THE (EUROPEAN) ARTIFICIAL INTELLIGENCE (R)EVOLUTION: ARE TRUSTWORTHINESS, LAW, ETHICS, AND ROBUSTNESS ENOUGH FOR (RE)LIABILITY?

December 20, 2021

Anhui University, People's Republic of China

(Version 2 – DDF)

Prof. Dr. Viola Schmid, LL.M. (Harvard), Technical University Darmstadt, Germany







Agenda

A. Versions of Contribution at Anhui University

B. Content of Presentation at Anhui University

Part 1: Retrospection

- I. Co-Authored German Publication Georg Gesk & Viola Schmid: Requirements and Opportunities of the "Internet Court" in Hangzhou/PRC – A Model? (2019, 5 Pages)
- II. Presentation & Abstract: Internet Law Works-in-Progress 2020, New York Law School, USA
- Part 2: New York Contribution (2020)
- Part 3: Follow Up on New York Contribution for Presentation at Anhui University (12/2021) The Selection

A. Versions of Contribution at Anhui University

Version 1: "Realtime Presentation Format (RPF)" (author's terminology) for December 20, 2021

Version 2: "Dig Deeper Format (DDF)" (author's terminology) encouraging further research and scientific discourse

→ DDF following

B. Content of	Presentation at	t Anhui University
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B. Content of Presentation at Anhui University in 3 Parts

Part 1: Retrospection

Part 2: New York Contribution (2020) <u>published</u> as "Video- & Audioformate & Slides"

Part 3: Follow Up on New York Contribution for Presentation at Anhui University (12/2021)

B. Part 1: Retrospection

Voraussetzungen und Chancen des "Internet Court" in Hangzhou/China – Ein Modell?, gemeinsam mit Prof. Dr. Georg Gesk (Universität Osnabrück) in: Schweighofer/Kummer/Saarenpää (Hrsg.), Internet of Things – Tagungsband des 22. Internationalen Rechtsinformatik Symposions (IRIS 2019), S. 425 – 430 (in der Printausgabe)

Translation: Requirements and Opportunities of the "Internet Court" in Hangzhou/PRC – A Model?

II. Presentation & Abstract: Internet Law Works-in-Progress 2020, New York Law School, USA

B. Part 1 Retrospection II - Presentation: Internet Law Works-in-Progress 2020

THE (EUROPEAN) ARTIFICIAL INTELLIGENCE (R)EVOLUTION:

ARE TRUSTWORTHINESS, LAW, ETHICS, AND ROBUSTNESS ENOUGH FOR (RE)LIABILITY?

Internet Law Works-in-Progress Saturday, March 14, 2020 New York Law School

Prof. Dr. Viola Schmid, LL.M. (Harvard)

Technical University Darmstadt, Germany







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B. Part 1 Retrospection II – Abstract: Internet Law Works-in-Progress 2020

"The (European) Artificial Intelligence (R)Evolution: Are Trustworthiness, Law, Ethics, and Robustness Enough for (Re)Liability?

The European Commission qualifies AI as a "game changer" and a European Independent High-Level Expert Group on AI (AI HLEG) witnesses an "AI driven world." Every "traditional lawyer and law professor" would expect that if the game and the world changes and a new "driver" appears on the scene (deus et dea et machina?) new law would evolve. Hence, especially (primary) law (on the European Union level) would change as well. However, as we all know, constitutional amendments or an adaption of European Union (primary) law for an AI augmented world (own terminology) or a "robot world" have not materialized yet.

We do not see a mutation, innovation, evolution or revolution of legal systems at present. However, it is necessary to create new legal settings in order to alleviate concerns of the public and of relevant industries alike when it comes to questions of liability for (un-)foreseen negative consequences caused by robots as well as AI systems. Defining robot and AI systems and designing a legal framework for liability are a prerequisite for reliability.

A lack of legal certainty threatens to stymie users as well as innovators in the design, production, distribution, merchandising and maintenance sector. Concerns regarding (un-)foreseeable risks (liabilities) and attempts at limiting liability are obvious as well as understandable.

Hence, new and holistic approaches to qualify and evaluate AI systems and robots are of highest importance. The AI world concept of the AI HLEG tackles this innovation barrier in 2019 by establishing the here so called "LER and FRA Formulas." "FRA" is an acronym for "Foundations,", "Realization," and "Assessment." The lawful, ethical and "robust" quality of AI systems ("LER Formula") gets the meaning of a "Foundation" for a future brand called "Trustworthy AI for Europe." Not only does this lay the AI Foundation, moreover, it also establishes that technical and non-technical measures have to be used to fulfill these fundamental requirements. Last but not least, the design of a "check-list" for AI is groundbreaking not only for AI systems but also for robots (e.g. autonomous vehicles). This "Assessment List" is currently in the process of interactive governance and feedback. Even in its first version, it might plaster the path towards a new "liability, accountability, responsibility law" for AI as well as for robots ("EGEGfTAI-I-2019", p. 26 continuing).

Summing up: Creating "ethical" (not legal) rules at the forefront of developments and attempts at escaping traditional legal liability does not suffice if revolution and technophobia are the consequence in the aftermath of (possibly high) risk applications in industry and society. Consequently, the first priority of law (as part of LER) is the development of a liability regime, especially in procedural law (such as administrative and civil procedure). The European Union and the Member States have to face the challenge dealing with "rogue" systems (AI systems that have no connection with a liable subject or that operate outside of causality principles linking a liable human subject [developer, producer, owner etc.] to a harmful outcome due to autonomous choices / behavior).

It is a matter of interpretation whether AI is revolutionary or evolutionary, which is why we chose the denomination "(R)Evolution".

The authors have competencies in German and European Union law and Georg Gesk has excelled in Chinese law as well. For the audience of the Internet Law Works-in-Progress conference, the authors selected nine European Union documents:

(1) "Building a European Data Economy" COM(2017) 9 final, 2017/01/10 (EDE-COM-I-2017); (2) "Artificial Intelligence for Europe" COM(2018)237 final, 2018/04/25 (AlfE-COM-I-2018); (3) "Coordinated Plan on Artificial Intelligence" COM(2018)795 final, 2018/12/07 (CPAI-COM-II-2018); (4) "Building Trust in Human-Centric Artificial Intelligence" COM(2019)168 final 2019/04/08 (HCAI-COM-I-2019); (5) "Ethics Guidelines for Trustworthy AI" 2019/04/08 (EGEGFTAI-I-2019); (6) "Definition of AI: Main capabilities and disciplines" 2019/04/08 (EGDoAI-I-2019); (7) "Policy and Investment Recommendations for Trustworthy AI" 2019/06/26 (EGPaIRfTAI-I-2019). (8) Report with recommendations to the Commission Civil Law Rules on Robotics, 2015/2103(INL), European Parliament, Rapporteur: Mady Delvaux (S&D, Luxembourg) (2016/05/31)] (9) European Parliamentary Research Service, Study, A common EU approach to liability rules and insurance for connected and autonomous vehicles, Author: Tatjana Evas, PE 615.635 February 2018.

Georg Gesk, University of Osnabrueck (Germany), Professor, ggesk@uniosnabrueck.de

Viola Schmid, Technical University Darmstadt (Germany), Law Professor, schmid@cylaw.tu-darmstadt.de"

B. Part II: New York Contribution (2020) as presented and published

THE (EUROPEAN) ARTIFICIAL INTELLIGENCE (R)EVOLUTION:

ARE TRUSTWORTHINESS, LAW, ETHICS, AND ROBUSTNESS, ENOUGH FOR (RE)LIABILITY?

Internet Law Works-in-Progress Saturday, March 14, 2020 New York Law School

Prof. Dr. Viola Schmid, LL.M. (Harvard),Technical University Darmstadt, Germany







Agenda (I)

- A. 2017 2020: A "European Al Hype" The Ambition of Global Leadership
- B. "European AI"
 - I. GoCore! Agenda Ten Sources & Two Publications
 - 1. "Core"
 - 2. Al-Framework-Graph as a Survival Guide for Al HLEG Deliverables

Agenda (II)

- 3. In a Nutshell:
 - a. LER-Formula (Lawful, Ethical, "Robust")
 - b. FRA-Formula (Foundations, Realisation, Assessment)
 - c. A New Brand: "A Trustworthy AI for Europe"
 - d. If the "AI process" is "Robust"
- III. About "Robustness" (White Paper, 02/19/2020)
 - 1. Four Requirements
 - 2. Focus within LER-Formula: "Robustness"

Agenda (III)

- C. (Re)Liability
 - I. Ten Challenges for AI Liability Law
 - II. Ten Talking Points
 - III. Core Dogma for AI Liability Law?
- D. Sources & Abbreviations (by the author)
 - I. Documents from the European Commission
 - II. "Deliverables" from Expertgroups set up by the European Commission
 - III. German Publications by Viola Schmid
- E. Abstract

A. 2017 – 2020: A "European Al Hype" – The Ambition of Global Leadership

White Paper

On Artificial Intelligence - A European approach to excellence and trust, COM(2020) 65 final, 02/19/2020

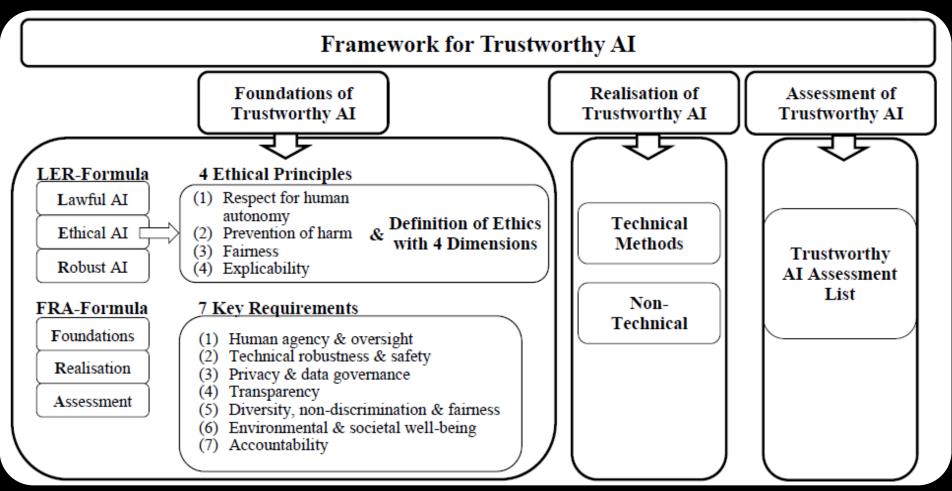
- Page 6:"[...] the race for global leadership is ongoing, [...]"
- Page 6: "[...] the potential to become a global champion [...]"
- Page 8:

"Europe is well positioned to exercise global leadership in building alliances around shared values and promoting the ethical use of AI."

- B. "European AI"
- I. GoCore! Agenda
- "Core" Ten Sources from European
 "Expertgroups" and Communications as well as
 Reports as well as a White Paper of the European
 Commission as well as two publications in German
 - → Not legally binding
 - → Perhaps (un)lawful ?
 - → But according to the authors:
 - "(Legal) AI Governance Design that is noteworthy & has potential for sustainability"

B. "European AI"

2. Al-Framework-Graph* as a Survival Guide for Al HLEG Deliverables



- B. "European Al"
- 3. In a Nutshell:
- a. LER-Formula (Lawful, Ethical, "Robust")
- b. FRA-Formula (Foundations, Realisation, Assessment)
- \rightarrow c. A New Brand:
 - "A Trustworthy AI for Europe"
 - d. If the "Al process"* is "Robust"

^{*}Author's terminology.

II. About "Robustness" (White Paper, 02/19/2020)

1. Four Requirements

"Robustness and Accuracy"*

- "Requirements ensuring that the AI systems are robust and accurate, or at least correctly reflect their level of accuracy, during all life cycle phases" (Reflection of Level of Accuracy)
- "Requirements ensuring that outcomes are reproducible" (Reproducibility)
- ➤ "Requirements ensuring that AI systems can adequately deal with errors or inconsistencies during all life cycle phase" (AI Malfunction Management I – "Reporting Systems")**
- "Requirements ensuring that AI systems are resilient against both overt attacks and more subtle attempts to manipulate data or algorithms themselves, and that mitigating measures are taken in such cases" (AI Malfunction Management II - Resilience)**

^{*}White Paper, 2020/02/19, p. 20; ** Author's terminology.

2. Focus within LER-Formula: "Robustness"

- ➤ Law & Ethics → Core Competences of Humanities & (Cyber)Law
- "Foresight Legal"*: Differences in a Global Perspective with Different "Benchmarks"
- → "Robustness", however, "Foresight Legal"*:

 Global "Yardsticks" → same Measurement
 Systems & Comparative (Legal) Analysis & Global
 Competition

"Robustness and Accuracy" as the Essentials of Liability (Law)

*Author's terminology.

C. (Re)Liability

- I. Eleven Core Challenges for AI Liability Law*
- Differentiation of Software Types (embedded and stand-alone)**
- 2. Data-drivenness & Data-dependency
- 3. Complexity of Environment
 - Internet of Things
 - Products, Services and the Value-chain

4. Connectivity

^{*}Derived from the Report from the European Commission "Report on the safety and liability implications of Artificial Intelligence, the Internet of Things and robotics" COM(2020) 64 final, 2020/02/19 (SLAIIoTR-REP-I-2020) and referring to "Liability for Artificial Intelligence and other emerging digital technologies", 2019/11/21 ("EGNTF-LAIDT-I-2019"), p. 32.

^{**} Sequence in presentation does not reflect ranking.

C. (Re)Liability

I. Eleven Core Challenges for AI Liability Law*

- 5. Openness
- 6. Vulnerability
- 7. Autonomy of AI (from Humans)
- 8. Lack of Predictability?
- 9. Opacity of AI (for Humans)
- 10. Physical Harm for Humans?
- 11. Mental Harm for Humans?

^{*}Derived from the Report from the European Commission on the safety and liability implications of Artificial Intelligence, the Internet of Things and robotics" COM(2020) 64 final, 2020/02/19 (SLAIIoTR-REP-I-2020) and referring to Liability for Artificial Intelligence and other emerging digital technologies, 2019/11/21 ("EGNTF-LAIDT-I-2019"), p. 32.

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C. (Re)Liability II. Ten Talking Points

The Expert Group Report on Liability for Emerging Digital Technologies – New Technologies Formation – set up by the European Commission consists of Sixteen Professors of Private/Civil Law

→ Ten Talking Points:

- 1. Damage
- 2. Causation
- 3. Wrongfulness and fault
- 4. Vicarious liability
- 5. Strict liability
- 6. Product liability
- 7. Contributory conduct
- 8. Prescription
- 9. Procedural challenges
- 10. Insurance

C. (Re)Liability III. Core Dogma for AI Liability Law?

"The new challenges in terms of safety create also new challenges in terms of liability. Those liability related challenges need to be addressed to ensure the same level of protection compared to victims of traditional technologies, while maintaining the balance with the needs of technological innovation."*

^{*} SLAIIoTR-REP-I-2020, p. 16.

C. (Re)Liability III. Core Dogma for AI Liability Law?

"This will help create trust in these new emerging digital technologies and create investment stability."*

 \rightarrow Title of White Paper (2020/02/19)

"On Artificial Intelligence –

A European Approach to Excellence and Trust"?

^{*} SLAIIoTR-REP-I-2020, p. 16.

TO BE CONTINUED:

THE ARTIFICIAL INTELLIGENCE (R)EVOLUTION:
ARE TRUSTWORTHINESS, LAW, ETHICS, AND ROBUSTNESS ENOUGH FOR
(RE)LIABILITY?

Prof. Dr. Georg Gesk

University of Osnabrueck, Germany, for the Asian Legal Systems







D. Sources & Abbreviations (by the author) I. Documents from the European Commission

Communication

- "Building a European Data Economy" COM(2017) 9 final, 2017/01/10 ("EDE-COM-I-2017")
- "Artificial Intelligence for Europe" COM(2018)237 final, 2018 /04/25 ("AIFE-COM-I-2018")
- "Coordinated Plan on Artificial Intelligence" COM(2018)795 final, 2018/12/07("CPAI-COM-II-2018")
- "Building Trust in Human-Centric Artificial Intelligence" COM(2019)168 final, 2019/04/08("HCAI-COM-I-2019")

Report

"Report on the safety and liability implications of Artificial Intelligence, the Internet of Things and robotics" COM(2020) 64 final, 2020/02/19 ("SLAIIoTR-REP-I-2020")

White Paper

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D. Sources & Abbreviations (by the author)II. "Deliverables" from Expertgroups set up by the European Commission

Independent High-Level Expert Group on AI (AI HLEG):

- "Ethics Guidelines for Trustworthy AI", 2019/04/08("EGEGFTAI-I-2019")
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- "Policy and Investment Recommendations for Trustworthy AI", 2019/06/26 ("EGPaIRfTAI-I-2019")

Expert Group on Liability and New Technologies - New Technologies Formation (NTF)

"Liability for Artificial Intelligence and other emerging digital technologies", 2019/11/21 ("EGNTF-LAIDT-I-2019")

D. Sources & Abbreviations (by the author) III. German Publications by Viola Schmid

Publication I: IRIS 2020 – "Responsible Digitalisation"

- "Künstliche & «Natürliche» Intelligenz: Was ich schon immer (vor 2020) über Recht, Ethik und «Robustheit» wissen wollte"
 - in: Schweighofer/Kummer/Saarenpää (Hrsg.), Verantwortungsbewusste Digitalisierung Tagungsband des 23. Internationalen Rechtsinformatik Symposions (IRIS 2020), p. 31 40
- ➤ Unauthorized english translation: ARTIFICIAL & "NATURAL" INTELLIGENCE: WHAT I HAVE ALWAYS WANTED TO KNOW ABOUT LAW, ETHICS AND "ROBUSTNESS" (BEFORE 2020)

Publication II: HKA-Formula

- "Zu den Voraussetzungen für die erfolgreiche Realisierung informationstechnologischer Projekte: die "HKA-Formel" (Haftung – Kommunikation – Akzeptanz) und andere Herausforderungen"
 - in: Heribert M. Anzinger/Kay Hamacher/Stefan Katzenbeisser (Hrsg.), Schutz genetischer, medizinischer und sozialer Daten als multidisziplinäre Aufgabe, Springer Verlag, 2013, p. 219-237
- ➤ Unauthorized english translation: "ON THE PREREQUISITES FOR THE SUCCESSFUL REALIZATION OF INFORMATION TECHNOLOGY PROJECTS: THE "LCA-FORMULA" (LIABILITY COMMUNICATION ACCEPTANCE) AND OTHER CHALLENGES"

E. Abstract

Internet Law Works-in-Progress 2020

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The European Commission qualifies AI as a "game changer" and a European Independent High-Level Expert Group on AI (AI HLEG) witnesses an "AI driven world." Every "traditional lawyer and law professor" would expect that if the game and the world changes and a new "driver" appears on the scene (deus et dea et machina?) new law would evolve. Hence, especially (primary) law (on the European Union level) would change as well. However, as we all know, constitutional amendments or an adaption of European Union (primary) law for an AI augmented world (own terminology) or a "robot world" have not materialized yet.

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Georg Gesk, University of Osnabrueck (Germany), Professor, ggesk@uni-osnabrueck.de Viola Schmid, Technical University Darmstadt (Germany), Law Professor, schmid@cylaw.tu-darmstadt.de

Your critique is input for me

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B. Part 3: Follow Up on New York Contribution 2020 for Presentation at Anhui University (12/2021) – The Selection

Update 12/2021



Part 3: Follow Up on New York Contribution 2020 for Presentation at Anhui University (12/2021) – The Selection

- I. "AI Act" Law-Making in the European Union (EU)
- II. Follow Up on New York Presentation "D. Sources"
- III. AIA: New AI Definition
- IV. AIA: Risk-Based Approach on Three Levels

B. Part 3. I. "Al Act" – Law-Making in the European Union (EU)

B. Part 3. I. "Al Act" – Law-Making in the European Union (EU)

(R)Evolution in April 2021? - AIA

Proposal for a Regulation of the European Parliament and of the Council laying down harmonised rules on Artificial Intelligence (Artificial Intelligence Act) and amending certain Union Legislative Acts, COM(2021) 206 final, 2021/04/21 and Annexes (AIA – author's abbreviation)

B. Part 3. I. "Al Act" – Law-Making in the European Union (EU)

AIA - "Provisions of the proposal"

TITLE I: SCOPE AND DEFINITIONS

TITLE II: PROHIBITED ARTIFICIAL INTELLIGENCE PRACTICES

TITLE III: HIGH-RISK AI SYSTEMS

TITLE IV: TRANSPARENCY OBLIGATIONS FOR CERTAIN AI SYSTEMS

TITLE V: MEASURES IN SUPPORT OF INNOVATION

TITLES VI, VII & VII: GOVERNANCE AND IMPLEMENTATION

TITLE IX: CODES OF CONDUCT

TITLES XI & XII: FINAL PROVISIONS

AIA, p. 12-16

B. Part 3. II. Follow Up on New York Presentation – "D. Sources"

B. Part 3. II. Follow Up on New York Presentation – "D. Sources"

European Commission

- Proposal for a Regulation laying down Harmonised Rules on Artificial Intelligence (ARTIFICIAL INTELLIGENCE ACT) and amending certain Union Legislative Act, COM(2021) 206 final, 2021/04/21 and Annexes (AIA)
- Fostering a European approach to Artificial Intelligence, COM(2021)205 final, 2021/04/21
- Coordinated Plan on Artificial Intelligence 2021 Review ANNEXES to the Communication Fostering a European approach to Artificial Intelligence, COM(2021)205 final, 2021/04/21
- ➤ The Polish Senate Fostering a European approach to Artificial Intelligence: Opinion on the application of the Principles of Subsidiarity and Proportionality, doc. 8334/21 COM(2021) 205 final, 2021/10/21
- ➤ The Senate of the Parliament of the Czech Republic Fostering a European approach to Artificial Intelligence: Opinion on the application of the Principles of Subsidiarity and Proportionality, doc. 8334/21 COM(2021) 205 final, 2021/12/21

B. Part 3. II. Follow Up on New York Presentation – "D. Sources"

European Parliament

Civil liability regime for artificial intelligence - Resolution of 20 October 2020 with recommendations to the Commission on a civil liability regime for artificial intelligence (2020/2014(INL)) – soft law

Independent High-Level Expert Group on AI (AI HLEG):

"Assessment List For Trustworthy AI (AltAI) For Self Assessment", 2020/07/17 B. Part 3. III.

AIA: New AI Definition

B. Part 3. III. AIA: New AI Definition

Article 3 (1) AIA

"'artificial intelligence system' (AI system) means software that is developed with one or more of the techniques and approaches listed in Annex I and can, for a given set of human-defined objectives, generate outputs such as content, predictions, recommendations, or decisions influencing the environments they interact with;"

ANNEX I - ARTIFICIAL INTELLIGENCE TECHNIQUES AND APPROACHES

- (a) Machine learning approaches, including supervised, unsupervised and reinforcement learning, using a wide variety of methods including deep learning;
- (b) Logic- and knowledge-based approaches, including knowledge representation, inductive (logic) programming, knowledge bases, inference and deductive engines, (symbolic) reasoning and expert systems;
- (c) Statistical approaches, Bayesian estimation, search and optimization methods.

B. Part 3. IV. AIA: Risk-Based Approach on Three Levels

B. Part 3. IV. AIA: Risk-Based Approach on Three Levels

"The regulation follows a risk-based approach, differentiating between uses of AI that create (i) an unacceptable risk (URAI), (ii) a high risk (HRAI) and (iii) low or minimal risk (LMRAI)"
AIA, P. 12

^{*}Highlighting and abbreviations by author.

AIA: Risk-Based Approach on Three Levels

"Pilot" (author's terminology)

Author's

Three Risk

"levels" of Al	abbreviation	(
(i)	URAI	TITLE II AIA: PROHIBITED ARTIFICIAL INTELLIGENCE PRACTICES Article 5 Nr. 1 lit. d
unacceptable		AIA
risk		"1. The following artificial intelligence practices shall be prohibited:
		(d) the use of 'real-time' remote biometric identification systems in publicly
		accessible spaces for the purpose of law enforcement, unless and in as far as such use
		is strictly necessary for one of the following objectives:
		(i) the targeted search for specific potential victims of crime, including missing children;
		(ii) the prevention of a specific, substantial and imminent threat to the life or physical safety of natural persons or of a terrorist attack;
		(iii) the detection, localisation, identification or prosecution of a perpetrator or suspect of a criminal offence referred to in Article 2(2) of Council Framework Decision 2002/584/JHA62 and punishable in the Member State concerned by a
		custodial sentence or a detention order for a maximum period of at least three years, as determined by the law of that Member State."
(ii) high risk	ΗΡΔΙ	HIGH-RISK ALSYSTEMS REFERRED TO IN ARTICLE 6(2) in ANNEX III of ALA:

"Nr. 2 Management and operation of critical infrastructure:

(a) Al systems intended to be used as safety components in the management and

operation of road traffic and the supply of water, gas, heating and electricity."

(iii) low or LMRAI no definition in AIA
minimal risk

Your critique is input for me

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