 Map of the major stakeholders

1.1.1 National bodies and agencies

In Estonia, all legislation – including legal acts regarding AI – must be adopted by [the parliament \(Riigikogu\)](#). Acts can be initiated by a member, a fraction or a committee of the Riigikogu and by [the Government of the Republic](#).² A large percentage of bills (about 90%)³ is initiated by the government. If the bill is initiated by members, factions or committees of the Riigikogu, the opinion of the government is necessary. Draft laws are debated and changes to them are proposed in the parliament.⁴ An act passed by the Riigikogu is sent to [the President of the Republic](#) for proclamation. The president may refuse to promulgate a law passed by the Riigikogu and return it to the Riigikogu.⁵ If parliament passes the law without any changes for a second time, the president may request [the Supreme Court](#) to declare it unconstitutional. If the supreme court declares the law to be conform with [the constitution](#), the president promulgates the law.

The Ministry of Justice plans and carries out the legal policy of the state and is the ministry responsible for drafting legislative proposals concerning AI. The Minister of Justice has stated that the state must find ways to include artificial intelligence (AI) into the process of law-making, e.g into the impact assessment of legal acts.⁶

² Estonia, 'The Constitution of the Republic of Estonia', 28 June 1992; According to paragraph 103 sec 1 of the Constitution of Estonia (*Eesti Vabariigi Põhiseadus*, 1992). Since 1 June 2010, the Estonian state gazette Riigiteataja is published online exclusively at and contains next to the official Estonian legal acts English translations of several of them. English translations are available via: Riigi Teataja, 'Welcome to the Website of Riigi Teataja', 2012, <https://www.riigiteataja.ee/en/>.

³ Jaan-Juhan Oidermaa ERR Indrek Kuus |, 'Riigikogu 2015 - 2019 | 588 õigusakti, 459 istungit kogupikkusega 1432 tundi', ERR, 21 February 2019, <https://www.err.ee/912724/riigikogu-2015-2019-588-oigusakti-459-istungit-kogupikkusega-1432-tundi>.

⁴ 'Riigikogu Rules of Procedure and Internal Rules Act – Riigi Teataja', 11 February 2003, <https://www.riigiteataja.ee/en/eli/ee/518112014003/consolide/current#>.

⁵ Estonia, 'The Constitution of the Republic of Estonia', Paragraph 107. However, as set forth in § 81, the President must be impartial and stand for public interests thus the President cannot veto a law on the grounds that she does not like it politically.

⁶ Ministry of Justice, 'Õigusloomepoliitika põhialustega lepitaakse kokku hea õigusloome põhimõtted | Justiitsministeerium', 4 June 2019, <https://www.just.ee/et/uudised/oigusloomepoliitika-pohialustega-lepitakse-kokku-hea-oigusloome-pohimotted>.

Important state officers that shape and lead the discussions on AI Policy are:

- at the Government Office of Estonia: the National Digital Advisor (at the time being Marten Kaevats),
- at the MKM: the Government Chief Information Officer (CIO)/Deputy Secretary-General for IT and Telecom (at the time being Siim Sikkut), the Government Chief Data Officer (at the time being Ott Velsberg) and the Government Chief Technology Officer (at the time being Kristo Vaher) and
- at the Ministry of Justice: the Head of the Legislative Policy Department (at the time being Kai Härmand).

The information society policy of the Republic of Estonia is shaped and co-ordinated by [the Ministry of Economic Affairs and Communications](#) (MKM). MKM together with [the Government Office of Estonia](#) leads also the drafting of the governmental AI strategies and other policy papers. They also provide input for [the Ministry of Justice](#), where the AI-related legal amendments are worked out.

[The Data Protection Inspectorate](#) supervises the implementation of and compliance with the rules of personal data protection in Estonia. The inspectorate also acts as a policy adviser on data protection and gives opinions on draft legislation. Furthermore, it supervises the implementation of the [Public Information Act](#), which specifies principles of granting access to information that is obtained upon the performance of public duties.⁷

[The Ministry of Foreign Affairs](#) coordinates international cooperation, including digital and AI related cooperation. The President of Estonia represents the state in international relations. The current president Kersti Kaljulaid and the previous president Toomas Hendrik Ilves have been actively promoting digitalisation and stated their stance on AI, thus influencing AI policy. President Kaljulaid has said that AI regulations should set clear standards but not hinder the market. She has stated support for a cross-sectoral approach and a technology-neutral regulation that is in full compliance with human rights, democratic freedoms and the rule of law, including EU law.⁸

[The National Audit Office](#) investigates and reports on the work of the government and local governments. In the past, they have i.a. reported

⁷ Estonia, 'Public Information Act – Riigi Teataja', 15 November 2000, Paragraphp 3-4, <https://www.riigiteataja.ee/en/eli/ee/529032019012/consolide/current>.

⁸ ERR, 'Kaljulaid sai kolme tunni jooksul Merkelile digiteemasid tutvustada', ERR, 9 October 2019, <https://www.err.ee/990194/kaljulaid-sai-kolme-tunni-jooksul-merkelile-digiteemasid-tutvustada>; Körber Stiftung, 'Digital Frontrunner', Körber-Stiftung, 2018, <https://www.koerber-stiftung.de/en/the-berlin-pulse/2018/kersti-kaljulaid>.

on problems regarding data protection in local governments⁹, on the preservation of state databases of critical importance¹⁰ and on the protection of personal data in national databases.¹¹ The Audit Office was also the author of the first version of the Estonian E-State Charter, the [the new version](#) of which was published together with the Chancellor of Justice in 2018.¹²

[The Chancellor of Justice](#) is the national human rights institution of Estonia. The Chancellor of Justice and its chancellery receive complaints of fundamental rights violations, including complaints related to technology and personal data protection,¹³ and verify that legislation is in conformity with the constitution and other laws. This includes monitoring the prohibition of discrimination and protection of privacy in automated administrative decision-making. The Chancellor of Justice has primarily a advisory function – in case he or she considers the law to contravene the constitution, the chancellor can turn to the supreme court and ask the act to be declared unconstitutional. The chancellor's opinions, however, are not legally binding.

In the context of AI and human rights protection, the Chancellor of Justice has been one of the very few public bodies to address possible challenges to the protection of human rights arising from the implementation of AI. The incumbent chancellor agrees with those legal theorists and political scientists who believe that in recent years, illiberal regimes have used technological advances to strengthen their undemocratic power. According to him, the concentration of personal data in few hands, together with ever-increasing computing power, poses a risk to democracy and individual freedoms, which makes it therefore necessary to protect personal data and deliberately address these risks, including through legal means.

[Enterprise Estonia](#) (EAS), a state foundation to promote business and regional policy in Estonia, and [Startup Estonia](#), a government-initiated umbrella organization supporting startups, support both IT entrepreneurship and innovation including the distribution of financial support for the implementation of AI.

⁹ Toomas Mattson, 'Security of Data Entrusted to Local Governments Not Guaranteed', 6 December 2018, <https://www.riigikontroll.ee/Suhtedavalikkusega/Pressiteated/tabid/168/557GetPage/1/557Year/2018/ItemId/998/amid/557/language/en-US/Default.aspx>.

¹⁰ National Audit Office, 'Guaranteeing Security and Preservation of Critical State Databases of Estonia', 24 May 2018.

¹¹ National Audit Office, 'Effectiveness of Internal Controls in the Protection of Personal Data in National Databases', 25 November 2008.

¹² For more detailed information about the Charter see below, [I.3.4. Everyone's rights in the e-state: The e-State Charter](#).

¹³ 'Chancellor's Year in Review 2017/2018', 2019, <https://www.oiguskantsler.ee/annual-report-2019/protection-of-privacy>.

1.1.2 Advisory councils

[The E-Estonia Council](#), formed in 2014, directs the development of the Estonian digital society and e-governance, especially the implementation of the national digital agenda (see *I.3.1*). The council comprises five experts and ICT sector representatives and three ministers and is chaired by the prime minister. Its work is organized by the strategy unit of the government office. The council gathers a few times a year, listens to relevant reports and approves policy papers. The council can set up expert committees and working groups or commission studies in the field of ICT Policy but so far it has not formed any expert committees related to human rights and AI.¹⁴

In 2018, [an AI Taskforce](#) (*krati tööühm*) was established for a period of one year. It was given the task to develop an Estonian AI action plan and to conduct a legal analysis of necessary legislative changes. The taskforce had a legal sub-group with the task to ascertain legal problems and propose solutions related to autonomous intelligent technologies.¹⁵ The AI taskforce was led by the government office and the MKM. The taskforce was comprised of state authorities, universities, companies and independent experts. In May 2019, they presented their proposals for Estonia's national AI strategy and published a summary of their work, including legal conclusions (see *I.3.2*).¹⁶

[The Cyber Security Council](#), founded in 2009 and chaired by the Secretary General of the MKM, focuses on the development of cyber security mainly in the areas of critical infrastructure and vital services, cyber crime and national defence and aims at contributing to the smooth co-operation between various relevant institutions.

[The e-Governance Academy](#) (EGA) is a non-profit think tank and consultancy organization based on a joint initiative of the government of Estonia, the Open Society Institute and the United Nations Development Programme. They create and transfer knowledge and best practice in the area of e-governance, e-democracy and national cyber security. Most of their efforts are focused on helping other countries by sharing knowledge and experience that Estonia has in the range of e-governance. In 2019, they organized e.g. a conference where the use

¹⁴ "E-Estonia Council, website".

¹⁵ The expert group advising the legal working group of AI Taskforce stated in its first report that any topics of ethics were not core of the work, as the Government Office planned to focus on ethics in cooperation with 'international organizations' and the EU initiative (High Level Expert Group on Artificial Intelligence, "Ethical Guidelines"); Taltech expert group, "1st report on legal framework and analysis related to autonomous intelligent technologies".

¹⁶ Kratid, 'Artificial Intelligence for Estonia', 2019, <https://www.kratid.ee/in-english>.

of AI by the public administration was discussed.¹⁷ The aim of the conference was to reinvigorate the debate on e-Government, particularly in developing countries. The ongoing EGA project “Stimulating regional innovation through better public e-services” evaluates also AI tools and tries to find ways to implement them at regional level.¹⁸

1.1.3 Municipalities

Limited by its size, Estonia does not have regional authorities. Instead, Estonia operates a one-tier local government system and local governments (79 in total) decide on local issues. As AI regulations and usage of AI in e-governance pose a major challenge, they are mostly resolved at national level.

In recent years, the state has taken steps to give more power of decision to local governments and to strengthen their technological competence. The state government gives financial support to [the Association of Estonian Cities and Municipalities \(AECM\)](#), the Estonian local governments umbrella organization, for the coordination and development of local governments’ IT systems.¹⁹ As envisaged by the Ministry of Finance that is tasked with coordinating regional policy, the AECM will be an important partner both for local governments and the MKM concerning the development and coordination of IT solutions (including AI) for local governments. As envisaged by the Ministry of Finance, the AECM would coordinate universal IT systems suitable for all local governments that would not have to waste resources on developing their own systems and could instead use centralized solutions where reasonable. At the moment, one of AECM’s planned projects, VOLIS 2, will be using AI and open data.²⁰

Depending on their size and (financial) resources, local governments differ vastly in their stance towards smarter cities and technological competence. The cities of Tallinn and Tartu are for example both

¹⁷ e-Governance Academy, ‘The 5th E-Governance Conference: Same Goals, Different Roadmaps’, *E-Governance Academy* (blog), 1 April 2019, 5, <https://ega.ee/news/the-5th-e-governance-conference-same-goals-different-roadmaps/>.

¹⁸ e-Governance Academy, ‘Stimulating Regional Innovation through Better Public E-Services’, *E-Governance Academy* (blog), accessed 20 March 2020, <https://ega.ee/project/stimulating-regional-innovation-through-better-egovernment-services/>.

¹⁹ ‘Riigireformu Tegevuste Ülevaade 2017-2019’, 2019; ‘Valitsuskomisjon ja Eesti Linnade ja Valdade Liidu 2019. Aasta Riigieelarve Läbirääkimiste Lõpp-Protokoll’, 7 September 2019.

²⁰ VOLIS is an information system for local authorities that enables meetings and sessions to be conducted online, broadcasting the local government’s sittings live, detailed information about events in the municipality, the local government’s work and e-participation for citizens.

politically and financially supporting the implementation of AI and providing funding for startup developing programs²¹ in their cities. In Tallinn, there are e.g. self-driving delivery robots, a driverless bus route,²² an AI based pedestrian crossing and autonomous snow-shoveling robots for public use.²³ In 2017, changes were made in the national Traffic Act to enable the use of self-driving delivery robots²⁴ and testing self-driving vehicles.²⁵ However, the impact on human rights, other than indirectly through the issue of safety, was not addressed in this context.²⁶ Currently, the MKM is about to prepare a new transport development plan which will include the issue of self-driving cars but it is not publicly known yet whether the impact on human rights will be assessed.

In spring 2019, the [city of Tallinn](#) and the [Tallinn University of Technology](#) launched a new research, innovation and educational collaboration called TalTechCity. The initiative covers a wide range of projects, from self-driving vehicles to the use of AI to create personal

²¹ Tallinna Loomeinkubaator, 'Loomeinkubaator', Loomeinkubaator, 2020, <https://inkubaator.tallinn.ee/en/>; Tartu Teaduspark, 'Incubation', *Tartu Science Park* (blog), 2020, <https://teaduspark.ee/en/incubation/>; Tartu Loome Majandus Keskus, 'Inkubatsioon', 2020, <https://loovtartu.ee/lmk/ettevotjale/inkubatsioon>; e-Estonia, 'Driverless Public Bus Route Now Open in Tallinn', e-Estonia, 29 August 2019, <https://e-estonia.com/driverless-public-bus-tallinn/>.

²² Ylle Tampere, 'Eesti Idufirma Avas Tallinnas Nutika Ülekäiguraja, Mis Sästab Elusid Ja Robotite Aega', Forte, 3 October 2019, <https://forte.delfi.ee/a/87633735>.

²³ e-Estonia, 'Autonomous Snow-Shovelling Robots Coming to a Street near You', e-Estonia, 8 November 2019, <https://e-estonia.com/autonomous-snow-shovelling-robots/>.

²⁴ "Traffic Act – Riigi Teataja", Chapter 7: "Requirements and traffic rules for self-driving delivery robots".

²⁵ On April 7, 2017, an amendment to the Traffic Act entered into force, § 78 of which provides for type approval, individual vehicle approval and validity of approval. Under that provision, it is necessary to apply for individual approval of a self-driving vehicle that will be tested on roads. The testing right for Estonia's public roads applies to self-driving vehicles classified as level SAE 2 or SAE 3 vehicles according to the classification of the International Society of Automotive Engineers (SAE International). These vehicles must have a driver either within the vehicle or act remotely who is responsible for the vehicle and takes control of it if necessary. An autonomous vehicle may not be tested on public roads before an application has been submitted to the Road Administration and the Road Administration has satisfied that application.

Ministry of Economic Affairs and Communications, 'Estonia Allowing a Number of Self-Driving Cars on the Streets Starting Today', 2 March 2017, <https://www.mkm.ee/en/news/estonia-allowing-number-self-driving-cars-streets-starting-today>; 'Liiklusseaduse, riigilõivuseaduse ja toote nõuetele vastavuse seaduse muutmise seadus 281 SE', Riigikogu, 15 March 2017, <https://www.riigikogu.ee/tegevus/eelnoud/eelnou/>.

²⁶ 'Liiklusseaduse, riigilõivuseaduse ja toote nõuetele vastavuse seaduse muutmise seadus 281 SE'; 'Liiklusseaduse muutmise seadus 399 SE', Riigikogu, 16 February 2017, <https://m.riigikogu.ee/tegevus/eelnoud/eelnou/>.

routes for tourists²⁷ and sensors collecting information about the movement of people and vehicles to detect air pollution and regulate traffic flow.²⁸ There is a smart street in Tallinn with different sensors that monitor the flow of people, cyclists and cars, the fullness of the trash cans and the environmental indicators.²⁹ Tallinn also works with Finland's capital Helsinki on the Finest Twins project, which aims to create a Centre of Excellence for Smart and Sustainable Cities and to deepen research and development into new models of municipal smart governance.³⁰

The second largest Estonian city after Tallinn, [Tartu](#), is taking steps towards increased energy efficiency within the European project [SmartEnCity](#). The city forms also part of a joint project between the City of Tartu, ICT companies and infrastructure companies called [Estonian Smart City Cluster](#). The project aims to create an innovative urban environment that will boost the competitive ability of companies by bringing together businesses, citizens, public authorities, R&D institutes and structures that support innovation.

1.1.4 Research institutions

Estonia's two largest universities are the [University of Tartu \(UT\)](#) and the [Tallinn University of Technology \(TalTech\)](#). The UT has an IT Law program³¹ and an International Law and Human Rights program.³² In 2020, the University of Tartu will open a new master's program on Data Science that will also be Estonia's first.³³ Like the UT, TalTech also teaches both law and computer science. Initiated by its Ragnar Nurkse Department of Innovation and Governance, TalTech has a [Digital](#)

²⁷ Renna Tõniste, 'TalTech and the City of Tallinn Are Building a Smart City Together', 7 March 2019, <https://www.ttu.ee/news/news-2/university-2/taltech-and-the-city-of-tallinn-are-building-a-smart-city-together/>.

²⁸ Pealinn, 'Tallinn on Targa linna arendamisel teistele eeskujuks', 1 March 2019, <http://www.pealinn.ee/tagid/koik/tallinn-on-targa-linna-arendamisel-teistele-eeskujuks-n237757>.

²⁹ ERR, Jakob Rosin, "Huvitaja": Tallinnas sõitey robotbuss ehmatas raagus puid nähes end seisma.

³⁰ TalTech, 'TalTech and Aalto Universities Receive a 32 Million Euros Teaming Grant to Build a Smart and Sustainable Talsinki as a Prototype for Europe and the World', 4 April 2019, <https://www.ttu.ee/news/news-2/university-2/taltech-and-aalto-universities-receive-a-32-million-euros-teaming-grant-to-build-a-smart-and-sustainable-talsinki-as-a-prototype-for-europe-and-the-world/>.

³¹ University of Tartu School of Law, 'IT Law Programme', 17 November 2014, <https://oigus.ut.ee/en/admissions/programme-information-technology-law>.

³² University of Tartu School of Law, 'International Law and Human Rights', 23 December 2015, <https://oigus.ut.ee/en/admissions/international-law-and-human-rights>.

³³ Universitas Tartuensis, 'Tartu Ülikool Avab Eesti Esimese Andmeteaduse Magistriõppekava | Ajakiri.Ut.Ee', June 2019, <https://www.ajakiri.ut.ee/artikkel/3236>.

[Governance Lab](#) that aims to develop public governance models and frameworks for the digital age.

[The Estonian Research Council](#) is a governmental foundation established to pool the funding of R&D. The Council acts as a partner to research institutions. One of its projects is called “Possibilities of using AI in e-governance” which comprises the development and legal assessment of governmental AI tools. The two-year project starting in fall 2019 is carried out in collaboration between the UT, TalTech, [Cybernetica AS](#), a research and development ICT company, and [STACC](#), a private company financed by Enterprise Estonia³⁴ that provides machine learning and data science competence and develops AI solutions in Estonia.

[Praxis](#) is a socio-economic research centre in Estonia. Their works include a study about digitising industry in Estonia³⁵ that also assessed autonomous systems. So far, Praxis has not published any works related to AI and human rights’ issues. In an independent article, one of Praxis experts expressed concerns on how AI will affect democracy on a broader scale stating that with the help of big data and machine learning algorithms, centralized systems and autocratic societies gain advantage over dispersed and liberal systems and centralized systems get better at making data driven decisions than elected politicians.³⁶

[The Foresight Centre](#) is a think tank at the Estonian parliament that analyses long-term developments in society. They have pointed out that “combining different data can increase the risk of violating people's right to privacy, which can increase unethical policymaking. [...] The use of artificial intelligence in decision-making can create inequalities in access to public services.”³⁷ As a possible future scenario they see that “vices are massively regulated and taxed, big data is used for prevention to guide citizens to better decisions. [...] Excessive interference of the state into the private lives of citizens may give them the feeling of living in a police state.”³⁸

1.1.5 Judiciary

³⁴ See above [I.1.1 National bodies and agencies](#).

³⁵ Praxis Think Tank, ‘Digitising Industry’, Praxis, accessed 20 March 2020, <http://www.praxis.ee/en/works/digitising-industry>.

³⁶ Mõttehommik, ‘Tarmo Jüristo: Kui Tehisintellekt Inimesest Mööda Läheb’, Praxise mõttehommik, 29 October 2018, <http://mottehommik.praxis.ee/tarmo-juristo-kui-tehisintellekt-inimesest-mooda-laheb/>; Praxis Think Tank, ‘Rauno Vinni: Eesti riigivalitsemise maailmameistriks?’, Praxis, 25 February 2019, <http://www.praxis.ee/kajastused/rauno-vinni-est-riigivalitsemise-maailmameistriks>.

³⁷ Arenguseire Keskus, ‘Valitsemine 2030: Riigivalitse - mise ja e-riigi stsenaariumid’, 2018, 72.

³⁸ Keskus, 8.

In Estonia, courts of first instance and courts of appeal are administered jointly by the Council for the Administration of Courts³⁹ and the Ministry of Justice.⁴⁰ [The Supreme Court](#) is an independent constitutional institution that administers itself and is financed directly from the state budget.

The former Minister of Justice has pointed out that courts will soon face cases related to AI and therewith connected questions like whether an algorithm constitutes a major source of danger within the meaning of §1056 of Law of Obligations Act⁴¹ or if the robot owner bears responsibility for not updating the robot's software. He furthermore expressed unease that the criminal justice system is not ready to prevent and detect technological crimes, although technology is becoming an issue in most crimes. In the minister's opinion, the courts need more technological skills and a better ability to analyze data.⁴² However, these topics have not received much reaction nor from the wider public nor from the press.

Former Chief Justice of the Supreme Court, Priit Pikamäe, has said that the Estonian Judiciary should be more innovative and implement AI to assist judges in finding patterns in the vast amounts of court documents.⁴³ The current Chief Justice, Villu Kõve, has also indicated that AI systems may help the judiciary and legal practitioners to organize and find information.⁴⁴

1.1.6 Civil society

Estonian civic sector activity in the area of fundamental rights protection concerning data processing is modest with only one notable organisation - the Estonian Human Rights Centre.

³⁹ The Council for Administration of Courts is comprised of the Chief Justice of the Supreme Court, five judges elected by the Court *en banc* for three years, two members of the Riigikogu, a sworn advocate appointed by the Board of the Bar Association, the Prosecutor General or a public prosecutor appointed by him or her, and the Chancellor of Justice or a representative appointed by him or her.

⁴⁰ 'Courts Act - Riigi Teataja' (2002), paragraph 39, <https://www.riigiteataja.ee/en/eli/ee/514022014001/consolide/current>.

⁴¹ See also [II Laws and regulations applicable to AI and big data](#).

⁴² Urmas Reinsalu, 'Justiitsminister Urmas Reinsalu Ettekanne Kohtunike Täiskogul 08.02.2019', 8 February 2019, https://www.just.ee/sites/www.just.ee/files/kohtunike_taiskogu_urmas_reinsalu_07.02.2019.pdf.

⁴³ Priit Pikamäe, 'Õigus- Ja Kohtusüsteemi Areng: Ettekanne Kohtunike Täiskogul 9. Veebruaril 2018 Tallinnas', 9 February 2018, https://www.riigikohus.ee/sites/default/files/elfinder/analyyisid/2017/RKE_ettekannet%C3%A4iskogu_2018.pdf.

⁴⁴ 'Kohtute Aastaraamat 2018', 2018, 16, 19, https://www.kohus.ee/sites/www.kohus.ee/files/elfinder/kohtute%20aastaraamat%20001-208_digi.pdf.

[The Estonian Human Rights Centre \(EHRC\)](#) is an independent non-governmental human rights advocacy organisation and one of the most well-known human rights NGOs in Estonia. They monitor the overall human rights situation in Estonia and publish bi-annual human rights reports about the situation in Estonia. One of their focus areas is the right to privacy.⁴⁵ In December 2019, the centre published an analysis “Human Rights, Information Society and Estonia: Initial Mapping” that inter alia addressed issues related to AI and human rights. The EHRC proposes for example:

- the creation of a comprehensive solution for the use of personal data, where the citizen can easily and clearly see which government services use his or her personal information and how and where he or she can agree to or opt out of the processing of his or her personal data or submit objections to its automated processing;
- the analysis of every AI-based decision from a human rights perspective, based on the idea that decisions made with AI should reduce, not intensify discrimination;
- a profiling ban in the field of national security based on special categories of personal data.⁴⁶

The EHRC’s report “Human Rights In Estonia 2020” indicates that the Data Protection Inspectorate needs more resources in order to hire technical experts capable of monitoring compliance with principles of data protection by design and by default and watching the interoperability of public e-services and systemic analysis of open data.⁴⁷

Apart from the EHRC, civic activity regarding fundamental rights and specifically data protection in Estonia is modest. It has been noted in this regard, that the right of data subjects to mandate non-profit bodies to lodge complaints on their behalf (regulated in article 80 of the GDPR as well as the possible implementation of the collective action mechanism it foresees) are of no use in Estonia, as it lacks of respective interest groups.⁴⁸

⁴⁵ ECHR, ‘Politseidroonide kasutamine vajab täpsemat reguleerimist’, Eesti Inimõiguste Keskus, 11 September 2018, <https://humanrights.ee/2018/09/politseidroonide-kasutamine-vajab-tapsemat-reguleerimist/>.

⁴⁶ ECHR, ‘Inimõigused, infoühiskond ja eesti: Esialgne kaardistus’, 2019, 16.

⁴⁷ ECHR, ‘Human Rights in Estonia 2020’, Estonian Human Rights Centre, 12 December 2019, <https://humanrights.ee/en/2019/12/human-rights-in-estonia-2020/>.

⁴⁸ Karin Sein, Monika Mikiver, and Paloma Krõõt Tupay, ‘Pilguheit Andmesubjekti Õiguskaitsevahenditele Uues Isikuandmete Kaitse Üldmääruses’, *Juridica*, no. II (2018): 94–115.

Estonia has also tried to popularize democratic e-participation with different initiatives that have not been very successful.⁴⁹ According to United Nations 2018 data, Estonia ranks 16 of 193 in the e-government development index, but 27 of 193 in the e-participation index.⁵⁰

1.2 Relations between the public and private sector

One of the key elements of the successful implementation of the Estonian e-state has been the close cooperation between the state and the private sector. Already in the 1990's, Scandinavian banks were interested in this new market and its opportunities. Banks were also pioneers in offering customers their services online.⁵¹

Nowadays, citizens and/or residents can use their government-backed digital identity to access an increasing number of private sector services that benefit from the possibility of online authentication, such as banking.⁵²

The Estonian public sector mostly outsources the development of its IT solutions.⁵³ Respectively, the government has also involved experts from the private sector in the two most important AI related expert groups: the self-driving vehicles expert group and the AI taskforce. The self-driving vehicles expert group (2016-2018) assessed whether Estonian law needed any changes to allow self-driving cars on the roads (for their conclusions see I.3.3). The AI taskforce (2018-2019) wrote the national AI strategy and carried out a legal analysis (see I.3.2).

The Estonian government has also published the so-called "first base component for AI based applications", which all parties from the public and private sectors are free to use and develop in accordance with their needs. The "first base component for AI based applications" added to the source code repository is a *text analysis tool* created by the private company [Texta OÜ](#), which has been used by many institutions to date for increasing the effectiveness of their work processes. The Ministry of Education and Research, for instance, uses the tool for the audit of their document management, in order to identify documents which have become public without permission. With the help of Texta, the Ministry

⁴⁹ e-Estonia, 'E-Estonia: E-Governance in Practice', 2016, 80, <https://ega.ee/wp-content/uploads/2016/06/e-Estonia-e-Governance-in-Practice.pdf>.

⁵⁰ United Nations, 'Country Information on Estonia', 2018.

⁵¹ Tarmo Kalvet, 'The Estonian Information Society Developments Since the 1990s', *Praxis*, 2007, 34.

⁵² e-Estonia, 'E-Estonia: E-Governance in Practice', 9.

⁵³ e-Estonia, 43.

of Justice removed personal data from nearly 80,000 judicial decisions concerning time-barred punishments.⁵⁴

Texta tools have also been used by private companies, e.g. to build a system that would make documents machine-readable (job offers in picture format), parse documents into sections and recommend similar documents to users; to analyse around 50 million internet comments in order to build classification models to automatically detect and tag comments not suitable for publishing; to analyse whether online comments contained something insulting, threatening, obscene or racist; to automatically detect names from newspaper articles and predict relationships like father, wife, son, daughter etc.⁵⁵

The government pursues also private sector engagement for the development of national digital strategies. For example, ideas gathered at the “Digital Agenda for Estonia 2021+” [conference for Estonian policymakers, businesses and citizens](#) in September 2019 are used to prepare the Digital Agenda for Estonia 2021+, which will be adopted by the end of 2020. There is coaching⁵⁶, hackathons⁵⁷ and conferences⁵⁸ held to help implement AI both in the public and the private sector. The state and local governments support startup incubators.

In the IT-sector, the most important private sector partner for the state is the [Estonian Association of Information Technology and Telecommunications \(ITL\)](#) - a voluntary organization which primary objective is to unite the Estonian information technology and telecommunications companies and organizations. The ITL is involved in the implementation of the National AI Strategy and works towards adopting AI in the private sector.⁵⁹

As can be seen from the above, relations between the public and private sector tend to focus on business interests.

⁵⁴ Registrate ja infosüsteemide Keskus, ‘Esimene Kratijupp Jõudis Koodivaramusse | RIK’, 18 October 2019, <https://www.rik.ee/et/news/esimene-kratijupp-joudis-koodivaramusse>.

⁵⁵ TEXTA, ‘TEXTA’, Home Page, 2020, <https://texta.ee/home>.

⁵⁶ Alpine House, ‘Alpine House | Superangel.io’, Superangel, 2020, <https://www.superangel.io/alpinehouse>.

⁵⁷ Garage 48, ‘Next Events’, Garage48, 2020, <http://garage48.org/events>.

⁵⁸ North Star AI, ‘Accelerate AI Impact in EU’, Applied Data Science Conference for Developers, 2020, <https://aiconf.tech>; Latitude 59, ‘The Flagship Startup and Tech Event of the World’s First Digital Society’, 2020, <https://latitude59.ee/>; Robotex, ‘Robotex International’, *Robotex International* (blog), 2020, <https://robotex.international/>; sSTARTUp Day, ‘STARTUp Day 2020’, sSTARTUp Day 2020, 2020, <https://www.startupday.ee/en>.

⁵⁹ Estonian Association of Information Technology and Telecommunications in Estonian, ‘Info- Ja Kommunikatsioonitehnoloogia Sektori Visioon Infoühiskonnast Eestis Aastal 2020’, 2013, <https://wp.itl.ee/files/Visioon2020.pdf>.

1.3 National strategies and guidelines

The Estonian strategy for developing the information society and ensuring cyber security ([Eesti infoühiskonna arengukava 2020](#), [English summary: Digital Agenda 2020 for Estonia](#), published by the MKM in 2018) refers to the enforcement of fundamental freedoms, human rights and personal data protection. The agenda aims to further develop the information society of Estonia while also increasing cyber security. No definition of AI is given in this strategy, although it does explicitly refer to AI. Although the strategy refers to the need to protect fundamental freedoms and human rights, it does not list any specific measures to be taken in this regard. According to the strategy, every person should be the owner of his or her data and have the possibility to track the usage of his or her personal data by the state. However, the agenda does not provide specific methods how such protection will be enforced.⁶⁰

The Government Office of the Republic of Estonia has begun preparing the state's long-term strategy "[Estonia 2035](#)". Among others, it will also consider AI and its impact. The strategy determines that for the growth of entrepreneurship, the Estonian legal environment must be adapted in order to avoid unnecessary hindrances for the implementation of AI. According to this view, [overregulation must be prevented](#).

1.3.1 Report of Estonia's AI taskforce

The [kratid⁶¹-project](#), an expert group led by the MKM and the Government Office and executed in cooperation with [EY Global](#), published in May 2019 their [report](#) on the implementation and future development of practical applications based on AI technologies, which was used as a basis for Estonia's national AI strategy. It aims to enable the implementation of AI in the public sector to gain a [competitive edge compared to other states](#). The group was tasked with proposing an action plan to boost the implementation of *kratts* in Estonia's public and private sector.

To achieve the proposed objectives of the Estonian AI action plan, the *kratt*-group advises piloting AI projects as quickly and as diversely as possible. That goes for both the public and the private sector. To this

⁶⁰ 'Eesti infoühiskonna arengukava 2020', 2019, 17.

⁶¹ Kratid, 'Artificial Intelligence for Estonia'. In Estonian mythology, a Kratt is a magical creature. Essentially, Kratt was a servant built from hay or old household items. Therefore, the Estonian government uses this character as a metaphor for AI and its complexities." *Kratid* is the plural form of *kratt*.

end, R&D and possibilities in education must be expanded to meet the demands of developing AI.

The report sets the following targets for public sector AI usage in the coming years.

- AI systems used in the public sector: 5 → (2018) → 23 (2019) → 50 (by the end of 2020)⁶²
- Number of institutions applying AI systems: 17 (2019) → 25 (by the end of 2020).
- Basic components of AI systems created⁶³: 1 (2019) → 5 (by the end of 2020).

No comprehensive list of implemented AI systems (23 as of 28.10.2019) exists. The following solutions have been piloted – this is not an exhaustive list:

- Detection of anomalies in the centrally managed distributed Data Exchange Layer between information systems X-Road by the Information System Authority;⁶⁴
- Information system SATIKAs detects mowing by using satellite data by the Agricultural Registers and Information Board;⁶⁵
- Transcription service for courtrooms by the Ministry of Justice;
- Profiling jobseekers and generating suggestions for open positions by the Unemployment Insurance Fund;
- Prediction of road conditions and return on investment by the Road Administration;
- Prediction of locations where highway patrols are required by the Police and Border Guard Board;
- Prediction model for chronically ill patients and their treatment requirements by the Health Insurance Fund;
- Chatbot in customer service by Statistics Estonia;⁶⁶
- Detection of the volume of traffic via cameras by the City of Tallinn;⁶⁷

⁶² 'Eesti infoühiskonna arengukava 2020', 11.

⁶³ Republic of Estonia Government Office and Ministry of Economic Affairs and Communications, 'Report of Estonia's AI Taskforce', May 2019, 23. Basic components constitute "basic modules of *kratt* solutions that the next institutions can "train" based on their data and needs and thus apply without major development works in their field."

⁶⁴ Kratid Project, 'Kratid X-tee andmevahetuse anomaaliate tuvastamiseks', Krattide veebileht, 2019, <https://www.kratid.ee/ria-kasutuslugu>.

⁶⁵ University of Tartu, 'Information System SATIKAS Helps to Detect Mowing by Using Satellite Data', Information system SATIKAS helps to detect mowing by using satellite data, 23 January 2019, <https://kosmos.ut.ee/en/news/information-system-satikas-helps-detect-mowing-using-satellite-data>.

⁶⁶ AlphaBlues, 'New Customer – Statistics Estonia', *AlphaBlues* (blog), 17 January 2019, <https://alphablues.com/new-customer-statistics-estonia/>.

⁶⁷ Kratid Project, 'Masinnägemise kratt liikluse paremaks korraldamiseks', Krattide veebileht, 2019, <https://www.kratid.ee/tlt-kasutuslugu>.

- Temporary driverless public bus route in Tallinn.⁶⁸

The report raises numerous ethical questions related to the implementation of AI,⁶⁹ but the discussion does not go beyond a reference to ethics and it distinctly lacks a clear focus on the potential problems. For the most part of its fundamental rights' discussion, the report refers to the [ethics guidelines for trustworthy AI by the EU High-Level Expert Group on AI](#).

The expert group points out the need for developers and implementers of AI to guarantee its human-centered design. In addition to that, greater attention is to be paid to more vulnerable groups of society.⁷⁰ Despite pointing out to the need to protect fundamental rights, the *kratt*-group does not bring forth any specific measures for the state to apply to ensure respect for fundamental rights when it comes to developing AI.

The *kratid*-project also includes a separate legal working group. A public [summary](#) (in Estonian) of their work was presented in January 2019.⁷¹

The legal analysis of the legal working group concludes that a separate artificial intelligence law is not required, as in the foreseeable future, AI systems will remain to be a tool used by humans to fulfil certain tasks. The concept of artificial superintelligence continues to be hypothetical for the near future. Thus, a need for regulation of such systems has not yet arisen and a separate law does not have to be enacted.⁷² The legal working group notes that by legal analogy, it could be considered to handle AI like animals – such a solution could apply to AI solutions already in use today. In Estonian legislation, animals are neither legal entities nor [things](#) within the meaning of civil law.⁷³ §1060 of the [Law of](#)

⁶⁸ ERR, 'Gallery: First Passengers Ride Driverless Bus in Tallinn', ERR, 29 August 2019, <https://news.err.ee/974526/gallery-first-passengers-ride-driverless-bus-in-tallinn>.

⁶⁹ Republic of Estonia Government Office and Ministry of Economic Affairs and Communications, "Report of Estonia's AI Taskforce", 42.

⁷⁰ Republic of Estonia Government Office and Ministry of Economic Affairs and Communications, "Report of Estonia's AI Taskforce", 42.

⁷¹ The overall three reports on the legal framework and analysis related to autonomous intelligence technologies are not publicly accessible.

⁷² 1st report on the legal framework and analysis related to autonomous intelligence technologies (point 15) and 2nd legal working group report, page 24. TalTech and Law Office Tehver & Partnerid.

⁷³ 1st report on the legal framework and analysis related to autonomous intelligence technologies, pt 15. TalTech and Law Office Tehver & Partnerid. "Animals are seen in the legislation of many countries as something more than just "things" – inanimate objects. They do not however have legal personality of their own and the responsibility for their actions is held by someone else with a supervisory duty – a human with a certain relationship to the animal (owner, handler). /.../ commentators have suggested similarities with robots: beings that act to a certain extent independently but are not capable of possessing full rights and legal personality."

[Obligations Act](#)⁷⁴ states that the keeper of an animal shall be liable for damage caused by the animal. The supreme court has defined the keeper of an animal as someone who acts as the master of the animal, but does not have to be the owner of it.⁷⁵

The legal working group places great emphasis on the need to evaluate AI systems and solutions, especially considering possible data protection issues. However, evaluating existing AI systems was not a part of their tasks.⁷⁶ They also suggest establishing a state-funded insurance fund. Most importantly, the legal working group raises the question of liability for artificial intelligence. Estonian legislation foresees [liability for damage caused by a major source of danger](#)⁷⁷ - the group holds the view that AI systems also fall under major sources of danger.⁷⁸

1.3.2 Estonia's national artificial intelligence strategy

The [national AI strategy](#) was adopted by the Estonian government on 25 July 2019. The strategy acts as a part of the European Union's coordinated action plan on AI. In total, the Estonian government is expected to invest at least 10M euros on the implementation of this strategy for the period 2019-2021. Its aim is not to concentrate on one industry but to encourage widespread testing of AI. The strategy was adopted based on the action plan proposal of the Estonian AI taskforce.

Just as the AI taskforce,⁷⁹ the national AI strategy defines AI in accordance with the commonly used EU definition, according to which "artificial intelligence includes systems that exhibit intelligent behaviour by analysing their environment and making decisions that are independent to a certain extent to meet certain objectives."⁸⁰ The taskforce broadly uses the Estonian term *kratt*, which means, "practical applications based on artificial intelligence technologies (in the narrow artificial intelligence meaning) performing a specific function."⁸¹

The strategy proposals are categorized according to the four objectives of the strategy:

⁷⁴ See [II. Laws and regulations applicable to AI and big data](#) for more information.

⁷⁵ Riigikohus Tsiviilkolleegium, Kohtuotsus Eesti Vabariigi nimel, No. 3-2-1-75-07 (Riigikohus Tsiviilkolleegium 24 november 2007).

⁷⁶ 2nd legal working group report, p 14.

⁷⁷ Riigikogu, 'Law of Obligations Act – Riigi Teataja' (2001), Paragraph 1056 (2), <https://www.riigiteataja.ee/en/eli/ee/515012020004/consolide/current>.

⁷⁸ 1st legal working group report, pt 23.

⁷⁹ See: [1.2 Advisory councils](#).

⁸⁰ High-level expert group on Artificial Intelligence, 'A Definition of AI: Main Capabilities and Disciplines' (Brussels, 8 April 2019).

⁸¹ Republic of Estonia Government Office and Ministry of Economic Affairs and Communications, 'Report of Estonia's AI Taskforce', 15.

- Advancing the use of AI in the public sector in Estonia: The actions focus on raising awareness among public agencies, improving officials' skills, ensuring funding for the development of AI systems and ensuring their sustainability. Interoperability of AI systems has to be ensured for the eventual creation of an autonomous AI-powered e-assistent - the so-called *#bürokratt*.
- Advancing the use of AI in the private sector in Estonia: The strategy aims to assist both implementers and developers of AI systems. Measures comprise a training programme, MOOC and innovation grants.
- Developing AI R&D and education in Estonia: Measures include training of professionals and updates to current general education, undergraduate and postgraduate curricula.
- Developing a legal environment for the use of AI: According to the strategy, there is no need for fundamental changes of the Estonian legal system. However, to enable the use of AI, certain legislative amendments shall be made. A respective bill is to be submitted to parliament by June 2020. The possible legislative changes are further discussed in [section III](#). The AI strategy also does not refer to fundamental rights or the protection thereof.

1.3.3 Beginning of an era of self-driving vehicles: final report of the expert group

The Estonian self-driving vehicles' expert group issued its [final report "Beginning of an era of self-driving vehicles: final report of the expert group"](#) (in Estonian) in February 2018. The report focuses on the foreseeable future (3-5 years) of self-driving cars in Estonia. The expert group calls for a shift in mentality (transport → mobility as a service) and for strategic steps to be taken at national level, incl. investments. Since March 2017, self-driving vehicles may be tested on all public roads in Estonia. The only requirement for testing is a human driver that can control the vehicle in case of an emergency and therefore be legally responsible. As an example, in summer of [2017](#) and [2019](#), Tallinn launched a special self driving bus line. The route was free of charge for everyone. A presenter was on each bus to explain the driverless technology to passengers and to ensure their safety.

1.3.4 Everyone's rights in the e-state: The e-State Charter

The [e-State Charter](#) was drafted by the National Audit Office and the Chancellor of Justice in 2018.⁸² It is a summary of citizens' rights when communicating with the agencies electronically. Although the charter is not legally binding, citizens can use it to individually assess the protection of their rights whilst using state-provided e-services. The e-

⁸² National Audit Office and Chancellor of Justice, 'Everyone's Rights in e-State: The e-State Charter', 26 March 2018, https://www.mkm.ee/sites/default/files/content-editors/eng_e-riigi_harta_26.03.2018_lopp.pdf.

state charter has established evaluation criteria for citizens and state authorities alike, but so far there are no publicly known cases in which citizens have referred to this charter for the protection of their rights.

Regarding AI systems, the most important parts of the charter cover rights such as the right to know what data agencies have collected, how they are protected and the right to receive public services easily and conveniently. Rights and freedoms listed in the e-state charter are based on an analysis of legislation and practice and do not provide for new additional rights.

1.4 International relations

1.4.1 General strategy

The Estonian government has ever since been actively sharing and promoting its AI experience with other countries. It has i.e. developed an [e-Estonia Briefing Centre](#) in Tallinn, where its digital solutions, including AI solutions and projects, are presented to international delegations.⁸³ According to Apolitical, a global internet platform for civil servants, the chief information officer of the government of Estonia is one of the most influential people in the sphere of digital government.⁸⁴

For Estonia, an important platform for sharing AI experience has been the [Digital Nations \(DN\)](#). Estonia is a founding member of DN, an international forum of governments who lead in pioneering digital practices to improve citizens' lives. Members of DN help one another and contribute with expertise on a non-binding, voluntary basis. DN has also a Working Group on AI that supports members in the fulfilment of the "Shared Approach for the Responsible Use of AI by Governments".⁸⁵

⁸³ Ministry of Economic Affairs and Communications, 'New E-Estonia Briefing Centre Taking Estonian Digital Success Stories to the World', 20 February 2019, <https://mkm.ee/en/news/new-e-estonia-briefing-centre-taking-estonian-digital-success-stories-world>.

⁸⁴ Sten Hankewitz, 'Estonia's Siim Sikkut One of the Most Influential People in Digital Government – Policy Platform', *Estonian World* (blog), 12 August 2018, <https://estonianworld.com/people/estonias-siim-sikkut-one-of-the-most-influential-people-in-digital-government-ngo/>.

⁸⁵ Leading Digital Governments, "Artificial Intelligence", Leading Digital Governments, 24 June 2019, <https://leadingdigitalgovs.org/comunicacion/noticias/artificial-intelligence>. The "Shared Approach for the Responsible Use of AI by Governments" establishes following goals that are not legally binding: understand and measure the impact of using AI by developing and sharing tools and approaches; be transparent about when and in what context we are using AI, starting with a clear user need and public benefit; provide meaningful explanations about AI decision-making, while also offering opportunities to review results and challenge these decisions; be as open as

Estonia works closely with other governments within the DN but has also established bilateral cooperations with some states, for example the UK, Canada and Denmark.⁸⁶

Another important platform for sharing the government's digital experience and solutions with other interested countries is [the Estonian e-Governance Academy \(EGA\)](#).⁸⁷ EGA has delivered digital transformation solutions in transitional societies, especially in Eastern and Central Europe and Asia and it also has cooperation projects with other EU countries.⁸⁸ As Estonia has a memorandum of understanding with the African Union and cooperates with the Caribbean Community and Common Market (CARICOM) to support effective, efficient and transparent digital public service development, EGA has been actively involved also in this regard in collaboration and support initiatives with the respective countries.⁸⁹

1.4.2 European linkages

On both expert and political level, Estonian representatives participate in AI cooperation groups of the European Union, the Council of Europe (CoE) and at regional level with the Nordic and Baltic states. Estonia is for example involved in the European Commission High Level Member States Group on AI and Digitising European Industry (DEI), in the CoE Ad Hoc Committee on Artificial Intelligence⁹⁰ and in the European Parliament's Panel for the Future of Science and Technology.⁹¹ The former Commission Vice-President for the Digital Single Market in 2014-2019, Andrus Ansip, had previously been prime minister of Estonia.

The governments of Nordic and Baltic countries, including Estonia, cooperate on AI. In May 2018, ministers responsible for digital development in the Nordic-Baltic region jointly released a "Declaration on AI in the Nordic-Baltic region" with the goal of "developing and

we can by sharing source code, training data, and other relevant information, all while protecting personal information, system integration, commercial integrity, and national security and defence; provide sufficient training so that government employees developing and using AI solutions have the responsible design, function, and implementation skills needed to make AI-based public services better.

⁸⁶ Leading Digital Governments, 'D9 Members', Leading Digital Governments, 2019, <https://leadingdigitalgovs.org/d9-members>.

⁸⁷ See above [I.1. National bodies and agencies](#).

⁸⁸ Including Austria, Belgium, Faroe Islands (Denmark), Finland, Germany, Greece, Netherlands, Portugal and Spain.

⁸⁹ e-Governance Academy, 'Projects of E-Governance Academy', e-Governance Academy, 2020, <https://ega.ee/projects/>.

⁹⁰ Council of Europe, 'Ad Hoc Committee on Artificial Intelligence – CAHAI', Artificial Intelligence, 2019, <https://www.coe.int/en/web/artificial-intelligence/cahai>.

⁹¹ Panel for the Future of Science and Technology (STOA), 'Members', 2020, <https://www.europarl.europa.eu/stoa/en/home/members>.

promoting the use of artificial intelligence to serve humans.”⁹² One of the collaboration areas is to develop ethical and transparent guidelines, standards, principles and values as guidance for the use of AI. The agreement states that the use of AI should be based on standards which enable interoperability, privacy, security, trust, good usability and portability. The countries also established the goal of avoiding unnecessary regulation.⁹³

Estonia has close digital cooperation ties with Finland. In 2017, a public sector data exchange facility between Finland and Estonia was created. In 2019, Estonia and Finland started the joint project *FINEST Twins*.⁹⁴ The project involves the establishment of the Smart City Centre of Excellence in Tallinn with the aim to mobilize all leading smart city actors and stakeholders in Estonia and to establish solid long-term high-level research, knowledge-transfer and innovation partnerships with counterparts from the Helsinki region.⁹⁵

Estonia has also developed a data embassy concept – a bank of servers to store data that has the same legal protection as a traditional embassy. Estonia’s first data embassy is based in a high-security data centre in Betzdorf, a commune in eastern Luxembourg.⁹⁶

1.4.3 International linkages

Estonia participates in AI-related discussions in the UN, WTO, OECD and NATO. In the OECD, the Chief Information Officer of Estonia is the chairman of the Senior Digital Government Officials Working Party (E-leaders). The MKM gave input to the G20 Ministerial Statement on Trade and the Digital Economy and the G20 Principles on AI which were adopted in June 2019.⁹⁷ The experts of the MKM and the Ministry of Justice participated in developing the OECD Principles on AI.⁹⁸ International cooperation on AI is managed mostly by the MKM.

⁹² Government of Sweden and Nordic Council of Minister, ‘AI in the Nordic-Baltic Region’, 14 May 2018.

⁹³ Government of Sweden and Nordic Council of Minister.

⁹⁴ See above, [1.1.3. Municipalities](#).

⁹⁵ Ralf-Martin Soe, ‘Targa linna tippkeskus Finest Twins’, *Targa linna tippkeskus Finest Twins* (blog), 21 June 2019, <https://sirp.ee/s1-artiklid/c21-teadus/targa-linna-tippkeskus-finest-twins/>.

⁹⁶ e-Estonia, ‘Data Embassy’, e-Estonia, 2020, <https://e-estonia.com/solutions/e-governance/data-embassy/>; see also: POLITICO, ‘Like His Tiny Country, Xavier Bettel Has Learned to Pick His Shots’, POLITICO, 21 September 2019, <https://www.politico.eu/article/luxembourg-tiny-country-xavier-bettel/>.

⁹⁷ Vabariigi Valitsus, ‘Peaminister Jüri Ratas arutab G20 riikidega tehisintellekti ja digitaalsete lahenduste laiemat kasutamist’, Valitsus.ee, 7 June 2019, <https://www.valitsus.ee/et/uudised/peaminister-juri-ratas-arutab-g20-riikidega-tehisintellekti-ja-digitaalsete-lahenduste>.

⁹⁸ OECD, ‘Artificial Intelligence: OECD Principles on AI’, 2020, <https://www.oecd.org/going-digital/ai/principles/>.

Estonia is among the non-permanent members of the UN Security Council in 2020-2021. In the UN Security Council, Estonia aims to work towards a better application of international law in the digital space⁹⁹ and raise issues like cybersecurity and artificial intelligence.¹⁰⁰

Estonia is home to the European IT agency and the [NATO Cooperative Cyber Defence Centre of Excellence \(NATO CCD COE\)](#) where machine learning tools are also used. The Ministry of Foreign Affairs has also established a new department for cyber diplomacy.¹⁰¹ The department's aim is to contribute to sectoral bilateral and multilateral relations and cooperation in the cyber field and participate in formats related to internet freedom.

1.5 Sample of recent cases

1.5.1 General remarks

AI solutions used by the public sector in Estonia comprise for example: prediction of the condition of roads, [detection of cybersecurity incidents by monitoring traffic](#), [intelligent traffic signs](#), [profiling jobseekers and generating suggestions for open positions](#), [chatbots](#), [prediction models for the health of chronically ill patients](#) and the detection of the volume of traffic. Examples of AI systems undergoing development in the public sector include detecting sudden cardiac failure and detecting tree and plant species.¹⁰² As of October 2019, the [first component for AI-based applications](#), developed by Texta OÜ, has been published in the state's public code repository.¹⁰³

[Private sector organisations are already using AI systems](#), but they are mostly applied by larger companies and not yet widespread. The kratid-project reports that a lack of even basic digitization is the first hurdle to

⁹⁹ Kersti Kaljulaid, 'Speech at the 74th United Nations General Assembly', 25 September 2019, <https://www.president.ee/en/official-duties/speeches/15448-address-by-the-president-of-the-republic-of-estonia-kersti-kaljulaid-at-the-74th-united-nations-general-assembly/index.html>.

¹⁰⁰ ERR, 'President: Estonia Can Raise Issue of Cyber Security on UN Security Council', ERR, 12 August 2018, <https://news.err.ee/853264/president-estonia-can-raise-issue-of-cyber-security-on-un-security-council>.

¹⁰¹ Ministry of Foreign Affairs, 'The Ministry of Foreign Affairs Gains a New Department for Cyber Diplomacy', 12 September 2019, <https://vm.ee/en/news/ministry-foreign-affairs-gains-new-department-cyber-diplomacy>.

¹⁰² Republic of Estonia Government Office and Ministry of Economic Affairs and Communications, 'Report of Estonia's AI Taskforce', 18.

¹⁰³ See above, [I.2 Relations between the public and private sector](#).

cross for many small and medium-sized businesses in Estonia.¹⁰⁴ Therefore, governmental measures are expected to support businesses when adopting or developing AI solutions by way of training programmes, activities aimed at raising awareness and financial grants.

1.5.2 AI judge for small-claims cases

The MKM and the Ministry of Justice are currently working on [creating a so-called AI judge](#), albeit only for payment order procedures. As payment orders are free of evidence, it is held that the AI system would only have to control the given facts, e.g if the claim doesn't surpass the limit of 6400 euros for payment orders.

Estonian Chief Data Officer Velsberg [stated](#) in this regard, that many of the risks people associate with AI are overstated. He stressed that the quality of AI-powered decisions is only as high as the quality of the data that is being fed into the system and humans were never bias-free either.

The Deputy Secretary General of the Judicial Administration Policy Department of the Ministry of Justice Viljar Peep emphasised in an [interview](#) that AI would never fully replace a judge in the Estonian court system. Rather, it was intended to deploy AI to assist judges.

The former Supreme Judge at the Estonian Supreme Court Priit Pikamäe was sceptical that robots would be able to replace judges in decision-making.¹⁰⁵ The Chancellor of Justice Ülle Madise remained also doubtful that AI will replace judges because only a person can make fair and reasonable weighing decisions. According to her, proper consideration requires sufficient factual knowledge, knowledge of theory, practice, and system, and flexible thinking.¹⁰⁶

Associate Professor of Civil Law Piia Kalamees expressed in a recent article the opinion that the procedure for payment orders should not be automated. According to Kalamees, the automation of payment order proceedings poses the danger that standard contract terms cannot be reviewed anymore by the courts ex officio, as required by CJEU case-law. The applicant may simply avoid a judicial review of contract terms by not submitting them when applying for the payment order. As a result, consumer rights might be violated. According to Kalamees, instead

¹⁰⁴ Republic of Estonia Government Office and Ministry of Economic Affairs and Communications, 'Report of Estonia's AI Taskforce', 26 ff.

¹⁰⁵ Priit Pikamäe, 'Õigus- Ja Kohtusüsteemi Areng: Ettekanne Kohtunike Täiskogul 9. Veebruaril 2018 Tallinnas'.

¹⁰⁶ Ü. Madise, 'Põhiseaduse caimust ja võimust muutuvast ühiskonnas', *Teadusmõte Eestis*, 2018.

of automatisisation the Estonian judiciary should rather make sure that each petition for a payment order is assessed individually.¹⁰⁷

1.5.3 Supermarket self-service with age recognition

The legal age to buy alcohol and tobacco products in Estonia is 18 years. To comply with this legislation, a supermarket in the Northern-Estonian town of Keila implemented [StrongPoint](#)'s self-service software with [Yoti](#)'s age detection solutions. The [supermarket in Keila is now using automatic age detection solutions](#) to approve purchases. If the system reaches an inconclusive result upon processing, a cashier is asked to manually verify the age of the client. The client may also opt for manual verification. In a [referred video article](#), a 15 year old minor was allowed to pass the age detection test. This raised concerns of minors being able to buy alcoholic and tobacco products and whether minors are protected enough by such systems if the age detection system is not able to accurately detect their age. The company later claimed that the issue was fixed and had been caused by an error in the self-service sale procedure, not within the age detection module itself. [Larger rival retail chains claim](#) that age detection solutions are not yet sophisticated enough to allow their implementation and trust their decisions. The [CEO of the solution provider StrongPoint claims](#) that the application of such technologies allows to create a fully automated supermarket equipped with only self-service machines. In public, the supermarket self-service machines with automatic age recognition raised no privacy concerns.

1.5.4 Use of surveillance equipment by the police

In September 2018, the Estonian Police [began using unmanned aerial vehicles for traffic supervision](#). The Executive Director of the Estonian Human Rights Centre Kari Käsper [called for](#) a new legal basis for such surveillance activities, as current legislation was adopted before the development and use of drones and could therefore not count with their use and possible fundamental rights infringements caused by them. In his opinion, the vision of police drones cannot be limited in the way it can be concerning simple cameras. Inevitably, drones will also capture footage of what should otherwise be considered private, including gardens and other private spaces. As a result, new threats to fundamental rights arise. Although the concerned use of drones in question does not pose a threat to fundamental rights by way of artificial intelligence or big data, the very fast development of such systems means that the deployment of AI systems by the police to analyse footage captured by drones might not be as far away as one would like to think. In their [response](#), the Police and Border Guard Board stated

¹⁰⁷ Pia Kalamees, 'Tarbija Õiguste Kaitse Maksekäsu Kiirmenetluses Euroopa Kohtu Praktika Valguses', *Juridica* 2019, no. 8 (2019): 613–24.

that the usage of drones was in compliance with the [Law Enforcement Act](#) and falls under the processing of data by monitoring equipment which is allowed for ascertaining and countering a threat or for eliminating a disturbance.

The [Police and Border Guard Board also encourages](#) local authorities to share their monitoring equipment with them to maintain public order. A representative from the development department of the police was quoted in a newspaper article stating that when it comes to the development of AI, the aim is to catch up with tech giants such as the USA and China.¹⁰⁸ Although facial recognition is not yet in use for public cameras, its application has already been subject to discussion. A representative of the police has also [stated](#) that national legislation is not able to keep up with the advent of surveillance systems powered by big data. According to his statement, the police is already using automatic number plate recognition systems in various surveillance cameras.¹⁰⁹ The Police and Border Guard Board has not yet taken an official stance on whether the use of smart cameras requires legislative changes or not.

¹⁰⁸ Virumaa Teataja, 'Omavalitsused saavad kaamerapilti jagada politseiga', Virumaa Teataja, 2 May 2019, <https://virumaateataja.postimees.ee/6651536/omavalitsused-saavad-kaamerapilti-jagada-politseiga>.

¹⁰⁹ Sirp, 'Eesti on saja tuhande valvekaamera maa', *Sirp* (blog), accessed 20 March 2020, <https://www.sirp.ee/s1-artiklid/c9-sotsiaalia/eesti-on-saja-tuhande-valvekaamera-maa/>.

2 Laws and regulations applicable to AI and big data

The following section provides an overview of national laws and regulations relevant when implementing AI systems and using big data in Estonia. Due to the developed Estonian e-society, a multitude of laws already allow the use of automated data processing in various tasks assigned to the public sector. Despite that fact, relevant case law is still scarce. As the use of artificial intelligence and big data extends across all market sectors, an increasing amount of laws and regulations have to be considered in their implementation.

Certain laws already allow certain public authorities to issue administrative acts/documents in an automated manner (see [Taxation Act](#) § 46² - 'The tax authority of state taxes may issue an administrative act and a document in an automated manner without the direct intervention of an official of the tax authority'; similarly: [Environmental Charges Act](#) § 33⁶, [Code of Civil Procedure](#) § 489²). According to the [explanatory memorandum](#) to the respective [amendment](#) of the Taxation Act, the issuance of automated administrative acts and documents speeds up and streamlines the communication between tax authorities and taxable persons. An electronic administrative act can be issued by data systems without the intervention of an official. Such an act does not have the name and position of the issuing official written on it. Automated administrative acts, as exemplified in the [explanatory statement](#), could be orders to file a tax declaration, registering a VAT payer in the VAT registry, tax deferral decisions, claims for interest, tax notices *et cetera*.¹¹⁰ Decisions which require further substantiation or additional hearing of the parties, e.g. a tax assessment or a liability decision, cannot be issued in an automated way.

Estonian laws and the respective statutes settle also the criteria for the enactment and maintenance of public databases, including the amount and type of information they may contain and the bodies and institutions the data may be shared with and the extent to which the data is publicly accessible (see below examples of Land Register Act and the Health Services Organisation Act; as another example, the communicable diseases database NAKIS, which is based on the [Communicable Diseases Prevention and Control Act](#) and its respective statute, can be named).¹¹¹ These regulations may therefore also affect the type and amount of data that can be used by AI.

¹¹⁰ 'Explanatory Statement Accompanying the Law Amending the Taxation Act', n.d.

¹¹¹ 'Communicable Diseases Prevention and Control Act – Riigi Teataja' (2003), <https://www.riigiteataja.ee/en/eli/ee/522122016003/consolide/current>;

Sector	Title in English (unofficial translations)	Fundamental rights addressed	EU basis?	Remedies if rights violated	Description
Cross-sectoral	Estonian Constitution (EC)	Fundamental rights are listed in Chapter II. EC § 10 contains the so-called progress clause, according to which the fundamental rights enshrined in the EC do not preclude additional rights, which arise from the spirit of the Constitution or are in accordance therewith.		Legal remedies for violations of any fundamental right are foreseen by law. If the legislator has not established an effective mechanism without loopholes for the protection of fundamental rights, the judiciary must ensure the protection of fundamental rights pursuant to § 14 of the Constitution.	According to EC § 44 (3), any person is entitled to access information about them held by public authorities. EC § 26 enshrines the right to privacy, which according to the Estonian courts' practice includes the protection of processing of personal data. The Supreme Court of Estonia has in its practice (1994) also acknowledged the right to informational self-determination, but has not separately explained its meaning. Commentaries to the Estonian Constitution define informational self-determination as the right of a person to decide for him- or herself, how much and if at all his or her personal data is being collected by the state. ¹¹² The implementation of AI can pose a threat to these fundamental rights. No relevant case law exists in Estonia yet.

¹¹² 'Eesti Vabariigi Põhiseadus', § Paragraph 26, accessed 20 March 2020, <https://pohiseadus.ee/index.php?sid=1&ptid=31&p=26>.



Public administration, law enforcement	Public Information Act (PIA)	Right to access to documents	(EU) 2016/210, 2003/98/EC and 2013/37/EU	A fine of up to 1200 euros can be imposed under PIA § 54 ¹ for the violation of requirements for disclosure and release of public information.	The purpose of the PIA is to ensure that every person has the opportunity to access information intended for public use (the legal basis for this right can be found in § 44 (1) EC). The public authorities have to enable the public to monitor the performance of public duties. Public authorities must ensure clarity and disclosure of information concerning the provision of public services (e.g. see § 1, § 9 (2) p)(4, § 28 of PIA). Public authorities must also disclose information about the purpose, scope and methods of processing personal data, the communication of personal data to third persons, including other agencies, and the making of personal data available to the public, and the right of and procedure for a person to examine data concerning themselves (§ 39 of PIA; this right is again based on the EC's § 44 (3)). As far as the use of AI by public authorities involves information intended for public use or the handling of personal data held by the public
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Public administration, law enforcement	Administrative Procedure Act	Right to good administration, protection of personal data	(EU) 2016/679 (GDPR)	If an administrative measure violates the rights of a person, the person may require an administrative authority or court to cancel or terminate the performance of a measure and to eliminate the consequences of the measure and compensate for the damages pursuant to the State Liability Act (§ 109 Administrative Procedure Act).	<p>authorities, the regulations of the PIA do also apply it.</p> <p>The purpose of the act is to ensure an uniform administrative procedure which allows the participation of affected persons and judicial control. The act is relevant when issuing administrative acts using AI technologies. Although AI is not mentioned specifically.</p> <p>§ 3 of the act states that the fundamental rights and freedoms or other subjective rights of a person may be restricted only pursuant to law; administrative acts and measures shall be appropriate, necessary and proportionate to the stated objectives.</p> <p>§ 4 (2) states that the right of discretion shall be exercised in accordance with the limits of authorisation, the purpose of discretion and the general principles of justice, taking into account relevant facts and considering legitimate interests.</p> <p>§ 7 of the Act states that administrative proceedings shall be public and personal data shall</p>
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					be processed according to the GDPR.
Cross-sectoral	Personal Data Protection Act (PDPA)	Protection of personal data, right to private life, right to an effective remedy and to a fair trial, right to good administration, non-discrimination.	(EU) 2016/679 (GDPR) and (EU)2016/680	Chapter six establishes remedies for violations of various requirements put forth in the GDPR.	The PDPA protects natural persons upon the processing of personal data and provides standards for implementing the GDPR, and transposing Directive (EU) 2016/680. It also stipulates the method of state supervision over the processing of personal data and liability for violations of requirements thereof.
Cross-sectoral	Code of Civil Procedure (§ 489 ²)	Equality before the law, right to an effective remedy and to a fair trial, right to good administration.	(EU) 2016/943, 2011/7/EU, (EU) 1215/2012, (EU) 606/2013, (EU) 650/2012, (EC) 1393/2007, (EC) 1896/2006, (EC) 805/2004, (EC) 861/2007, (EU) 655/2014, 2003/8/EC, (EC) 2201/2003,	An error in the proceedings (incl. faulty orders made in an automated manner) may be contested in the appellate court.	Orders for payment may be made in an automated manner if the fulfilment of the prerequisites for making the order (the sum must not surpass a set amount <i>et cetera</i>) are met and can be verified in an automated manner. The aim is to follow the principle of good administration (deducted from § 14 of the Estonian Constitution). Automated processes allow the simplification of proceedings for every citizen.



Insurance	Insurance Activities Act (§ 218, § 219)	Protection of personal data, right to good administration, respect for private life, freedom of enterprise, the duty of public institutions to guarantee the rights and freedoms provided in the Constitution (§ 14 EC).	(EC) 4/2009, (EC) 44/2001 (EU) 2018/411, (EU) 2016/2341, 2002/92/EC, 2009/138/EC, 2011/89/EU, 2014/51/EU, (EU) 2016/97, (EU) 2016/679, (EU) 1094/2010, (EU) 1286/2014, (EU) 2015/35 and 2004/113/EC		The act regulates insurance activities, insurance distribution and supervision thereof. § 218 and § 219 of the act regulate the processing and transmission of personal data. Public authorities, health care providers, insurance undertakings and other third parties may transmit personal data at the request of an insurance undertaking if the personal health or court data are necessary to the insurance undertaking for the performance of an insurance contract or if the right and obligation to disclose such data derives from law or other legislation. The scope of this act also includes data transfers for the purpose of data processing within AI systems.
Cross-sectoral	Equal Treatment Act	Equality, non-discrimination, right to an effective remedy	2006/54/EC, 2008/104/EC, 2010/41/EU, 2000/43/EC, 2000/78/EC and 2004/113/EC	§ 24 of the act gives the injured party the right to demand the discontinuation of discrimination and compensation for respective damages suffered.	The scope of the act includes the protection of persons against discrimination on grounds of nationality, race, colour, religion or other beliefs, age, disability or sexual orientation. All of this also applies to AI systems, be it in the private or public sector. As such,



					automation bias is to be avoided when developing and implementing AI systems.
Employment	Employment Contracts Act	Non-discrimination, freedom to choose an occupation and right to engage in work, other rights related to employment as regulated in the EU Charter	2008/104/EC, 2003/88/EC and 2010/18/EU		The act regulates employment relationships. § 3 of the act obliges employers to ensure the protection of employees against discrimination, follow the principle of equal treatment and promote equality. Considering the fact that AI systems are widely used during recruitment in various companies, companies must take care to ensure the protection of candidates against discrimination, to follow the principle of equal treatment and promote equality.
Cross-sectoral	Gender Equality Act	Equality between women and men, right to an effective remedy, non-discrimination	2006/54/EC, 2010/41/EU, 2004/113/EC, 79/7/EEC and 92/85/EEC	§ 13 of the act gives the injured party the right to demand the termination of harmful activity and compensation for respective damages.	The Gender Equality Act ensures the equal treatment of men and women as also provided for in the Constitution of the Republic of Estonia. Implementing AI systems may pose a threat to equal treatment. Processes powered by AI systems must be in compliance with this act to rule out automation bias.
ICT	Cybersecurity Act	Protection of personal data	(EU) 2016/1148	A fine of up to 800 euros or 20 000 euros for a legal person can be imposed according to § 18 of the act	The act sets the requirements for the maintenance of networks and information systems essential for the functioning of society. These



				for violating the duties of a service provider when applying security measures.	requirements also apply to state and local authorities' networks and information systems. It also establishes legal obligations for the prevention and resolution of cyber incidents. AI systems developed and implemented by the state must comply with the cybersecurity requirements established within this act to ensure the protection of personal data for all Estonian citizens.
Cross-sectoral	Law of Obligations Act (§ 1056, § 1061)	Right to an effective remedy, freedom to conduct a business	See the full list here , e.g. (EU) 2015/2366, (EU) 2016/97 and 2002/47/EC.	<p>The person managing a major source of danger is subject to claims for compensation in case of damage (regardless of culpability) – the principle of risk liability.</p> <p>The producer is liable for causing the death of a person and for causing bodily injury to or damage to the health of a person if this is caused by a defective product.</p> <p>The AI taskforce stated in their final report that the main challenge is distributing the risks between the creator, manufacturer, and user of an autonomous agent</p>	§ 1056 enacts liability for damage caused by a major source of danger regardless of the person's culpability. A thing or an activity is designated as a major source of danger if major or frequent damage may arise therefrom even if it is handled or done by a specialist. The AI Taskforce concluded in their final report that this principle can be applied to the activity of AI explaining that: "Software applications (including those based on artificial intelligence) do not pose a threat in and of themselves (similarly to motor vehicles). This is why it is important to differentiate. In especially sensitive areas of use,



				<p>in a situation where the autonomous agent causes damage to or violates the obligations of a party. However, the AI taskforce concluded that the current legislation of Estonia, more specifically the said paragraphs, provide a mechanism that enables the fair and specific distribution of compensation for damage caused by devices that are too complex or dangerous.¹¹³</p>	<p>such as digital applications in medicine or use of service robots, increased source of danger liability applied to digitally automated processes should be considered based on analogies of liability from animal husbandry, road pavement, and pharmacy – at least when these could damage significant legal interests in an especially permanent manner, particularly with relation to injuries and death. increased liability in the case of absence of guilt and even if they have the right to share this liability with software developers and/or manufacturers, irrespective of the non-performance of their own obligations (e.g. resulting from manufacturer's liability). In distributing legal liability in risk-sharing, the following leading principles are adhered to: those who benefit from self-learning software applications should bear liability for the errors and risks caused by the software applications even if the system is unpredictable. There is no immediate need to establish</p>
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¹¹³ Republic of Estonia Government Office and Ministry of Economic Affairs and Communications, "Report of Estonia's AI Taskforce", 39.



					<p>special regulations to connect kratts with the concept of increased danger. The judicial area gives sufficient opportunities to use this legal approach in relevant cases and, insofar as the market and scope of using kratts is only just developing, the application of risk liability should belong in the sphere of competitive legal argumentation that is assessed by the legal practice and legal awareness of the judge separately in each specific case.</p> <p>In future, there is a need to additionally analyse the use of kratts that are directly linked to the life and health status of humans and determine or categorise such cases of use of kratts to establish a doctrine for the application of the principle of increased source of danger on a case-by-case basis.”¹¹⁴</p>
Public Administration	State Liability Act	Right to an effective remedy, right to good		Remedies for damages caused by public authorities are generally regulated in the State Liability Act . Measures	The State Liability Act provides the procedure for the protection and restoration of rights violated by the exercise of public powers. This

¹¹⁴ Republic of Estonia Government Office and Ministry of Economic Affairs and Communications, “Report of Estonia’s AI Taskforce”, 39-40.



		administratio n, right to compensatio n (§ 25 EC: "Everyone is entitled to compensatio n for intangible as well as tangible harm that he or she has suffered because of the unlawful actions of any person.")		include claims for the repeal of acts, termination of or refrainment from acts and compensation for damages. These measures can also be applied in case of unlawful use of AI (so far, there is no relevant legal practice).	includes demanding compensation for both patrimonial and non- patrimonial damage caused by a public authority. Non-patrimonial damage includes wrongful degradation of dignity, damage to health, deprivation of liberty, violation of the inviolability of home or private life or the confidentiality of messages or defamation of honour or good name of the person (§ 9 State Liability Act).
Law Enforce ment	Law Enforcement Act (§ 34, § 35)	Right to liberty and security, protection of personal data, private and family life, right to an effective remedy, right to good	(EU) 2016/679	Law enforcement (in the context of this act: protection of public order) means administrative proceedings in Estonian law and is thus subject to administrative infringement procedure in case of an administrative offence.	The act provides principles of protection of the public order. In the context of AI and big data, the police may process personal data by using monitoring equipment or by obtaining data from electronic communications undertaking (§ 34 and § 35). The police is obliged to notify the public of the use of monitoring equipment in public places with a sign or a sticker.



		administratio n.			
Health Service s	Health Services Organisation Act (§ 59 ¹ , § 59 ³)	Protection of personal data, right to private life, right to the integrity of the person, right to health care.	2005/36/EC, 2011/24/EU, (EU) 1231/2010, (EC) 883/2004, (EC) 987/2009 and (EC) 859/2003		The act regulates the organisation of health services and its requirements. § 59 ¹ creates a legal basis for the establishment and usage of a health information system (i.e. a database). The following paragraphs regulate forwarding data to the information system and granting access to data stored in it, including, e.g., its usage for possible AI systems.
Social Security	Social Welfare Act (§ 15 ¹)	Protection of personal data, human dignity, rights of the child, social security and social assistance, rights of the elderly, rights of persons with disabilities, right to good administratio n.			§ 15 of the act allows local authorities to process personal data of youth between the age of 16 and 26 years stored in the state registries in order to identify the youth not in employment, education or training (NEET). According to the law's explanatory memorandum , the amendment allows to use IT solutions (incl. algorithms) in order to analyse young citizens' eligibility for social benefits intended to NEET youth. The data may be used by the local authority to identify the need for assistance within the specified



					<p>target group (youth), e.g. for planning new services.</p> <p>Young people who, according to the system, could have a need for assistance, will be notified of the processing of their data and consent for further processing will be requested. Any person within the established target group may opt out of the processing of their data. However, in this case their identification code will be stored in the Social Services and Benefits Registry until they are 27 years old to rule out further data processing of their data. There are no remedies available against the storage of the identification code. According to the explanatory memorandum, the identification code is needed to rule out further processing against the will of the data subject.</p>
Real Estate	<p>Land Register Act (§ 39-40, § 62¹, § 65², § 76¹, § 79⁵)</p>	Right to property, right to good administration, right of access to documents	2010/416/EU	State liability for damages caused by the processing – including automatic processing – of personal data in the electronic land register as well as by errors of respective data processing	The act regulates the maintenance of the land register. In Estonia, the land register is generally publicly available. The act allows certain <i>ex officio</i> changes to the land register to be made automatically if the technical



				<p>devices relating to transfer to an electronic land register.</p>	<p>readiness exists (e.g. changes on a person's personal data in the land registry). The act also provides a separate state liability provision for the case of a fault in automated data processing relating to transfer to an electronic land register, including the use of AI. No relevant case law exists.</p> <p>A data protection specialist at the Centre of Registers and Information Systems stated that automated data processing is currently only in use for making changes to the land register based on information retrieved from the land cadastre. If the change is correct, then affected persons are not notified of the automatic processing as 77¹³ of the Land Register Act makes an exception for the notification obligation. If the change turns out to be incorrect, the person affected will be notified and their permission will be asked for amending the entry. § 652 of the Land Register Act allows correction of entries in case of change of personal data. This is not in use yet but a suitable</p>
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					<p>automatic solution is being developed by the Ministry of Justice. Affected persons will not be notified of correct automatic processing.</p> <p>In 2019, a new website was published for the land register, which allowed anonymous users (i.e. without signing in) to perform searches. Although anonymous searches were possible since the establishment of an electronic land register, this new website raised public concern regarding privacy. The land register was later updated to allow searches only for persons after identifying themselves either via ID card, mobile-ID or a bank link. As a result, the respective landowner will see every search (regarding their property) and the person who performed it.</p>
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3 Future development

In the context of AI, Estonia's most important stakeholders are the Ministry of Economic Affairs and Communications and the Ministry of Justice from the public sector and the Estonian Association of Information Technology and Telecommunications from the private sector.¹¹⁵ However, these stakeholders' emphasis is clearly focused on the possibilities and advantages AI implies. Questions concerning human rights protection are recognized and named, but not handled in closer detail.¹¹⁶

The Ministry of Justice of Estonia plans to come forward with its AI-related regulatory proposals in mid-2020.¹¹⁷ Different aspects, based on the *kratid*-project legal working group's proposals and possibly to be included into the amendment, do relate to a better rights' protection of data subjects. The legislative changes may include amendments to the [Administrative Procedure Act](#) to fully enable automated administrative acts and documents to be issued by all government agencies. However, it has been stated that the addressee must know from the document itself that it has been issued in an automated manner.¹¹⁸ Currently, legislation does not oblige administrative acts given in an automated manner to have a reference to the automated process. It has been suggested to amend the [State Liability Act](#) to explicitly include state liability in cases where the fault of an AI system has caused damages.¹¹⁹ Regulations applying to major sources of danger in the [Law of Obligations Act](#) could be revisited to allow the classification of AI as a major source of danger for the purpose of stricter private and state liability.¹²⁰ It has been suggested to amend the [Penal Code](#) so that creating a dangerous AI would be an offence. Thus, in case of a crime committed by an AI system, the person in charge (depending on the circumstances) could be prosecuted as the principal offender.¹²¹

With respect to fundamental rights protection, there are no particular plans concerning AI policy and technological developments. The approach of the authorities, which is mainly focused on the effective

¹¹⁵ See above, [2. Relations between the public and private sector](#).

¹¹⁶ Compare above, [3. National strategies and guidelines](#).

¹¹⁷ Compare above, [1.1. National bodies and agencies](#).

¹¹⁸ Jacob Juksaar, Kea Kohv, and Paloma Krõõt Tupay, 'Country Report Estonia', 9 November 2019, para. I.1.2 Advisory councils, 6, 1.1., <https://docs.google.com/document/d/1u6oKcqvrxWIM2-KSfWAsobrXXqaV9lwF/edit?ts=5dc8f4d7#heading=h.vvdkhwr9j17g>.

¹¹⁹ *Idem*, p 7, pt 2.1.

¹²⁰ *Idem*, p 8, pt 4.1.

¹²¹ *Idem*, p 9, pt 11.1-11.2.

implementation and possible achievement of AI, does actually well depict the Estonian societies' approach to data protection and its handling. In 2014, a large-scale survey on the right to privacy as a human right and everyday technologies in Estonia¹²² showed that 41% of those questioned were of the opinion that the concerns about data protection were exaggerated.¹²³ 74 % did agree with the statement that 'they have nothing to hide'¹²⁴ and 61 % percent agreed with the claim that the state needs for a better rights protection more rights for data processing without the consent of the data subject.

Digital public administration has been an Estonian success. Though being a small country with a population of only 1,3 million, digitalisation has had a great impact in putting Estonia back on the map after more than fifty years of Soviet Occupation and economic problems. It has not only been a decisive factor for Estonia's prosperity after independence, but it has also had a great impact on the way Estonians communicate with the state.¹²⁵ Nowadays, no one is used to queueing at public authorities anymore – people are used that almost all services provided by the state can be retrieved online. Therefore, digital solutions are generally seen as an enabler, not as a threat.

¹²² Inimõiguste Instituut, 'Privacy as a Human Right and Everyday Technologies (2014)', 2014, <https://www.humanrightsestonia.ee/en/research-surveys/privacy-as-a-human-right-and-everyday-technologies/>.

¹²³ Inimõiguste Instituut, chap. Methodology and Results, 48, Summary, 4.

¹²⁴ Inimõiguste Instituut, 4, 49.

¹²⁵ Kaljulaid, 'Speech President Kaljulaid at Columbia University', 2 November 2018, <https://president.ee/en/official-duties/speeches/14790-president-kaljulaid-at-columbia-university/index.html>.

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