

# AI4Health & the Law

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*Dr. Christian Djeffal  
Humboldt Institute for Internet  
and Society*



r. Christian Djeffal  
umboldt Institute for Internet  
and Society

## Functions of Law and Technology (Djefal 2017)



Limitation



Motivation



Design

# Agenda

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# 4Health the Law

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Ford Institute for Internet  
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## Motivation



The law also encourages the use of technologies including AI



There can even be an obligation to employ AI



Example: "state of the art"

AI 4  
Health

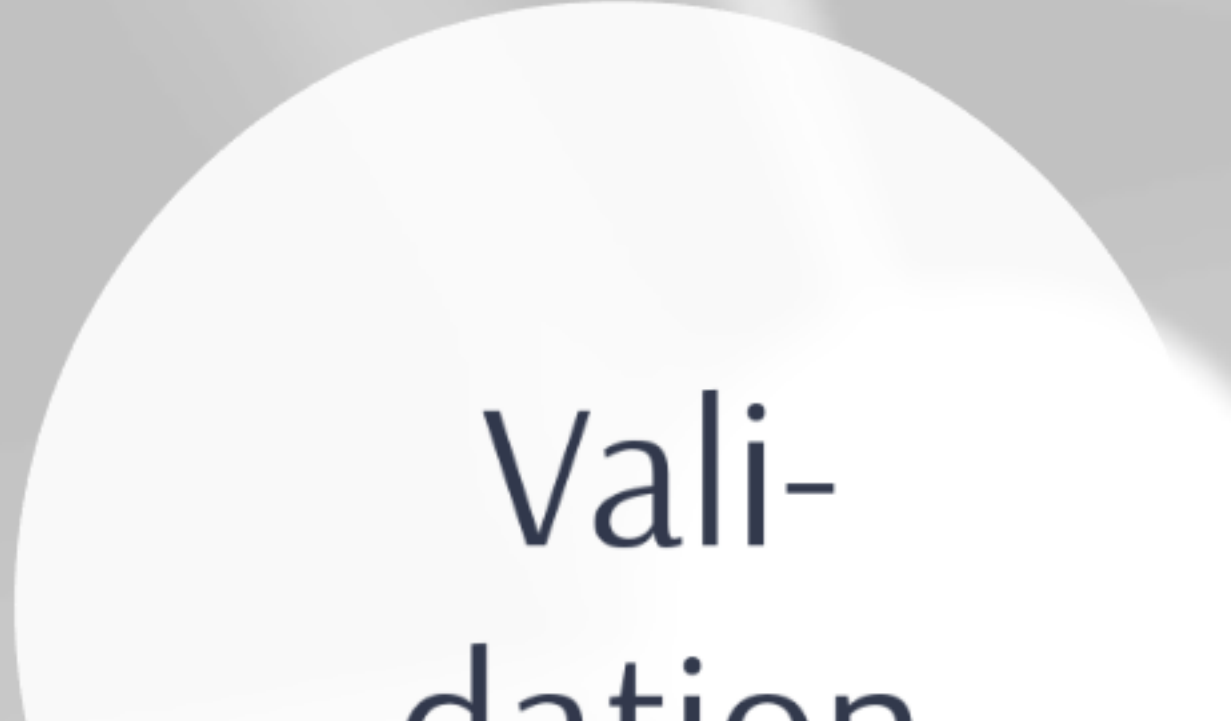
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# International Covenant on Economic, Social and Cultural Rights

## Article 12

1. The States Parties to the present Covenant recognize the right of everyone to the enjoyment of the highest attainable standard of physical and mental health.
2. The steps to be taken by the States Parties to the present Covenant to achieve the full realization of this right shall include those necessary for:  
...  
(d) The creation of conditions which would assure to all medical service and medical attention in the event of sickness.



# Convention on the Rights of Persons with Disabilities

## Article 4

### General obligations

1. States Parties undertake to ensure and promote the full realization of all human rights and fundamental freedoms for all persons with disabilities without discrimination of any kind on the basis of disability. To this end, States Parties undertake:

(g) To undertake or promote research and development of, and to promote the availability and use of new technologies, including information and communications technologies, mobility aids, devices and assistive technologies, suitable for persons with disabilities, giving priority to technologies at an affordable cost;



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# AI for E-Health

1. Clinical Testing
2. Cybersecurity
  - Recently so-called poisoning attacks
  - state of the art measure: testing and validation

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## Limitation



Limit the possibilities of technology



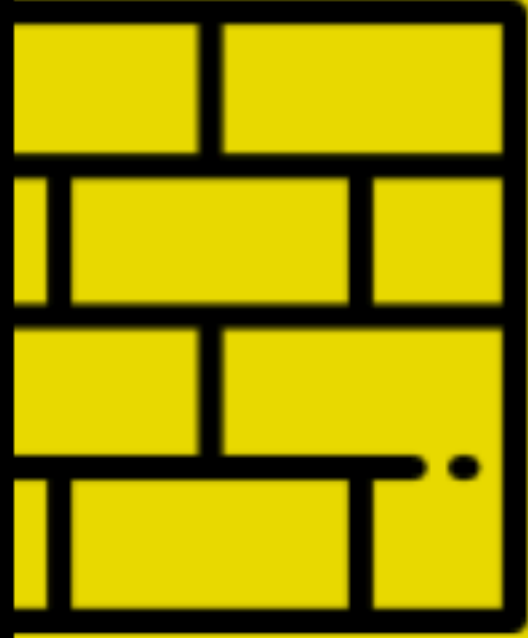
Voicing other societal concerns



eg: data protection, cybersecurity

Fragmentation

Data governance



# Limitation



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# Export restrictions I

According to Article 18 (5) of the Personal Data Law, a personal data operator is obliged to ensure recording, systematisation, accumulation, storage, clarification (updating, modification) and extraction of the personal data of Russian citizens using databases located in the territory of the Russian Federation.



# Export restrictions II

In November 2018, the US Department of Commerce suggested different emerging technologies for export control including:

- Neural networks and deep learning (e.g., brain modelling, time series prediction, classification)
- Evolution and genetic computation (e.g., genetic algorithms, genetic programming)
- Reinforcement learning
- Computer vision (e.g., object recognition, image understanding)
- Expert systems (e.g., decision support systems, teaching systems)
- Speech and audio processing (e.g., speech recognition and production)
- Natural language processing (e.g., machine translation)



# General Data Protection Directive

Several mechanisms how to arrive at a free exchange of data between countries:

- Adequacy Decisions
- Binding Corporate Rules
- Certification
- Standard Contract Clauses



# Japanese Ministry of Health General Guidance

- Japan Handling Medical Device Foreign Clinical Data:
- Explanation and check list for using foreign medical data
- Specific concerns include biocompatibility
- In some cases, there are need to be parallel test with domestic clinical study data...

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# Design

The law can also structure and influence the design process of IT-systems.



Privacy and  
Security by  
Design

Fairness

Testing and  
Validation



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# Art. 25 GDPR Privacy by design

Taking into account the state of the art, the cost of implementation and the nature, scope, context and purposes of processing as well as the risks of varying likelihood and severity for rights and freedoms of natural persons posed by the processing, the controller shall, **both at the time of the determination of the means for processing and at the time of the processing itself, implement appropriate technical and organisational measures**, such as pseudonymisation, which are designed to implement data-protection principles, such as data minimisation, in an effective manner and to **integrate the necessary safeguards into the processing in order to meet the requirements of this Regulation and protect the rights of data subjects.**



# Fairness

- It is hard to eliminate all biases in any social institution
- Human rights law and equality to law are effective frameworks for negotiating and deciding upon questions of fairness
- For example IEEE P7003 Algorithmic Bias Considerations



Art. 88 section 5 German Tax Code



# Art. 88 section 5 German Tax Code

At a minimum, risk management systems must ensure that:

1. a sufficient number of cases are selected, on the basis of random selection, for comprehensive review by officials,
2. officials review those cases sorted out as requiring review,
3. officials are able to select cases for comprehensive review,
4. regular reviews are conducted to determine whether risk management systems are fulfilling their objectives.

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