



MSI-NET (2016)09
10 October 2016

2nd meeting, 29-30 September 2016, 9:30-17:30
(Strasbourg, Palais de l'Europe, Room 7)

Meeting Report

1. Mr Jan Kleijssen, Director of Information Society and Action Against Crime opened the meeting and welcomed the MSI-NET members and participants. In providing the MSI-NET with information of relevance to its work, Mr Kleijssen referred to the Conference on "Internet Freedom: a constant factor of democratic security in Europe" that took place on 9 September 2016 in Strasbourg. Mr Kleijssen mentioned the work done by other bodies of the Council of Europe in relation to Internet intermediaries such as the Cloud Evidence Group of the Cybercrime Convention and the need of good coordination with other entities was emphasised. Mr Kleijssen informed the MSI-NET about the initiative of the Council of Europe to create a platform to foster the dialogue between the member States and Internet businesses to improve the respect of human rights, democracy and the rule of law online. Finally, he stressed the relevance of discussions of topics such as as the roles and responsibilities of Internet intermediaries, the impact of algorithms and other related developments, including artificial intelligence on human rights.

2. The Secretariat informed the MSI-NET about the the 10th meeting of the CDMSI (Steering Committee on Media and Information Society) that took place on 28 June – 1 July 2016.

3. The agenda (Appendix 1) was adopted without any changes. The list of participants appears in Appendix 2. The gender distribution of the 39 participants was 20 women (51%) and 19 men (49%).

Conclusions and decisions

4. With regard to the first expected result, namely a *draft Committee of Ministers recommendation on Internet intermediaries*, the MSI-NET discussed the first version of the document presented by the Rapporteur Mr Matthias Kettemann (Appendix 3). The MSI-NET decided to use a broad and function-based definition of Internet intermediaries. The Committee agreed that there is a real need for guidance for States on their interaction and regulations of Internet intermediaries and the MSI-NET could contribute to frame it thorough a human rights and rule of law perspective. The negative and positive obligations of States in this sense could be further detailed. It was also acknowledged the current trend of departing from the limited liability regime of Internet

intermediaries, and the need to reaffirm it as a means to protect human rights and free flow of information. The Committee also decided to develop the section dedicated to better ensure the human rights protection of users in their relationship with Internet intermediaries, in particular stressing due process safeguards. A number of observations, comments and proposals for changes on the draft recommendation were discussed during the meeting, which will be reflected in the revised draft recommendation by the Rapporteur.

5. With regard to the *report on human rights dimensions of algorithms*, the MSI-NET discussed the first version of the document presented by the rapporteur Mr Ben Wagner (Appendix 4). There was an agreement on the relevance of such a report to raise awareness of the topic and the need to further explain in a specific and clear way what impacts do algorithms have on human rights. The discussion on the definition of algorithms, highlighted the difficulty in capturing a rapidly changing digital environment. The case studies used to exemplify this impact were extensively discussed, with a view to developing them and identifying the concrete human rights at stake. A number of observations, comments and proposals for changes were discussed which will be reflected in the revised draft recommendation by the Rapporteur.

6. EuroISPA presented its views on the update of the Human rights guidelines for Internet Service Providers drafted in 2008 in co-operation with the Council of Europe. It noted that having followed the MSI-NET discussions it would opt for a combination of the guidelines' update with the draft recommendation.

6. The MSI-NET discussed participation in events with a view to ensuring multi-stakeholder input and participation in its work, notably in the context of the IGF. The Chair will represent the work of the MSI-NET and asked the Secretariat to make proposals for speaking slots in IGF workshops and events where he could participate.

Any other business

7. The MSI-NET members generally supported the view that before the draft recommendation on Internet intermediaries and the draft report on algorithms are finalised, there should be a consultation with other relevant Council of Europe steering and conventional committees as well as other stakeholders. The Secretariat was asked to prepare proposals about the time of consultations, having particular regard to the meetings of the CDMSI in 2017.

8. The MSI-NET agreed tentatively to hold its next meeting in Strasbourg on 27 and 28 March 2017.

9. The Secretariat will prepare a draft meeting report to be sent to the Chair and the vice-Chair for consideration. Thereafter, the Secretariat will send the draft report to the MSI-NET with a deadline of 5 full working days allowing for comments. In the absence of comments the report will be deemed finalised and will be transmitted to the CDMSI for information. The progress of work of the MSI-NET will be reflected in its draft documents and the reports of its meetings. Therefore, it is considered not necessary to produce abridged reports of meetings.

Appendix 1

Annotated agenda¹

1. Opening of the meeting
Mr Jan Kleijssen, Director, Information Society and Action against Crime Directorate, will address the meeting.
2. Adoption of the agenda
3. Information by the Secretariat
Information on standard-setting work and other activities of the Council of Europe relevant to the work of the MSI-NET, in particular on the 10th meeting of the CDMSI (Steering Committee on Media and Information Society), 28 June – 1 July 2016.
4. Discussion on the draft recommendation by the Committee of Ministers on Internet intermediaries
MSI-NET [Terms of Reference](#) *(doc MSI-NET(2016)05)*
The members of the MSI-NET will be invited to examine and discuss the first version of the draft recommendation prepared by the rapporteur.
5. Discussion on the draft report on human rights dimensions of algorithms
MSI-NET [Terms of Reference](#) *(doc MSI-NET(2016)06)*
The members of the MSI-NET will be invited to examine and discuss the first version of the study prepared by the rapporteur.
6. Human rights guidelines for Internet service providers
A presentation will be made by EuroISPA and the members of the MSI-NET will be invited to discuss about the possibility of the updating of the Guidelines.
[Human rights guidelines for Internet Service Providers \(2008\)](#)
7. Participation of MSI-NET in other activities
The members of the MSI-NET will be invited to share information about participation in past and upcoming activities relevant to the work of the Committee.
8. Dates of next meetings
9. Other business

¹ As it appears in document MSI-NET(2016)08.

Appendix 2

List of participants

COMMITTEE MEMBERS	MEMBRES DU COMITE
Mr Bertrand de la CHAPELLE – Co-founder and Director of the Internet & Jurisdiction Project, France	M. Bertrand de la CHAPELLE – Co-fondateur et Directeur du Projet Internet & Jurisdiction, France
<i>Ms Julia HÖRNLE – Professor of Internet Law, Queen Mary University of London apologised</i>	<i>Mme Julia HÖRNLE – Professeur des lois dans le domaine d'Internet, Queen Mary University of London excusée</i>
Ms Tanja KERŠEVAN-SMOKVINA – Principal Advisor to Director General, Agency for Communication Networks and Services, Slovenia	Mme Tanja KERŠEVAN-SMOKVINA - Conseillère principale auprès du directeur général - Agence pour les réseaux et services de communication – Slovénie
Mr Matthias KETTEMANN – Postdoc Fellow, Cluster of Excellence "Normative Orders" University of Frankfurt/Main (Germany) Austria (Rapporteur Recommendation)	M. Matthias KETTEMANN – Postdoc Fellow, Cluster of Excellence "Normative Orders" Université de Francfort-sur-le-Main (Allemagne) Autriche (Rapporteur Recommandation)
<i>Ms Sabine MAASS – Head of Division 'Legal framework for digital services, media industry', Federal Ministry for Economic Affairs and Energy – Germany (apologized)</i>	<i>Mme Sabine MAASS – Chef de la division «Cadre juridique pour les services numériques, l'industrie des médias», Ministère Fédéral de l'Economie et de l'Energie – Allemagne (excusée)</i>
Mr Arseny NEDYAK – Deputy Director, Department of Media State Policy, Ministry of Telecommunication, Russian Federation	M. Arseny NEDYAK – Directeur adjoint, Service des politiques nationales des médias, Ministère de la télécommunication – Fédération de Russie
Mr Pēteris PODVINSKIS – Ministry of Foreign Affairs, International Organisations Directorate, Department for Public Policy related to Internet – Latvia	M. Pēteris PODVINSKIS – Ministère des affaires étrangères, Direction Organisations Internationales, Service des Politiques publiques dans le domaine de l'Internet – Lettonie
Mr Thomas SCHNEIDER – Deputy Director of International Affairs, International Information Society Coordinator, Federal Department of the Environment, Transport, Energy and Communication DETEC, Federal Office of Communications (OFCOM), Switzerland	M. Thomas SCHNEIDER – Directeur adjoint des affaires internationales, Coordinateur de la société d'information internationale, Service fédéral de l'environnement, transport, énergie et communication DETEC, Office fédéral des communications (OFCOM) – Suisse
Mr Wolfgang SCHULZ – Professor, Faculty of Law, University of Hamburg / Hans-Bredow-Institut (Chair)	M. Wolfgang SCHULZ – Professeur, Faculté de droit, Université de Hambourg / Institut de Hans-Bredow (président)
Ms Sophie STALLA-BOURDILLON – Associate Professor in Information Technology / Intellectual Property Law, Director of ILAWS, Southampton Law School	Mme Sophie STALLA-BOURDILLON – Professeur agrégée en technologie d'information / droit de la propriété intellectuelle, Directrice de ILAWS, Faculté de droit de Southampton
University of Southampton	Université de Southampton
Ms Karmen TURK – Trinity Tallinn – Estonia	Mme Karmen TURK – Trinity Tallinn – Estonie
(Vice-Chair)	(vice-présidente)

Mr Dirk VOORHOOF – Lecturer European Media Law, UCPH (Copenhagen University) / Professor at Ghent University, member of the Centre for Media Pluralism and Press Freedom (CMPF) Scientific Committee

Mr Benjamin WAGNER – Director of the Centre for Internet & Human Rights, European University Viadrina, Frankfurt/Oder (Rapporteur Report HR dimensions on Algorithms)

M. Dirk VOORHOOF – M. Dirk VOORHOOF – Professeur de droit européen des media, UCPH (Université de Copenhague) / Professeur à l'université de Gand, membre du comité scientifique du Centre pour le pluralisme des médias et la liberté de la presse (CMPF)

M. Benjamin WAGNER – Directeur du Centre pour l'Internet & les droits de l'Homme, Université européenne Viadrina, Francfort/Oder (Rapporteur rapport aspect des DH dans le domaine des algorithmes)

COUNCIL OF EUROPE MEMBER STATES

AZERBAIJAN

Mr. Bakhtiyar MAMMADOV, Chief advisor, Ministry of Communications and High Technologies of the Republic of Azerbaijan

GERMANY

Ms Dörte NIELANDT, Deputy Head of Division „Legal framework for digital services, media industry“ - Federal Ministry for Economic Affairs and Energy – Germany

ITALY

Ms Francesca PELLICANO, Autorità per le Garanzie nelle Comunicazioni, Roma / Napoli

POLAND

Ms Marta KACZMARSKA, Deputy to the Permanent Representative, Permanent Representation of Poland to the Council of Europe, Strasbourg

SPAIN

Ms María REYES FERNÁNDEZ, Legal Advisor, Directorate on Information Society Services, Secretary of State for Telecommunications and Information Society - Spain

SWITZERLAND

Mr Jorge CANCIO, *International Relations, Federal Department of the Environment, Transport, Energy and Communication DETEC, Federal Office of Communications (OFCOM) – Switzerland apologised*

TURKEY

Mr. Erhan BAL, Radio and Television Supreme Council (RTÜK)

ETATS MEMBRES DU CONSEIL DE L'EUROPE

AZERBAÏDJAN

M. Bakhtiyar MAMMADOV, Conseiller principal, Ministère de la communication et des hautes technologies de la République d'Azerbaïdjan

ALLEMAGNE

Mme Dörte NIELANDT, adjointe au chef de division „Cadre juridique des services numériques et l'industrie des medias“- Ministère Fédéral de l'Economie et de l'Energie – Allemagne

ITALIE

Mme Francesca PELLICANO, Autorità per le Garanzie nelle Comunicazioni, Roma / Napoli

POLOGNE

Mme Marta KACZMARSKA, Adjointe au Représentant Permanent, représentation permanente de la Pologne auprès du Conseil de l'Europe, Strasbourg

ESPAGNE

Ms María REYES FERNÁNDEZ, Conseillère juridique, Direction des services de la société de l'information, Secrétariat d'Etat aux Télécommunications et à la Société de l'Information - Espagne

SUISSE

M. Jorge CANCIO, *Relations Internationales, Service fédéral de l'environnement, transport, énergie et communication DETEC, Office fédéral des communications (OFCOM) – Suisse Excusé*

TURQUIE

M. Erhan BAL, Conseil supérieur de la Radio et de la Télévision (RTÜK)

PARTICIPANTS

PARTICIPANTS

EUROPEAN COMMISSION - DG CONNECT

Ms Irene ROCHE LAGUNA, Legal officer, DG for Communications Networks, Content & Technology

EUROPEAN AUDIOVISUAL OBSERVATORY

Department for Legal Information

Ms Maja CAPPELLO, Head of Department

OSCE

Office of the Representative on Freedom of the Media

Mr Frane MAROEVIC, Director (apologized)

MEXICO

Mr Diego SANDOVAL PIMENTEL, Deputy to the Permanent Observer of Mexico to the Council of Europe

REPRESENTATIVES OF CIVIL SOCIETY, ACADEMIC COMMUNITIES AND THE PRIVATE SECTOR

Ms Christina ANGELOPOULOS, Information Law and Policy Centre, Institute of Advanced Legal Studies, School of Advanced Study, University of London (UK)

Mr Pierre François DOCQUIR, ARTICLE 19, Defending freedom of expression and information (London)

Mr Martin HUSOVEC, Assistant Professor, Tilburg Institute for Law, Technology and Society (TILT, University of Tilburg, Netherlands)

Ms Aleksandra KUCZERAWY, Legal Researcher, Centre for IT & IP Law – iMinds, University Leuven, Belgium

Mr Joe McNAMEE, Executive director, European Digital Rights (EDRI), Brussels, Belgium

Ms Aibhinn KELLEHER, FACEBOOK Ireland Ltd (Dublin)

Mr Michael ROTERT, Honorary Spokesman, EuroISPA (European Internet Service Provider Association)

Ms Karen WHITE, TWITTER (apologised)

Mr Marco PANCINI, GOOGLE (apologised)

OBSERVERS

EBU – European Broadcasting Union
apologised

COMMISSION EUROPEENNE - DG CONNECT

Mme Irene ROCHE LAGUNA, juriste, DG des réseaux de communication, du contenu et des technologies

OBSERVATOIRE EUROPEEN DE L'AUDIOVISUEL

Service des Informations juridiques

Mme Maja CAPPELLO, Chef de service

OSCE

Bureau du Représentant pour la liberté des médias

M. Frane MAROEVIC, Directeur (excusé)

MEXIQUE

M. Diego SANDOVAL PIMENTEL, Adjoint à l'Observateur Permanent du Mexique auprès du Conseil de l'Europe

REPRESENTANTS DE LA SOCIÉTÉ CIVILE, DU MILIEU UNIVERSITAIRE ET DU SECTEUR PRIVÉ

Mme Christina ANGELOPOULOS, Information Law and Policy Centre, Institute of Advanced Legal Studies, School of Advanced Study, University of London (Université de Londres)

M. Pierre François DOCQUIR, ARTICLE 19, Defending freedom of expression and information (Londres)

M. Martin HUSOVEC, Assistant Professor, Tilburg Institute for Law, Technology and Society (TILT, Université de Tilburg, Pays-Bas)

Mme Aleksandra KUCZERAWY, chercheuse en droit, Centre de Droit des TI & PI, Université de Louvain, Belgique

M. Joe McNAMEE, Directeur Exécutif, European Digital Rights (EDRI), Bruxelles, Belgique

Mme Aibhinn KELLEHER, FACEBOOK Ireland Ltd (Dublin)

M. Michael ROTERT, porte-parole honoraire, EuroISPA (European Internet Service Provider Association)

Mme Karen WHITE, TWITTER (excusée)

M. Marco PANCINI, GOOGLE (excusé)

OBSERVATEURS

UER - Union Européenne de Radio-télévision
excusée

MOROCCO

Ms Chanaz el AKRICHI, Head of Cooperation division, Ministry of Communication

Ms Meriem KHATOURI, Director for Media Studies and Development, Ministry of Communication

MAROC

Mme Chanaz el AKRICHI, Chef de la division de la Coopération, Ministère de la Communication

Mme Meriem KHATOURI, Directrice des études et du développement des médias, Ministère de la Communication

COUNCIL OF EUROPE

DIRECTORATE GENERAL HUMAN RIGHTS AND RULE OF LAW

Mr Jan KLEIJSEN, Director, Directorate of Information Society and Action against Crime

Mr Patrick PENNINCKX, Head of Information Society Department

Ms. Silvia GRUNDMANN, Head of Media and Internet Division, Information Society Department

Mr Alexandru FRUNZA, Project Officer, Cybercrime Division, Information Society Department

Mr Octavian SOFRANSKY, Data Protection Unit

Information Society Department

Ms Elvana THAÇI, Head of Standard Setting Unit, MSI-NET Secretariat, Media and Internet Division, Information Society Department

Ms Charlotte ALTENHÖNER-DION, Administrator, MSI-NET Secretariat, Media and Internet Division, Information Society Department

Ms Ana GASCÓN MARCÉN, Administrator, MSI-NET Secretariat, Media and Internet Division, Information Society Department

Ms Małgorzata PEK, Project Officer, Media and Internet Division, Information Society Department

Ms Elisabeth MAETZ, Assistant, Media and Internet Division, Information Society Department

CONSEIL DE L'EUROPE

DIRECTION GÉNÉRALE DROITS DE L'HOMME ET ÉTAT DE DROIT

M. Jan KLEIJSEN, Directeur, Direction de la Société de l'information et de la lutte contre la criminalité

M. Patrick PENNINCKX, chef du service de la Société de l'information

Mme Silvia GRUNDMANN, chef de la division médias et internet, service de la Société de l'information

M. Alexandru FRUNZA, Chargé de Projet, division de la Cybercriminalité, service de la Société de l'information

M. Octavian SOFRANSKY, Unité Protection des Données, service de la Société de l'information

Mme Elvana THAÇI, Chef de l'unité normative, Secrétariat MSI-NET, division médias et internet, service de la société de l'information

Mme Charlotte ALTENHÖNER-DION, administratrice, Secrétariat MSI-NET, division médias et internet, service de la société de l'information

Mme Ana GASCÓN MARCÉN, Administratrice, Secrétariat MSI-NET, division médias et internet, service de la Société de l'information

Mme Małgorzata PEK, Chargée de projet, division médias et internet, service de la Société de l'information

Mme Elisabeth MAETZ, Assistante, division médias et internet, service de la Société de l'information

INTERPRETERS / INTERPRETES

Clarissa WORDSDALE, Martine KARALY, Isabelle MARCHINI

Appendix 3²

Draft Recommendation CM/Rec(2017x)xx of the Committee of Ministers to member States on Internet intermediaries

FIRST DRAFT (13 SEPTEMBER 2016)

SUBMITTED AT THE 2ND MEETING (29-30 SEPTEMBER 2016)

Rapporteur: Matthias C. Kettemann

1. Everyone has a right to Internet access which is inherent in the right to freedom of expression as protected in Article 10 of the European Convention on Human Rights (ETS No. 5, hereinafter “the Convention”). Council of Europe member States are obliged to secure to everyone within their jurisdiction human rights and fundamental freedoms on the Internet.

2. Internet intermediaries assume a pivotal role in providing access to the Internet and the Internet’s content to billions of Internet users and are structurally essential to all online data flows. Internet intermediaries also control access to, and manage, online content. The factual and legal conditions under which access to the Internet is provided and information is sought, disseminated and received, and data is aggregated and managed by Internet intermediaries are framed by a complex combination of national, European and international laws, and by terms of service, soft law and code. In fulfilling their negative and positive human rights obligation, member States must provide a legal framework which enables Internet intermediaries to fulfill this critical role without violating human rights.

3. Member States are confronted with the need to reconcile conflicting objectives and conduct balancing exercises between competing rights involved in increasingly international settings complicated by the characteristics of the technology underlying the Internet and the multiple functions and diverse nature of Internet intermediaries.

4. Therefore, the Committee of Ministers, wishing to provide guidance for member States in developing and applying law to Internet intermediaries, and acting under the terms of Article 15.b of the Statute of the Council of Europe, recommends that member States:

- ensure that they fulfill their positive and negative obligation to secure human rights to everyone within their jurisdiction in full compliance with Articles 8 and 10 of the Convention when regulating the activities of Internet intermediaries;
- take all necessary measures, in co-operation with all relevant stakeholders, to ensure that Internet intermediaries can fulfill their role and potential in the information society without violating human rights;
- ensure online as offline the primary duty of states to protect human rights and the rule of law including procedural safeguards and effective remedies if rights have been violated;
- in doing so, adopt national and contribute to regional and international policy frameworks with due regard to the Guidelines on Internet Intermediaries set out in the appendix to this recommendation;

² As contained in document MSI-NET(2016)05, dated 13 September 2016.

- promote these Guidelines in other international and regional forums that deal with Internet intermediaries.

Appendix to Recommendation: Guidelines on Internet Intermediaries

1. General principles

- 1.1. In line with Recommendation CM/Rec(2016)3 of the Committee of Ministers to member States on human rights and business, it is the primary duty of states to respect, protect and fulfill for everyone within their jurisdiction all rights and freedoms enshrined in the European Convention on Human Rights, online just as offline.
- 1.2. States are responsible for providing a legal framework, based on the Convention and in accordance with the well-established principles of human rights, democracy and rule of law, which promotes an online environment in which public debate can take place.
- 1.3. Specialized organs of society, such as Internet intermediaries, are required to comply with all applicable laws and to respect human rights ("the corporate responsibility to respect human rights"). Breaches of duties of the state and the obligations of specialized organs of society with regard to human rights must be matched with appropriate, easily accessible and effective remedies.
- 1.4. Each individual has a right to participate in the information society. Their right to Internet access the Internet is inherent in the right to access information and communication which is protection by the Convention. Member states are therefore obliged to guarantee access to the Internet for their citizens (Yildirim (2012), § 31). Protecting the Internet's accessibility and its capacity to store and communicate vast amounts is essential for enhancing the public's access to news and other information (Times Newspapers Ltd. (2009), § 27).
- 1.5. Protection of Internet intermediaries complement the right to access. Internet intermediaries play a pivotal role in ensuring access to Internet content, both as access providers and as content hosts. Intermediaries are thus important sources of often specific information and have been instrumental in the emergence of citizen journalism (Cengiz, 2015).
- 1.6. When the effective exercise of Article 10 requires positive measures of protection, even between individuals or individuals and Internet intermediaries, member States are responsible to enact appropriate domestic legislation. When regulating Internet intermediaries member States have to strike a fair balance between the general interest of the community, the interests of the individual, and the interest of the intermediary (Özgür Gündem, 2000, § 43).
- 1.7. When regulating Internet intermediaries member States have to strike a fair balance between the general interest of the community, the interests of the individual, and the interest of the intermediary (Özgür Gündem, 2000, § 43).

- 1.8. With a view to ensuring the right to Internet access and the protection of Internet intermediaries states shall take positive measures and, when appropriate, regulate Internet intermediaries. Intermediaries are key players in the digital economy and any regulation pertaining to them must ensure that they can continue to offer and develop innovative services while ensuring that any new service complies with existing laws and respects human rights.
- 1.9. Member States shall ensure that regulation of Internet intermediaries is, as applicable, flexible, scalable, and innovation-friendly and must strike an appropriate balance between conflicting human rights.
- 1.10. Member States shall not delegate censorship measures to private entities, privatize law enforcement functions or imbue intermediaries with quasi-judicial functions without proper safeguards. Internet intermediaries should object to invitations to assume such functions.
- 1.11. Any restrictions on the right to freedom of expression of intermediaries must be provided by law, pursue a legitimate aim as exhaustively listed in Article 10 (2) of the Convention, and be necessary and proportionate in a democratic society.
- 1.12. A human-rights centred approach to the exercise of freedom of expression on Internet intermediaries' networks and platforms requires that their terms of service are transparent and interpreted consistently with international human rights standards; that such terms are applied and enforced consistently and proportionately; and that users of the service have access to a redress mechanism. In addition, private companies should refrain from imposing restrictions on freedom expression, which go beyond the requirements of the law.

2. Protection of the enabling role of Internet intermediaries

- 2.1. Member States shall ensure that the responsibility of Internet intermediaries is delimited in conformity with, in particular, Articles 8, 10 and 13 of the Convention.
- 2.2. Member states shall adopt an activity-based approach to regulate the responsibility of Internet intermediaries so that Internet actors performing a wide range of activities are able to benefit from (civil and criminal) liability exemptions when they (1) act as conduits for third-party expression in relation to a specific activity (e.g. search function, user-generated comments section) and (2) implement transparency best practices when dealing with third-party content.
- 2.3. Member states shall promote the development of transparency best practices for dealing with third-party content (e.g. through the adoption of codes of conduct).
- 2.4. Member states shall not require Internet intermediaries to assess the lawfulness of third-party content. They may assess whether or not content violates their terms of service, but must do so in a non-discriminatory manner and ensure that any consequences of such an assessment, and possibilities of redress, are clearly communicated and do not amount to discrimination or other human rights violations.
- 2.5. Internet intermediaries shall only be required to promptly react upon unlawful content if a clear, foreseeable and proportionate procedure has been put in

place, the nature of which should depend upon the impact of such a procedure on the right to privacy and the principle of confidentiality of communications as protected by Article 8 and on Internet users' freedom of expression as protected by Article 10 of the Convention.

- 2.6. Different procedures should be applied when the content-related complaint involves a private dispute (e.g. copyright, where a notice system might be preferable) and when the content at issue is criminal (e.g. incitement to violence).
- 2.7. Member states shall only require Internet intermediaries operating at the application layer to take down unlawful content if they have actual knowledge or have been notified of the presence/transmission of manifestly unlawful content on their systems.
- 2.8. Internet access providers shall only be required to block access to unlawful content as the result of a court order. They shall not bear pre-litigation and court costs when opposing judicial blocking orders. Internet intermediaries operating at the application layer shall not bear pre-litigation and court costs when the content at stake is not found to be manifestly unlawful.
- 2.9. Member states shall put in place notice-and-counter-notice procedures by which application-level Internet intermediaries shall abide by when reacting upon unlawful content and that shall effectively involve both issuers and recipients of content in order to render the right to an effective remedy as protected by Article 13 of the Convention effective.
- 2.10. Member states shall consider implementing in their judicial systems widely accessible and fast judicial notice-and-counter-notice procedures to issue notifications to Internet intermediaries operating at the application layer, which are more human rights compliant than (purely) privately-operated notice-and-counter-notice procedures
- 2.11. Member states shall promote the development of best practices designed for the prompt recognition of manifestly unlawful content that should rely upon notice-and-counter-notice procedures through the adoption of sectoral instruments such as codes of conduct.
- 2.12. Internet intermediaries shall not be required (following the reception of notifications or the issuance of court orders) to systematically monitor their systems in order to prevent unlawful activities in particular when the systematic monitoring of third-party content implies the implementation of privacy-intrusive measures, when the systematic monitoring of third-party content may lead to over-blocking measures or when the systematic monitoring of third-party content amounts to imposing an unreasonable financial burden on Internet intermediaries' activities.
- 2.13. Member states shall not encourage Internet intermediaries to voluntarily monitor their systems systematically in order to prevent unlawful activities, if the systematic monitoring of third-party content implies the use of privacy-intrusive and/or over-blocking measures.
- 2.14. To determine whether measures are privacy-intrusive, account shall be taken of the role played by Internet intermediaries in the process of transmission of communications and the effects of the principle of confidentiality of communications as protected by Article 8 of the Convention.

- 2.15. Member states consider the adoption of sectoral rules relating to the allocation of implementation costs of blocking or take down orders to allow Internet intermediaries to claim for reimbursement against certain categories of victims (e.g. Intellectual Property right holders) as long as the right to an effective remedy as protected by Article 13 of the Convention is not jeopardized.

3. Limits to the regulation of intermediaries

- 3.1. States are obliged to combat violence and other criminal or unlawful activities online. Fulfilling this obligation may justify the imposition of duties upon intermediaries to remove content, communicate user information or suspend access for users or to domain names.
- 3.2. Given the importance of the right to Internet access and freedom of expression, any restrictions on intermediaries impacting these rights, must be provided by law, pursue a legitimate aim as exhaustively listed in Article 10 (2) of the Convention, and be necessary and proportionate in a democratic society.
- 3.3. Any laws or regulations governing the liability of intermediaries must be accessible and sufficiently precise so as to enable them to foresee the consequences of their conduct. Moreover, for the requirements of accessibility and foreseeability to be met, the law must also afford a measure of legal protection against arbitrariness and lay down adequate procedural safeguards so as to provide effective protection to Convention rights, including the right to freedom of expression. Such protection is not limited to interferences with freedom of expression emanating from public authorities. Member States are also responsible for preventing and remedying Convention violations by private persons or entities under the conditions laid out above.
- 3.4. Member States shall not encourage Internet intermediaries, independently or collectively, to monitor and censor expression that is neither illegal under international nor national law.

4. Encouraging human rights-sensitive business practices by Internet intermediaries

- 4.1. Recognizing that most aspects of the relationship between intermediaries and users are covered by private law, member States shall provide incentives to Internet intermediaries to develop business practices that are sensitive to human rights, in particular freedom of expression and data protection.
- 4.2. Member states shall strive to ensure that contracts between users and intermediaries are consistent with the principles underlying the Convention (Khurshid Mustafa and Tarzibachi 2008, § 33, 16; Pla and Puncernau (2004), § 59).
- 4.3. Member States shall ensure that consumer and data protection laws are respected by Internet intermediaries and to that end consider encouraging regular reviews of terms of service, intermediaries' monetizing policy, the use of personal data, the decision-making remit of algorithms (especially news and search algorithms), clear and transparent procedures for reporting of content and decision-making criteria respecting regarding reported content.

- 4.4. States shall encourage transparency in and accountability of Internet intermediaries and shall only subject Internet intermediaries to requests for removal of content or regarding customer data, when provided by law and necessary in a democratic society.
- 4.5. States shall encourage intermediaries to provide quick and effective avenues for redressing user grievances and terms of service violations, and provide for effective remedies within national legal systems, when internal and alternative dispute settlement mechanisms prove insufficient.
- 4.6. While respecting the rights of Internet intermediaries, member States shall promote the evolution of online public sphere. In particular, when decisions by Internet intermediaries have the effect of preventing any effective exercise of the freedom of expression, member States may need to protect the enjoyment of Convention rights by regulating property rights in way that safeguards the Internet as a communicative space.

5. Jurisdictional challenges to the activities of Internet intermediaries

- 5.1. The nature of the Internet implies that intermediaries will be subjected to different legal systems. This can have chilling effects on the information available through intermediaries.
- 5.2. Member states shall ensure that their obligation to respect, protect and fulfill for everyone within their jurisdiction all rights and freedoms enshrined in the Convention is exercised in a way that does amount to a misuse of legal processes.
- 5.3. Recognizing the sovereign equality of all member States, and the margin of appreciation in developing the normative framework within each member States, no member State shall pass laws that have substantial and unwarranted extra-territorial effects.
- 5.4. Member States shall not introduce data localization requirements or require Internet intermediaries to have a physical presence in their country.
- 5.5. Member States shall ensure that national courts only assert jurisdiction over intermediary operating across borders when the operation has a sufficiently serious impact upon a would-be claimant. Cases by private parties should only be brought when they can establish that they have a real substantial connection to that jurisdiction and have suffered substantial harm in that jurisdiction.
- 5.6. States shall encourage the development, in the appropriate forums, of a dialogue to solve issues of conflict of laws and jurisdiction.

Appendix 4³

Draft report on the human rights dimensions of algorithms

RAPPORTEUR: BEN WAGNER

Director of the Centre for Internet & Human Rights
European University Viadrina, Frankfurt / Oder
Germany

³ As contained in document MSI-NET(2016)06, dated 12 September 2016.

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Summary and main Conclusions

[Summary will be inserted here once a final version of the study has been completed]

1. Introduction

What information can you see on your Facebook feed? Who is a criminal or a terrorist? Will you get health insurance? Are we going to give you a job? Many of these questions used to be answered by human beings and are currently increasingly being answered by automated decision-making systems. These automated decision-making systems raise considerable challenges not only in each policy area they are used but also for societies as a whole on how to safeguard fundamental rights and human dignity in the face of rapidly changing technology. The right to free elections, workers' rights, the right to life, freedom of expression, privacy and even the rule of law itself are all impacted as will be shown in the following study. As such it is perhaps unsurprising that how to respond to challenges associated with 'algorithms' and Internet intermediaries is currently one of the most hotly debated public policy questions.

As "software is eating the world" (Andreessen 2011) human beings are increasingly surrounded by technical systems which make decisions that "they do not understand and have no control over" (Article 29 Data Protection Working Party 2013). While this can be disconcerting it is not necessarily a negative development but rather a product of this particular phase of modernity in which globalized economic and technological development produce large numbers of software-driven technical artefacts. These "coded objects" (Kitchin and Dodge 2011) embed all manner of decision making capacities that are relevant for public policy decision makers: Which split-second choices should a software-driven vehicle make if it knows it is going to crash? Do the algorithms of quasi-monopolistic Internet companies have the power to tip elections? What rights do workers have whose entire relationship with their employer is automated? Is racial, ethnic or gender bias more likely in an automated system and how much bias should be considered acceptable?

None of these questions provide for easy public policy answers and yet decision makers can and should spend time trying to grapple with these challenges. Historically many of the decisions on how to develop these kinds of software have been made by private companies, following whichever economic, legal and ethical frameworks those companies saw fit. There is undoubtedly a deficit in well-founded public policy that provides a framework for the regulation of algorithmic decision making (systems and processes), but it is unclear whether effective regulation is possible while many technologies based on algorithms are still in their infancy. The issues arising from the use of algorithms in decision-making are manifold and complex and include concerns about data quality, privacy and unfair discrimination, but the debate is still at such an early stage that understanding what algorithms actually do and which consequences for society flow from them may be difficult to discern at this stage. This should not however prevent more fundamental deliberations on how human rights should be secured in a world governed by algorithmic decision-making at a more principle based level. Concerns need to be identified and thought should be given to how these concerns could potentially be addressed by the normative framework.

This is particularly the case as many public policy initiatives in this area are quickly copied by other states around the world, leading to relatively swift cascades of good or bad policy. Moreover, many of the debates about algorithms focus less on algorithms themselves and more broadly on the role of technology in society (Bucher 2016). While many of the elements of debates on technology and society are important in understanding algorithms (Bijker et al. 2012), there are also novel policy challenges that arise in debates about algorithms which are related to automated (or semi-automated) decision-making. These challenges will form the core of this study which we hope will be able to shed some light on the human rights dimensions of algorithms.

2. Defining Algorithms and automated data processing techniques

When looking at algorithms and the automated data processing techniques they engage in, it is important to be absolutely clear what types of algorithms are being discussed here. Rather than reinventing the wheel, this study will build on existing well-established definitions used by other authors, in particular the work of Tarleton Gillespie (2014), Nicholas Diakopoulos (2015) and Frank Pasquale (2015).

This definition used here starts from Tarleton Gillespie's assumption that "algorithms need not be software: in the broadest sense, they are encoded procedures for transforming input data into a desired output, based on specified calculations. The procedures name both a problem and the steps by which it should be solved." (Gillespie 2014:167) Thus it can be suggested that algorithms are "a series of steps undertaken in order to solve a particular problem or accomplish a defined outcome." (Diakopoulos 2015:400)

However saying what algorithms *are* is not the same as defining which algorithms matter. For the purpose of this report it seems reasonable to limit the scope of the algorithms being discussed to those which are digital (Diakopoulos 2015) and are of "public relevance" (Gillespie 2014:168). Moreover in order to separate out the specific human rights dimensions of algorithms, this report will focus on algorithmic decision-making, i.e. when algorithms make decisions in an automated or semi-automated fashion.⁴ This type of decision-making is often subjective in that there is no obvious right or wrong answer but rather the judgement of a human being was previously used to make a subjective determination that is now being made by an automated system (Pasquale 2015:8).

Finally it should be noted that algorithms as discussed here do not exist meaningfully without interaction with human beings. They are deeply entangled with practice (Gillespie 2014:168) and the "promise of algorithmic objectivity" (Gillespie 2014:168), both of which serve to create the social and institutional conditions in which algorithms have effects on real life human beings. It is heavily misleading to claim the computing systems are or even can be neutral, rather technologies are deeply social constructs (Winner 1980, 1986) with considerable political implications (Denardis 2012). Thus when the 'computer says no'⁵ the decision-making software in the computer is "biased but ambivalent" (McCarthy 2011:90), it has no meaning without a social system around it that gives this 'no' meaning. It is thus too simple to simply blame the algorithm and simply suggesting to stop using computers or computing is rarely a helpful alternative. Rather specific norms and values are embedded in and enmeshed with algorithms that need to be questioned, critiqued and challenged.

Thus it should be evident that many of the decision making processes around algorithms are relevant for scrutiny by policy makers. However for the purposes of this study this ascertain is not sufficient, it is also important to ask to whether algorithms have an impact on human rights?

The French Parliament certainly seems to think so. "On 26 January 2016, the French National Assembly voted for a new Bill on digital rights. The Bill includes provisions relating to algorithmic transparency and the duty of 'loyalty', or fairness, of online platforms and algorithmic decision-making" (Rosnay 2016). Beyond France there are numerous indications that algorithms do indeed have an impact on human rights. The longest and most sustained human rights debate on algorithms and automated data processing relates to the Right to Privacy (Tene and Polonetsky 2013). It is possible to find articles from more than 45 years ago which discuss infringements of the right to privacy (Sills 1970) associated with automated data processing. Moreover data protection regulation such as the EU's General Data Protection Regulation has also

⁴ The distinction between 'semi-automated' and 'solely automated' is important and exists in various EU Directives on data protection such as the GDPR. For the purposes of this study we will – following similar work on this topic by the Council of Europe - not differentiate but consider both semi-automated and solely automated decision-making as relevant automated decision-making processes.

⁵ See <https://www.youtube.com/watch?v=AJO3TM-p2QI> for a full explanation of this phrase.

produced some of the key regulatory instruments for algorithms such as the “right to explanation” (Goodman and Flaxman 2016) or the right of access to “knowledge of the logic involved in any automatic processing of data concerning him” (EU Directive 95/46/EC). However one of the main challenges faced in this area is that data protection is often understood in an individual rather than a collective sense (Mantelero 2016), which suggests a false sense of agency for individuals. It can also be seen in this context that the European Data Protection Supervisor (EDPS) appointed an Ethics Advisory Group to go beyond the boundaries of existing Data Protection law to search for a new Digital Ethics.⁶

Another human right that is evidently affected by the usage of algorithms is Freedom of Expression. The report of UN Special Rapporteur on the promotion and protection of the right to freedom of opinion and expression David Kaye to the Thirty-second session of the Human Rights Council (A/HRC/32/ 38) suggests that “search engine algorithms dictate what users see and in what priority, and they may be manipulated to restrict or prioritize content” (Kaye 2016:7) and that “platforms deploy algorithmic predictions of user preferences and consequently guide the advertisements individuals might see, how their social media feeds are arranged and the order in which search results appear” (Kaye 2016:16).

Another key fundamental freedom that is frequently cited in relation to human rights is the right to Protection against Discrimination. Various discriminatory patterns arise around the usage of algorithms that are frequently suggested to violate this right (Caliskan-Islam, Bryson, and Narayanan 2016; Tufekci et al. 2015). There are also suggestions that certain forms of algorithmic decision-making lead to “social sorting” (Lyon 2003).

Beyond these three fundamental rights discussed above, there are numerous other areas in which human rights may be affected by algorithms. These include ensuring the rule of law (Pasquale 2015; Joerden 2015), the right to free elections (Bond et al. 2012), workers’ rights (Irani 2015) and even the Right to Life (Asaro 2013). A similar elaboration could be made for almost any other human right, but suffice to say at this point that there are evidently human rights aspects to the usage of algorithms and that they are thus worthy of further study by policy makers to understand these aspects.

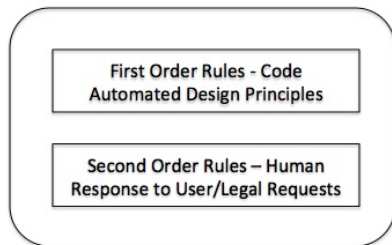
3. Characteristics and limitations of Algorithms

There are many different aspects that can be considered as key characteristics of algorithms that engage in automated data processing and (semi-)automated decision making. As a result this list cannot be exhaustive or predict all possible potential iterations of algorithms and their decision-making. Rather it attempts to provide an overview of the current characteristics and limitations traits of algorithms in 2016.

Automation is one of the core challenges associated with algorithmic decision-making. The ability of automated computing systems to make decisions about a growing number of situations previously decided by human-beings is a key characteristic of the practical implementation of algorithms. It is important to note in this context that human decision-making and algorithmic decision-making is fundamentally different (Spiekermann 2015). While algorithmic decision-making is increasingly adept at mimicking the decision making of human beings, important elements (such as discretion) of decision-making processes cannot be automated and often get ‘lost on the way’ when human decision-making processes are automated (Spiekermann 2015). This is not to say that decision-making by humans or algorithms is necessarily better or worse, but rather that the two are fundamentally and categorically different, have different kinds of consequences and make different kinds of mistakes. While societies and governments around the world have considerable experience understanding human decision-making and its failures, we are only beginning to understand algorithmic decision-making and its flaws.

⁶ See <https://secure.edps.europa.eu/EDPSWEB/edps/EDPS/Ethics> for further details.

Another important aspect of algorithmic decision making is their perceived inflexibility in some areas and their incredible flexibility in others. Broadly speaking, algorithms are typically highly adaptive within the scope of their programming and are typically able to integrate considerable amounts of additional data without great difficulty. In order to simplify this statement the graph on the left may help to explain the adaptive nature of algorithms. Without any changes to the actual code the data processing (first order rules) of algorithms is typically more difficult to influence than the outputs of algorithms (second order rules) (Wagner 2016a). This distinction is important, as the first order elements of automated decision-making processes are often adaptive, and can adjust to second order rules very rapidly (Wagner 2016b).



One area where algorithms are typically very inflexible (where the computer says 'no') is in the area of procedural and deeper structural changes to their decision making, or first order rules as they are termed here. This characteristic can often be observed with organisations which implement algorithmic systems without an in-house capacity to change the software code themselves. Even if the outputs of the system are perceived as 'mistakes' it will often be easier and/or cheaper for such organisations to 'fix' the problem with second order rules rather than to change the algorithm itself. Problems about algorithmic flexibility or inflexibility have little to do with the actual algorithms themselves but instead are a product of how human beings implement and regulate algorithms.

In relation to flexibility another aspect of some algorithms design also needs to be considered, namely self-learning or adaptive algorithms. These algorithms have the ability to learn based on data they receive through machine learning techniques (Williamson 2016). This ability to learn new 'tricks' from the data they receive certainly makes algorithms more flexible in some regard, but also makes their output harder to predict (Gillespie 2016). This also has led some authors to suggest that many forms of algorithmic transparency, accountability and regulation are impossible because the programmers themselves are unable to predict or fully understand how the algorithm makes the decisions that it makes (Kroll 2016).

Finally many technologies based on algorithms use data mining and pattern recognition without "understanding" causal relationships (correlation instead of causation), which may lead to errors and raise concerns about data quality. Related to this, one key challenge linked to the implementation of algorithms is the frequent perception that they are able to create neutral and independent predictions about future events. The hype around Google Flu trends in 2011 which later turned out to be completely unjustified as their prediction ability was far lower than claimed is just one example of the ongoing struggle with claims around predictive algorithms (Lazer et al. 2014; Lazer and Kennedy 2015). The challenge however is less to do with algorithms themselves and far more about how human beings perceive and interpret their results. The belief that computer algorithms produce neutral unbiased results (Chun 2006) without any form of politics (Denardis 2008) is at the heart of this problem. Rather than changing the algorithms in any way, it would be far more helpful to ensure more critical engagement in public debates about them.

4. Empirical Dimensions: Current and Future Uses of Algorithms

The following set of cases provides a broad overview of the areas in which automated decision-making is currently employed in a way which raises relevant public policy questions. However this list is not exhaustive and is based primarily on those areas in which considerable public, academic or expert debate already exists and thus some preliminary comparisons and conclusions are possible. Areas that could have also been

covered in this context include healthcare, mobility and many other areas that are not even being debated yet but may be in future.

A. Content filtering and website blocking

One of the key public policy debates about online content filtering is the extent to which content removal by social media platforms takes places manually, semi-automatically or automatically. While large social media platforms like Google or Facebook love to claim that all content taken down is previously reviewed by a human being (Buni and Chemaly 2016), there are evidently large parts of the process which are automated (Wagner 2016b). Given the importance of platforms like Google or Facebook, their centrality for many users experience of the Internet as a quasi-public sphere (York 2010) and their ability to massively amplify certain voices (Bucher 2012) this is by no means a trivial matter.

Automation of the content removal process by social media platforms is particularly evident in the response times that different types of content receive and how content is prioritized, a process that is evidently automated. The same goes for the threshold of user complaints that are required before a piece of content is reviewed. While this varies for different kinds of content it is not 0 and there are strong suggestions that the complete responses of Facebook to user queries is automated for many types of content (Wagner 2016b; Zhang, Stalla-Bourdillon, and Gilbert 2016). Thus it is possible that many users complain about a specific type of content without an automated algorithm judging it relevant to ask a human operator to review the content. As a result, it is possible to claim that large parts of the content takedown process are automated and the even human content takedowns are at minimum semi-automated. Another example are 'upload filters,' which are used to scan for and automatically remove content considered copyright infringement or child sexual abuse images (McIntyre 2012). It has been suggested that similar algorithms could be used for extremist content (Toor 2016). As noted by Tufekci et al. (2015) "The scale of the content on user-generated platforms and costs associated with human moderation are the reasons algorithmic processes appeal to platforms. Yet, given the crucial gate-keeping function played by these platforms, algorithms also introduce new complications rather than creating a simple solution." Thus many of the practices discussed above involved algorithmic decision-making and thus pose considerable challenges for the rights to Freedom of Expression and Privacy.

B. Terrorism and crime prevention

There has been a considerable push for the usage of automated decision-making in the areas of national security and crime prevention. Following a string of violent attacks in the US and Europe in recent years, many European and US politicians have begun calling for online social media platforms to use their algorithms to identify terrorists (Rifkind 2014; Toor 2016). Many social media platforms are seemingly already using algorithms to identify extremist content and are being asked by governments to pass on the results generated by these algorithms to governments. One important example of this practice relates to British parliamentary investigation into the murder of the British soldier Lee Rigby in London 2013.

According to a report from the British Intelligence and Security Committee of Parliament the killers had, apparently, posted extremist content in an online social network that was flagged and removed, reportedly algorithmically. The Parliamentary report states that: "The Committee asked GCHQ about the processes by which companies hosting such platforms might close accounts. GCHQ explained that different Communications Service Providers (CSPs) use different systems. However, it appears that there are: various automated techniques for identifying accounts which they believe break their terms of service. They use these techniques to identify and disable accounts which they believe

may be linked to child exploitation and to illegal acts such as inciting violence [...] Such accounts are then automatically suspended.” (Rifkind 2014)

In the US, the Obama administration has advocated for the use of ‘hashes’⁷ for the detection and automatic removal of extremist videos and images. Additionally, there have been proposals to modify search algorithms in order to “hide” websites that would incite and support extremism. The hash mechanism has been adopted by Facebook and YouTube for video content, however no information has been released over the presence of human input nor on the criteria adopted to establish which videos are “extremist”. In Europe, while similar projects are under scrutiny, the Interpol has created a regional organization monitoring online extremist content called the “Internet Referral Unit”. The system will be automated in the next few months with the introduction of the “Joint Referral Platform.”⁸ Notably the data on extremist online content that Europol is processing refers not just to Internet content which is illegal in Europe or one of its member states but also to material which violates the Terms of Service of an Internet intermediary. By contrast the Internet Referral Unit of the Netherlands have publicly stated that they have no interest in policing the Terms of Service of Internet Intermediaries and “don’t do anything automated” (Lestrade 2016).

In a different vein, it should also be noted that automated recommender systems can also have problematic effects in regards to ideological or political content. Specifically, the programming of many online recommendation systems can create ‘filter bubbles’ - fully-automated echo chambers in which individuals only see pieces or information which confirm their own existing opinions - of extremist content (Bozdag 2013; Pariser 2011; Zuckerman 2013) which according to the results of recent research are relatively easy to stumble into and relatively hard to get out of (Salamatian 2014). These fully-automated echo chambers pose the danger of creating “ideological bubbles” (O’Callaghan et al. 2014) of online content. However other scholars like Borgesius et al. who argue that there is “there is little empirical evidence that warrants any worries about filter bubbles” (Zuiderveen Borgesius et al. 2016).

Moving from terrorism to crime prevention, the main policy debates around the usage of algorithms seem to be related to the concept of predictive policing. This approach - broadly framed – bases its analysis on historical patterns of crime to predict future patterns of crime beyond the ability of human beings. This has included developed automated systems which predict which individuals are likely to become involved in a crime (Perry 2013). Similarly, to the online content algorithms discussed above, there is considerable concern that these recommender systems for crime are likely to create echo chambers within which existing biases and prejudices are sedimented. Existing biases and prejudices related to for example racial or ethnic groups are then not recognized by the police as their own biases, as they have become integrated into an automated computer program. As the computer program is perceived to be independent and neutral, these biases become ‘normal’ and part of everyday usage of a computer, rather than specific decisions of an individual which can be more readily questioned.

c. Search algorithms and search functionality more generally

Search algorithms and search functionality more generally form a key aspect of the Internet. The ability to search the Internet would however be impossible without search algorithms that provide responses to user queries. Search algorithms can be horizontal or vertical in nature. Horizontal search algorithms are used for general search. For instance, the search engine providers Google and Bing employ horizontal search algorithms for general search; to help web users locate particular information from millions of web pages.⁹ Vertical search algorithms (otherwise known as specialised

⁷ Hashes are unique identifiers for pieces of internet content that are typically generated by an algorithm and simplify the identification process. For a further explanation of what hashes are and how they are used to regulate internet content see (McIntyre 2012).

⁸ Submission from Article 19.

⁹ Submission from Sophie Stalla-Bourdillon, Steffen Staab and Laura Carmichael.

search algorithms) are used to search *"a specific segment of online content"* (Verhaert, 2014, p. 266). Moreover most modern search tend to provide personalized results which adapt the search results to the algorithmically predicted preferences of their users (and this creates the potential filter bubble).

Search algorithms and search engines are likely to have a positive impact on the fundamental right to freedom of expression. As observed by the Committee of Ministers of the Council of Europe: *"Search engines enable a worldwide public to seek, receive and impart information and ideas and other content in particular to acquire knowledge, engage in debate and participate in democratic processes."*¹⁰

However search algorithms and search engines may also have a negative impact on freedom of expression. Content which is not indexed or not ranked highly by one of the few popular internet search engines may be less likely to reach a large audience. A search algorithm might also be biased towards certain types of content or content providers, thereby risking to affect related values such as media pluralism and diversity.¹¹ This can lead to considerable discrimination issues, both in regards to end-users, customers and societies as a whole.¹² A biased algorithm within a large quasi-monopolistic search engine that systematically discriminates one group in society based on their age, sexuality, race or gender would cause considerable problems not just for the individuals affected by these decisions, but for societies as a whole.

There are also concerns with search engines impact on the right to privacy and data protection. The specific dimensions of this impact relate to facilitating aggregation through gathering information about a specific individual, reducing practical obscurity by making it easier to find information about an individual, violating contextual integrity by violating norms about the distribution of information and reducing individual control over information disclosure as a whole.¹³

D. Surveillance, Online Tracking, Profiling and "Social Sorting"

Algorithms play a role in online tracking and profiling of individuals whose browsing patterns are recorded on the basis of cookies and similar technologies such as digital fingerprinting and aggregated with search queries (search engines) and other data (eg social media tracking and data collection through apps on mobile devices) (Tene and Polonetsky 2012). One of the main applications of online tracking and profiling is targeted advertising based on the profile of presumed interests of the person tracked. However these profiles can also be used in the context of assessing a person's risk profile for the purpose of insurance or credit scoring (discussed further below) or more generally for differential pricing (offering different prices for the same goods or services to different consumers, based on their profile). Particular concerns arise from the use of data brokers who aggregate the information contained in personal profiles and this information may then be mined through the use of algorithms, which creates a risk of large-scale surveillance (dataveillance) by private entities and governments alike (Rubinstein, Lee, and Schwartz 2008). The major problem of using data from profiles for different purposes through algorithms is that the data loses its original context and this use is therefore likely to affect a person's informational self-determination and is likely to be prejudicial and/or discriminatory, as the data loses its contextual integrity (Nissenbaum 2004; Tene and Polonetsky 2012). Furthermore the use of algorithms on aggregated profile data may also increase undesirable social inequalities (for example

¹⁰ Council of Europe, Recommendation of the Committee of Ministers to member States on the protection of human rights with regard to search engines, CM/Rec(2012)3, Adopted by the Committee of Ministers on 4 April 2012 at the 1139th meeting of the Ministers' Deputies, paragraph 1, available at <https://wcd.coe.int/ViewDoc.jsp?id=1929429>.

¹¹ Submission from Aleksandra Kuczerawy, Brendan van Alsenoy and Jef Ausloos.

¹² Submission from Sophie Stalla-Bourdillon, Steffen Staab and Laura Carmichael.

¹³ Submission from Aleksandra Kuczerawy, Brendan van Alsenoy and Jef Ausloos.

power, status, wealth) (Tene and Polonetsky 2012). This has already been described as 'social sorting' (Lyon 2003).¹⁴

- a. From a human rights point of view some of these concerns can be addressed through developing the right to privacy, but other concerns are not sufficiently captured by the right to privacy. Thus, some scholars have argued that from a normative point of view more conceptualisation of these concerns is required to develop the framework of normative principles further, for example as part of a fundamental right not to be unfairly discriminated against. Others have suggested that this right is already sufficiently covered by Article 14 of the European Convention on Human Rights on anti-discrimination which just needs to be applied more broadly.

E. Insurance and Credit Scoring

The objective of insurance is to provide a degree of "financial protection" (David, 2015, p. 147) to the applicant(s). Insurance risk assessment is a formal statistical method utilised to assign applicants to appropriate insurance tariffs by considering the likelihood, frequency and cost of a potential claim (David, 2015, p. 148). Prior to the use of formal statistical methods, "subjective human assessment" was used for creditworthiness assessment (Hand & Henley, 1997, p. 530) and insurance; i.e. the examination of an individual's application on a case-by-case basis. However, the current credit scoring model faces a number of criticisms – principally they lack transparency and assess a limited range of variables.¹⁵

In some instances, algorithmic credit scoring aims to focus beyond traditional variables and take advantage of additional types and amounts of data, such as social media data (Williams 2016) and browsing history to further enrich creditworthiness assessment (Holloman, 2014), (Shipley & Zhuo, 2016), (Clements, 2015). Credit scoring has a potentially broader remit than was initially intended; e.g. it is not only used by lenders but employers (The Editorial Board, 2013).¹⁶ Many businesses traditionally working in the field of credit scoring have expanded their reach to become data brokers and identity management companies (for example providing age-verification information).

F. Automating the Workplace and workers Rights

The workplace is another key area whether automated decision making has become increasingly common in recent years. Algorithms are increasingly involved in decisions on both hiring and firing staff, staff organization and management as well as evaluating the professional contribution of individual staff members (Tufekci et al. 2015). These decision-making processes are by no means perfect when they are conducted by humans and there are numerous biases in hiring related to race (Bertrand and Mullainathan 2004) class and gender (Altonji and Blank 1999; Goldin and Rouse 1997) that have been demonstrated. With more and more companies moving towards algorithmic hiring (Rosenblat, Kneese, and others 2014) it is however highly problematic that the systems employed typically lack any transparency in the decisions they make, both in the hiring process and beyond. Moreover many of these automated decision-making processes are based on data from Internet intermediaries.

Another challenge is related to automated feedback loops which decide how employees should be managed and are typically linked to customer input (Kocher and Hensel 2016). By allowing the 'wisdom of the crowd' to make decisions about individuals employment is not only highly ethically questionable, it also limits the ability of workers to contest such decisions as they seem to be 'objective' measures of their performance. As individual employment platforms are "Transforming People into Human Computation" there are

¹⁴ Submission from Julia Hornle.

¹⁵ Submission from Sophie Stalla-Bourdillon, Steffen Staab and Laura Carmichael.

¹⁶ Submission from Sophie Stalla-Bourdillon, Steffen Staab and Laura Carmichael.

obvious questions to be asked about workers' rights, employee self-determination and how societies as a whole believe that human beings should be treated at the workplace.

G. Cloud providers and data storage

Another key aspect related to the usage of algorithms for automated data processing focusses on 'cloud' data storage. This refers to solutions whereby files and other data are no longer stored on local storage but are stored remotely on servers accessible via the Internet. However by virtue of engaging in non-local storage practices, the data of users is also subject to being processed by algorithms while stored remotely in ways that would not be the case if the information is stored remotely. There are two places where such automated data processing can take place: (1) in transit to the remote network storage location and (2) on the remote servers where the data is stored. Importantly as modern operating systems are increasingly deeply enmeshes with 'cloud' i.e. remote services, it is increasingly difficult for users to ascertain to what extent they are using local or remote services. For example, the Siri service for voice interaction with users phones regularly interacts with and stores data on remote servers (Yamamoto et al. 2014) without this being evident let alone transparent to users (Article 29 Data Protection Working Party 2013).

The key question in regards to data in transit is whether it is sufficiently protected or not through technologies such as strong end-to-end encryption [Schulz and Hoboken forthcoming]. If data is encrypted automated data processing becomes a lot more difficult and in some cases completely impossible. If the data which is transferred to the cloud is not encrypted - as is surprisingly common even though this should not be the case - then whichever networks the data passes can analyze and even modify the data. Actors doing so range from intelligence services such as the U.S. NSA or the British GCHQ to more mundane peddlers of advertising such as Phorm and NebuAd (Ermert 2013; Greenwald and MacAskill 2013; Metz 2008; Williams 2008).

However this does not mean that cloud data is safe simply because it is encrypted in transit. It is also possible for data to be manipulated and analyzed on the servers where it is being stored. For example, Microsoft's cloud service 'SkyDrive' operates an "automated process designed to pull the trigger when it 'sees' certain content (such as nudity)," leading to a users account being terminated when such content is found (Clay 2012). This is particularly problematic for many users who "believe their images to be private" (Heckert 2011) are now confronted with an unwanted automated decisions being made based on their personal data.

H. Elections & implications for democracy

[Include cross-link and reference to CoE MSI-MED Report by Damian Tambini].

One important area that is often ignored when looking at the effects of automated data processing and algorithms relates to elections. Since the advent of the Internet it has been argued that online campaigning and social media were likely to change the way in which politics and elections work but it is only more recently that academic research has revealed the extent to which changes to online content platforms can 'tip' elections. More specifically researchers manipulated the Facebook platform without users knowledge during U.S. elections and were thus able to convince a statistically significant segment of the population to vote (Bond et al. 2012). There are strong indications that since then Facebook has been selling similar services to political parties around the world, with similar behaviour observed during the UK local elections in 2016 (Griffin 2016). Whether Facebook and similar quasi-monopolistic online platforms are using their power to influence human voting benevolently or not is less the point than the fact that they - in principle - have the ability to massively influence elections.

At the same time Facebook is increasingly considered by scholars such as Helberger et al. to be acting as a "news editor [that] has editorial responsibility for its trending topics"

(Helberger and Trilling 2016). This in turn begs the question of whether social media platforms should be considered Internet intermediaries or rather the editors of news websites.

I. Internet of Things and Smart Cities

As discussed in the introduction the spread of programmed objects into all areas of society and human life is being increasingly common. This shift which is sometimes referred to as the 'Internet of Things' or discussed in the context of 'smart cities.' With increasing amount of automation and larger amounts of data that is typically stored by Internet intermediaries it is in theory possible to better tailor automated systems surrounding human beings to their needs. However it is an open question whether such automated systems are used in the interests of users or citizens, particularly when they are implemented in highly sensitive areas such as the medical sector (Bates et al. 2014).

As noted by Natali Helberger "there are possible challenges from the Internet of Things for the 'profiled consumer.' These challenges go beyond issues of privacy and data protection – which will continue to play a prominent role. In addition, the protection of contractual fairness, adequate information and autonomous and free choices comes to the fore" (Helberger 2016:22) Finally it is very common for the data collected by such services to be shared between different data brokers (Hoofnagle 2003), ensuring that the 'profiled consumer' becomes a 'profiled citizen.'

J. Digitisation of Public Sector & government services

Numerous government agencies and services are increasingly automating their decision-making with the use of algorithms. While it is heavily debated whether such systems can increase efficiency or not what is evident is that many of the systems pose considerable questions for transparency and accountability of public decision-making. This is particularly the case as these are government authorities which are typically held to a higher standard in their decision making than private sector or other non-governmental organisations.

Despite these standards there are strong suggestions that the public sector is employing automated-decision making in areas as diverse as social security, taxation, health care and the justice system. For example many courts in the United States use a computer program to assess the risk of repeat offending, which has been shown to be "biased against blacks" (Kirchner 2016). Another example relates to the practice of *Profiling the Unemployed in Poland* (Jędrzej Niklas, Karolina Sztandar-Sztanderska, and Katarzyna Szymielewicz 2015). During their analysis they identified several challenges which are broadly also true for the usage of algorithms in other areas of the public sector service delivery as well:

- "1. Non-transparent rules of distributing public services [...]"*
- 2. Shortcomings of computer systems as a trigger for arbitrary decisions ...]"*
- 3. Gap between declared goals and practice [...]"*
- 4. System based on the 'presumption of guilt' [...]"*
- 5. Categorization as a source of social stigma [...]"*
- 6. Risk of discrimination" (Jędrzej Niklas et al. 2015:33–37)*

Finally there are risks associated with outsourcing key government functions such as the provision of government benefits to the private sector. It has been argued in South

Africa that operating such privatized government services while simultaneously engaging in competitive banking and insurance markets provides an inappropriate competitive advantage to companies who operate privatized government services (Elza Van Lingen 2016). Aside from the competition concerns there are evident concerns related to privacy and data protection that also arise from such arrangements, particularly as many of the organisations providing these kinds of services are Internet intermediaries.

5. Ethical & legal & human rights dimensions

Many of the challenges discussed above touch upon, ethical, legal and human rights challenges. None of these challenges are easily or readily resolved, nor should regulatory responses to algorithms and automation be taken lightly. Importantly many of the challenges related to automated data processing have historically been resolved by data protection legislation. Thus relevant innovative governance mechanisms such as the “right to explanation” (Goodman and Flaxman 2016) are also typically the product of data protection legislation. However it should be noted that there is a significant difference between the right to privacy and the data protection regulation, which is at the end still a governance mechanism to safeguard privacy and other rights. Moreover it should be evident from the previous analysis that the “challenges go beyond issues of privacy and data protection” (Helberger 2016:22) and thus cannot be resolved by recourse to data protection regulation alone.

Challenges around discrimination of content raises questions of competition law and discrimination of minorities, while the ability of algorithms to manipulate elections is a matter for electoral commissions and parliaments. There are also issues related to “protection of contractual fairness, adequate information and autonomous and free choices” (Helberger 2016:22). While the issues touched upon above are too broad to be covered by data protection regulation alone, nor should these regulatory mechanisms or the expertise of the data protection community be forgotten in the process of finding regulatory responses to algorithmic governance.

Importantly there is a danger that if misconstrued some of the statements or recommendations in this report could be used to regulate the development of algorithms or other software code. So to be absolutely clear it should be stated here that this should be not a reasonable outcome of this report and any such interpretation would be false. This is because interference with the right of individuals to research, develop and test would itself be a grave infringement of human rights and in particular freedom of opinion, expression, thought and research. Aside from significant human rights impacts of doing so, limiting research and development of algorithms actually limits a better understanding of how algorithms operate and what effects they have. Importantly many of the public policy solutions can only that will be discussed below are only relevant for very large actors with a considerable quasi-monopolistic market share (Naughton 2016) and could well be harmful if implemented on implementers of algorithms of all shapes and sizes.

Finally, there are very fundamental legal and ethical surrounding the legal personhood of automated systems such as algorithms that cannot easily be resolved in this report. Particularly around questions such as liability and accountability these questions are important, not in a manner to exculpate those involved in developed and implementing such systems from responsibility but rather to acknowledge that accountability and liability is becoming increasingly complex with autonomous systems.

6 Mechanisms of Governance, Accountability & Transparency

There is a frequently stated perception that the regulation of algorithms in automated systems is either impossible or extremely difficult. Such statements tend to ignore the numerous cases in which algorithms are already regulated before their implementation by government regulators or independent auditors. To provide just one example, the software and algorithms used in 'slot machines' in Australia and New Zealand are required by government regulation to be "fair, secure and auditable" (Woolley et al. 2013). As part of this process the developers of such machines are required to submit their algorithms to regulators before they can be presented to consumers. The same applies to the regulation of online gambling in the United Kingdom, where gambling equipment is controlled by a specific licensing regime.

The Australian/New Zealand Gaming Machine National Standard in its most recent revision 10.3 defines in extraordinary detail the technical specifications by which such machines can operate. For example the "Nominal Standard Deviation (NSD) of a game must be no greater than 15" and "the hashing algorithm for the verification of gaming equipment software, firmware and PSDs is the HMAC-SHA1 algorithm".¹⁷ This is not to say that such mechanisms would definitely be appropriate for regulating Internet intermediaries, but rather that the claim that the regulation of algorithms is impossible is evidently false and that regulators should look to existing mechanisms already implemented.

a. Transparency

One of the main challenges frequently cited in regulating algorithms is that they seem like black boxes to both consumers and regulators (Pasquale 2015). As Tufekci et al note: "a common ethical concern about algorithmic decision-making is the opaque nature of many algorithms. When algorithms are employed to make straightforward decisions, such as in the case of medical diagnostics or aviation, a lack of transparency raises important question of accountability" (Tufekci et al. 2015:11). Thus there is a frequent and growing debate about algorithmic transparency in which algorithms could be provided to independent auditors, regulators or the general public (Diakopoulos 2015; Rosnay 2016).

As provision of entire algorithms to the public is typically considered unlikely, there is also a debate around the possibility of providing key subsets of information about the algorithms to the public, for example which variables are in use, the average values and standard deviations of the results produced or the amount and type of data being processed by the algorithm.

¹⁷ The Australian/New Zealand Gaming Machine National Standard which is available here: <https://publications.qld.gov.au/dataset/a-nz-gaming-machine-national-standards>

All of these measures aim to increase transparency of automated systems. This is obviously complicated by the frequent changes in the algorithms used, as Google for example changes its algorithm hundreds of times per year (Tufekci et al. 2015). There is also the frequently danger of manipulation and 'gaming' of algorithms if they were made public. At the same time the usage of machine learning complicates transparency to a point where provision of all of the source code of an algorithm may not even be sufficient, and instead there is a need for an actual explanation of how the results of an algorithm were produced. Initial steps to such a right can be drawn from the European General Data Protection Regulation (GDPR) including a right to explanation (Goodman and Flaxman 2016).

Private companies also regard their algorithm as their key trade secret and hence disclosure is unrealistic. Besides, in a decision of 28 January 2014, the German Federal Supreme Court (Bundesgerichtshof) rejected a claim for information concerning the credit agency's algorithm as it was a protected business secret but allowed a claim for information concerning the data used to calculate creditworthiness through the means of the algorithm. However where algorithms are used in decision-making which potentially prejudices the rights of individuals an oversight mechanism may ensure that the algorithm operates in a fair and sustainable manner. An example for this is section 28 b of the German Federal Law on Data Protection which provides that there has to be a scientifically proven mathematical-statistical process for the calculation of the probability of a specific behaviour of an individual before such an algorithm can be used for making a decision about a contract.

b. Accountability

What accountability do individuals have for the algorithms they implement? This depends very much on the nature of the algorithms and their outputs. In many cases if the outputs are defamatory, infringe copyright or raise other legal concerns there are already governance mechanisms to ensure that these kinds of outputs are limited (Staab, Stalla-Bourdillon, and Carmichael 2016), with the case of Max Mosley taking action against Google just one of many examples (Stanley 2011). However such mechanisms typically only affect second order rules, i.e. changes to the outputs of algorithms. By contrasts there is a general lack of regulatory frameworks to influence first order rules and ensure that algorithms – in most cases – are actually producing results that uphold and protect fundamental values or basic ethical and societal principles.

However it has been suggested that "[t]echnologists think about trust and assurance for computer systems a bit different from policymakers, seeking strong formal guarantees or trustworthy digital evidence that a system works as it is intended to or complies with a rule or policy objective rather than simple assurances that a piece of software acts in a certain way." (Kroll et al. 2016)

This in turn feeds into the wider debate on auditing of algorithms by which 'zero knowledge proofs' could conceivably be generated by algorithms to demonstrate that they conform to certain properties without the individual engaging in the proof being able to see the actual algorithm (Kroll 2016).

Regulating Algorithms directly

As was discussed above, gambling is one area where the code of algorithms is regulated directly and required to conform to certain standards, but it is not the only area where this kind of regulation is being discussed. In the financial sector there is an ongoing debate about the regulation of high-speed trading algorithms as these are seen to have a strong potential destabilizing effect on the overall financial system. One of the leading social democrat politicians suggested in 2012 that financial trading “algorithms will have to undergo a stress test to ascertain its stability” (Steinbrück 2012).

One associated area where similar regulation has been threatened is in the area of online content regulation and Internet hotlines. Here the British Police special unit CEOP demanded that their ‘Facebook button’ be provided by default to all Internet users (Wagner 2016b). While this attempt to pressure Facebook into changing its default code on the British Facebook website was unsuccessful, it suggests what kind of regulatory responses could be expected if states begin to define the content of algorithms on large online platforms.

Aside from direct regulatory mechanisms to influence the code of algorithms, indirect mechanisms to influence algorithms code could also be considered. These address the production process or the producers of algorithms and attempt to ensure they are aware of the legal challenges, ethical dilemmas and human rights concerns raised by automated decision-making. Another instrument to achieve such goals could be consist of standardized professional ethics or forms of licensing system for data engineers and algorithm designers similar to those that exist for professions like doctors, lawyers or architects.¹⁸

In conclusion it should be noted that the approach to direct regulation of algorithms or software code should be pursued with extreme care. It is the regulatory approach that provides the most pitfalls and is most likely to wider problems. Notably the direct regulatory approach raises considerable concerns about freedom of opinion and expression, the right to privacy as well as Freedom of Profession. Moreover given the fact that regulators currently do not know that much about algorithms, greater steps towards transparency and accountability of algorithms would seem far more appropriate.

Conclusions and Recommendations

Understanding how automated decision-making systems operate is fraught with great difficulty and raises numerous public policy questions. None of these questions have easy answers, this should not however dissuade policy makers from looking more closely at them. Many of these challenges are so difficult to assess because the field is comparatively new and finding effective solutions remains difficult. As a first step it seems reasonable to suggest that policy-makers should seek to learn more about the implementation of automated decision-making systems in their respective countries. As a second step, they should try to ensure that existing law and legal frameworks remain implemented and effective in response to the challenges posed by automated decision-making in numerous different areas. As a final step, policy makers should be wary of limiting researchers or those trying to understand how algorithms operate, or focussing their regulatory efforts on organisations with low market share. This is because many of the policy challenges raised in areas such as free and fair elections or online content moderation only come into being by virtue of quasi-monopolistic markets.

Despite this MSI-NET have tried to develop some basic recommendations which we hope can help more the debate forward on effective public policy responses to the challenge of automated decision-making.

¹⁸ Submission from Markus Oermann, University of Hamburg.

- a. Governments should engage with their own sector-specific (insurance, credit reference agencies, banks, e-commerce sector) regulators to develop sector specific standards and guidelines to ensure that they are able to respond to the challenges of the use of algorithms in automated decision-making and taking into account the consumer interest.
- b. Governments should consider to provide means of redress (complaint systems) to consumers who have been unfairly prejudiced by automated decision-making
- c. Governments should ensure that consumers have access to key aspects of algorithms so that they are able to make informed decisions about which services to use.
- d. Governments should make all automated decision-making systems used by any public authority or other government entity fully transparent and should provide all relevant information required for full scrutiny and auditing of such automated decision-making systems to all affected parties.
- e. Governments should not engage in any actions which limits the ability to conduct research on, develop or understand automated decision-making systems.
- f. Government should ensure that the individuals and organisations are held accountable for negligent use of automated decision-making systems.
- g. Governments should ensure that free and fair elections remain possible
- h. Governments should not impose a general obligation on Internet Intermediaries to use automated techniques to monitor information that they transmit or store.
- i. Internet Intermediaries should be fully transparent with the users in the context of removal and blocking of content and should inform users whether and to what extent the decision-making in response to requests for taking down Internet content are automated or not.
- j. Users should have the possibility to challenge the blocking and filtering of the content.

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