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Privacy & Ethics In the Age of Big Data



Faculty Technology, Policy and Management

Governance &
Cybersecurity

ICT

Serious Gaming

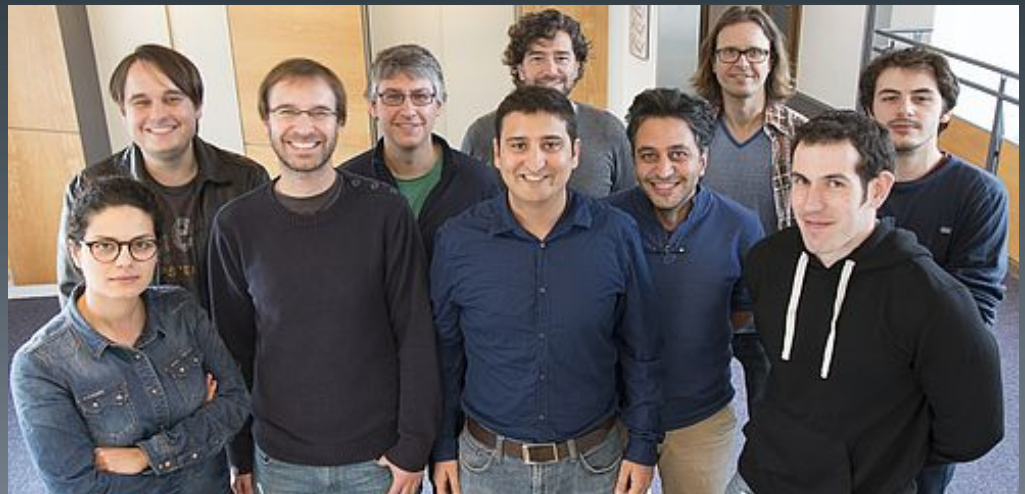
EdX MOOC

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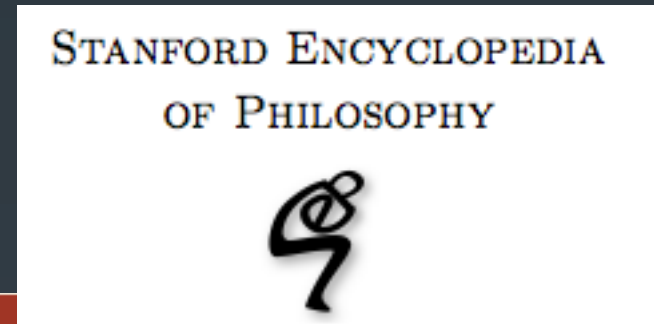
Responsible
Innovation

-

Economics of
Cybersecurity



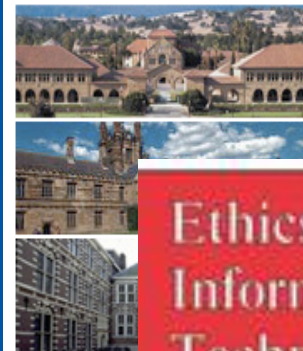
"Ethics, Privacy & ICT"



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INFORMATION
TECHNOLOGY
AND MORAL
PHILOSOPHY

EDITED BY
JEROEN VAN DEN HOVEN
JOHN WECKERT

CAMBRIDGE

Ethics and
Information
Technology

Springer

ERC Advanced Grant (2,5 Meuro)

- Project: Global Terrorism and Collective Moral Responsibility: Redesigning Military, Police and Intelligence Institutions in Liberal Democracies
- Prof. Seumas Miller



Dirk Helbing, ETHZ & Delft

Computational
Social Science
10 PhD positions



EU Social Big Data Research Infrastructure



Big Data Analytics

The *Big Data analytics* may have a potential high impact and may generate enormous value to society. It can create new opportunities to understand complex aspects, such as mobility behaviors, economic and financial crises, the spread of epidemics, the diffusion of opinions and

Social Mining

Social mining aimed at discovering patterns and models of human behavior across the various social dimensions. It is aimed at extracting multi-dimensional patterns and models from multi-dimensional networking data.

Privacy, Security & Trust

In the era of *Big Data* the opportunities of discovering knowledge from social big data increase with the risk of *privacy violation*: during knowledge discovery, the risk is the uncontrolled intrusion into the personal data of the data subjects.



Chair

Privacy & Big Data Expert Group

- Ministry of Economic Affairs
- Mr. Henk Kamp



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Bibliometric Mapping of Computer and Information Ethics

Richard Heersmink, Jeroen van den Hoven, Nees Jan van Eck & Jan van den Berg

Ethics and Information Technology 13 (3):241-249 (2011)

Abstract This paper presents the first bibliometric mapping analysis of the field of computer and information ethics (C&IE). It provides a map of the relations between 400 key terms in the field. This term map can be used to get an overview of concepts and topics in the field and to identify relations between information and communication technology concepts on the one hand and ethical concepts on the other hand. To produce the term map, a data set of over thousand articles published in leading journals and conference proceedings in the C&IE field was constructed. With the help of various computer algorithms, key terms were identified in the titles and abstracts of the articles and co-occurrence frequencies of these key terms were calculated. Based on the co-occurrence frequencies, the term map was constructed. This was done using a computer program called VOSviewer. The term map provides a visual representation of the C&IE field and, more specifically, of the organization of the field around three main concepts, namely privacy, ethics, and the Internet.

Keywords [Bibliometric mapping](#) [Computer and information ethics](#) [Term map](#) [VOSviewer](#)

Categories [Computer Ethics in Applied Ethics](#)
[Information Ethics in Philosophy of Computing and Information](#)
([categorize this paper](#))

DOI [10.1007/s10676-011-9273-7](#)

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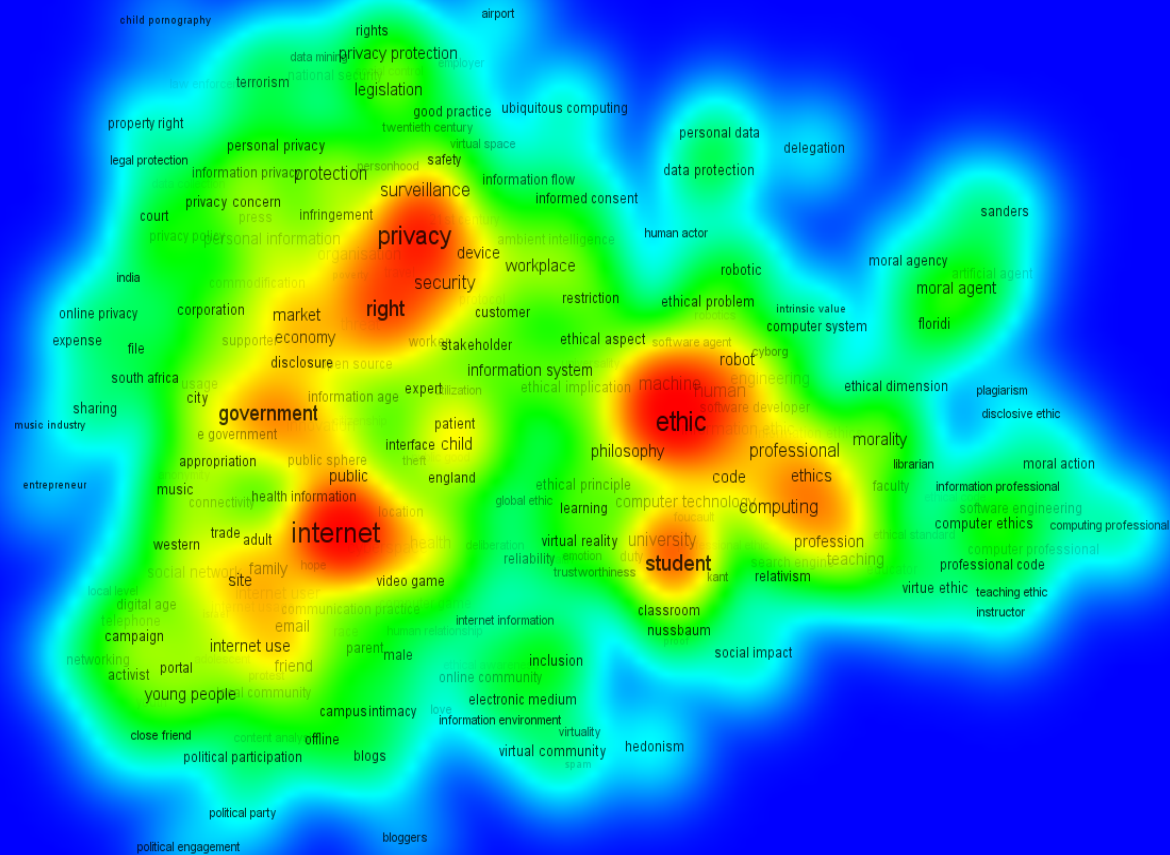
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Two Topics

- Responsible Innovation
- Design for Values

Research and Development/ Innovation



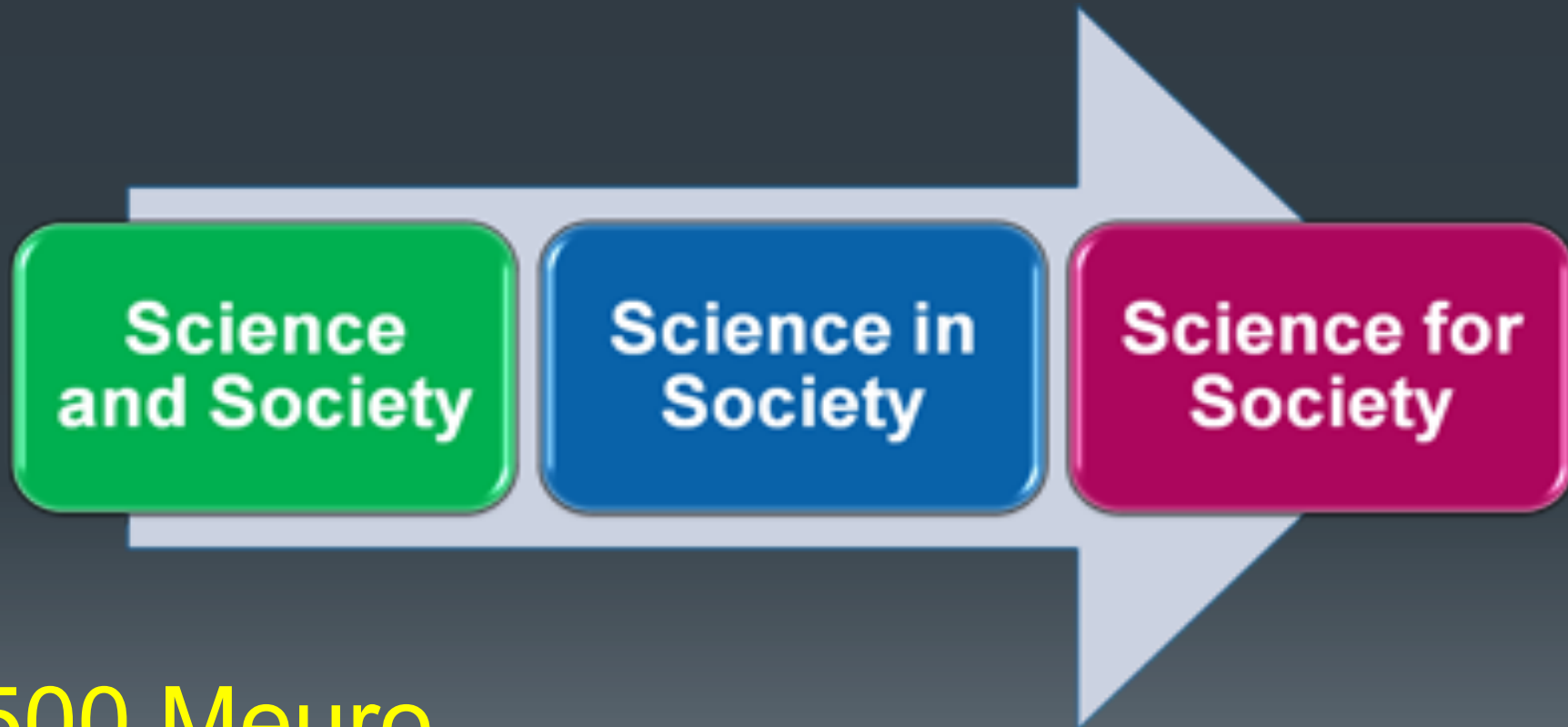
Expert Group RePort to European Commission



“Options for
Strengthening
Responsible
Research and
Innovation”
Van den
Hoven, e.a.

responsibility

RRI: Responsible Research and Innovation



500 Meuro

LUND Declaration: Grand Challenges 2009



Rome Declaration on Responsible Innovation 2014

Responsible Research and Innovation (RRI)

The Rome Declaration, November 2014

We call on European Institutions, EU Member States and their R&I Funding and Performing Organisations, business and civil society to make Responsible Research and Innovation a central objective across all relevant policies and activities, including in shaping the European Research Area and the Innovation Union.

Strategies and actions to advance engagement in Europe



“ RRI a Central Objective across
All relevant policies and activities...”



Innovation: a Moral Conception

If you can change the world by innovation today so that you can satisfy more of your obligations tomorrow, you have a moral obligation to innovate today.

Values as design
requirements

Responsibility
Privacy
Accountability
Agency
Autonomy
Sustainability
Safety
Security

Values
Norms
Laws
Ideals
Ethics
Principles

Express
Implement

Artefacts
Architectures
Materials
Standards
Security
Systems
Infrastructure

Computers
Oiltankers
Airplanes
Reactors
Roads
Internet
Electricity
Grids
Hospitals

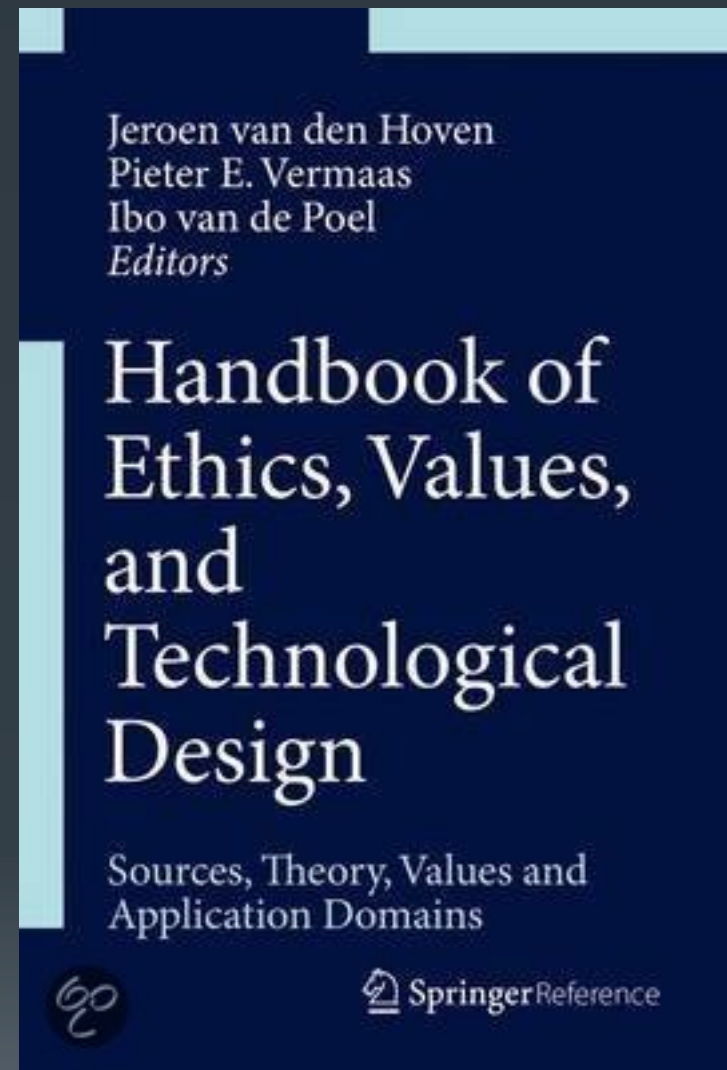
Justify
Audit

Key Problem

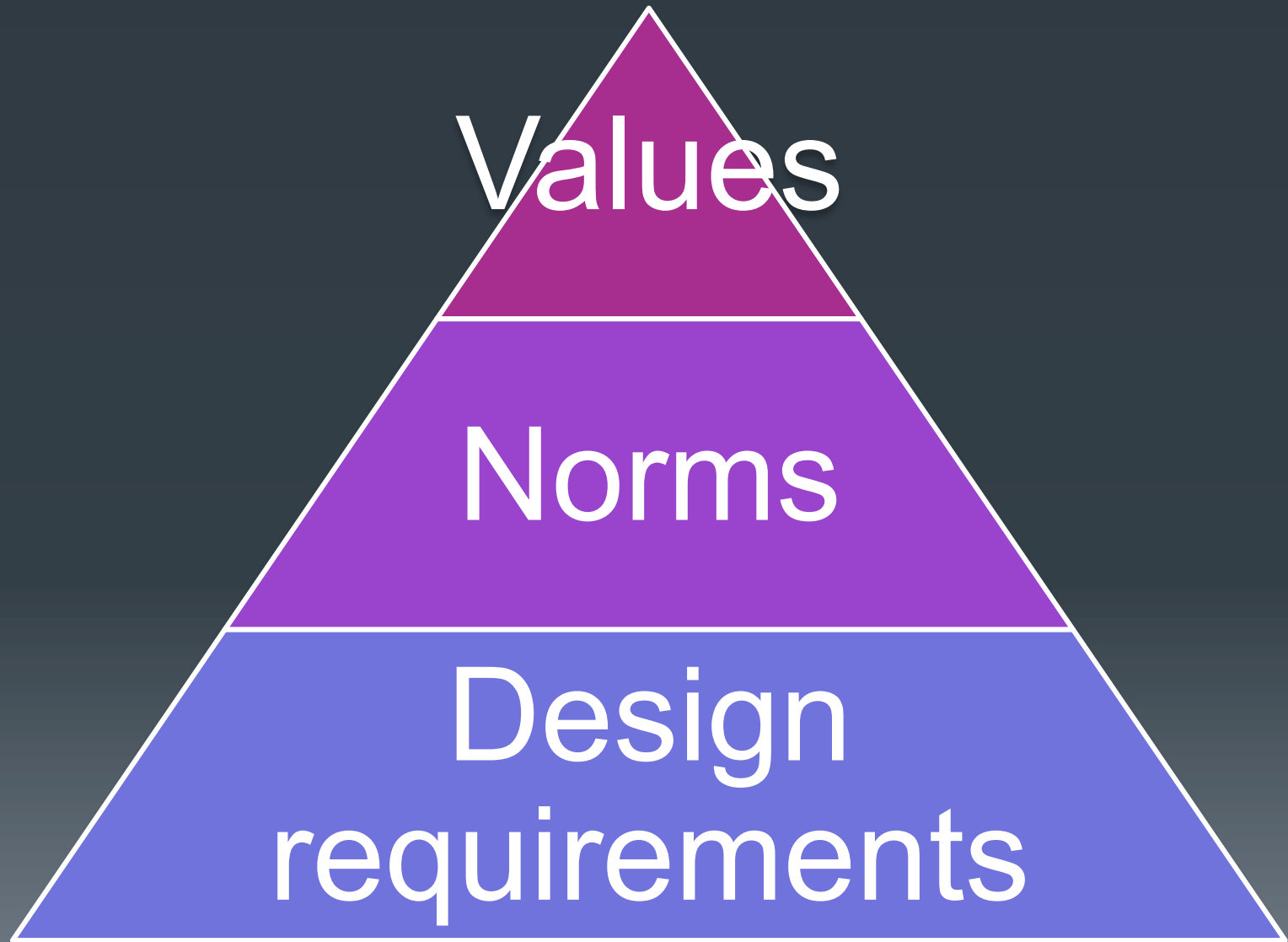
21st Century: Value Sensitive Design

Design for X

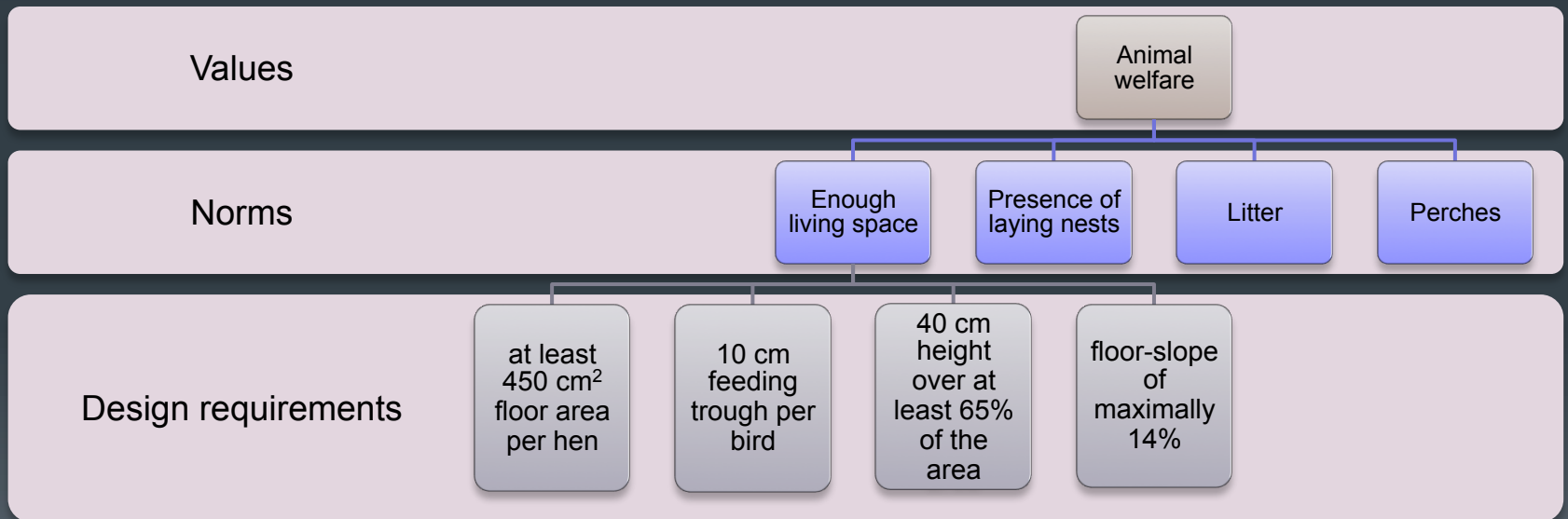
- Design for privacy
- Design for security
- Design for inclusion
- Design for sustainability
- Design for democracy
- Design for safety
- Design for transparency
- Design for accountability
- Design for human capabilities

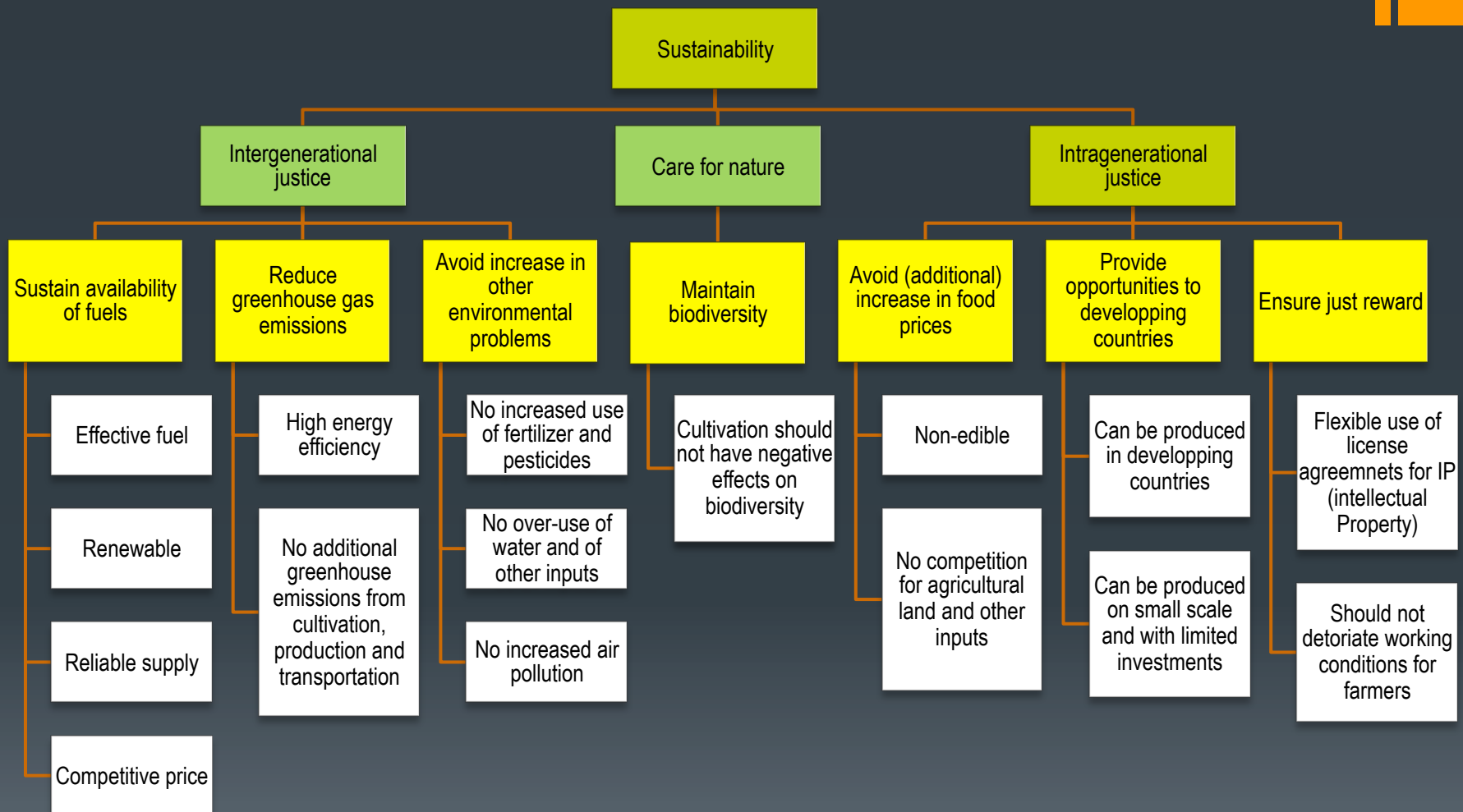


Values hierarchy



Example of values hierarchy





Big Data Society & Privacy : Homework

- Challenge One: : End the “Other Privacy Scandal”
- Challenge Two: Move Beyond “Balancing” Metaphor (Obama, and many others)
- Problems: Informed Consent, Personal data....



End “The Other Privacy Scandal”

Challenge One

Protecting X






Constrain
generating
Acquiring
accessing
processing
Disseminating
Personal Data

Data Protection


Protecting X

- Defining, justifying and implementing constraints
- Generation, acquisition, processing, dissemination, storage
- Data



- 
- 1. Preventing harm**
 - 2. Fairness in markets for personal data**
 - 3. Prevention of Discrimination and Contextual Integrity**
 - 4. Respect moral autonomy**

Privacy: Data Protection for Moral Reasons



Move Beyond Balancing Metaphor Solving Moral Overload by Design

Challenge Two

Privacy vs. Security



Patient Safety vs. Privacy

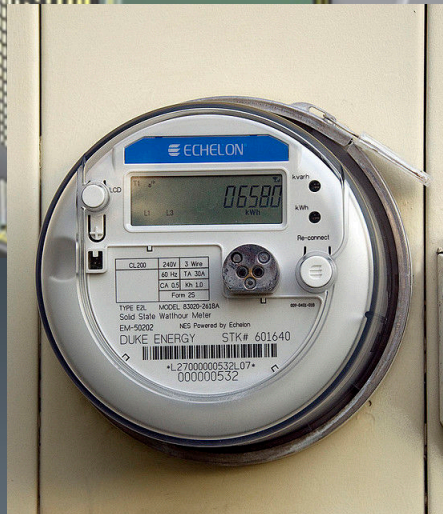
Electronic Patient Records



Netherlands: 300
Million wasted &
failed Innovation



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M

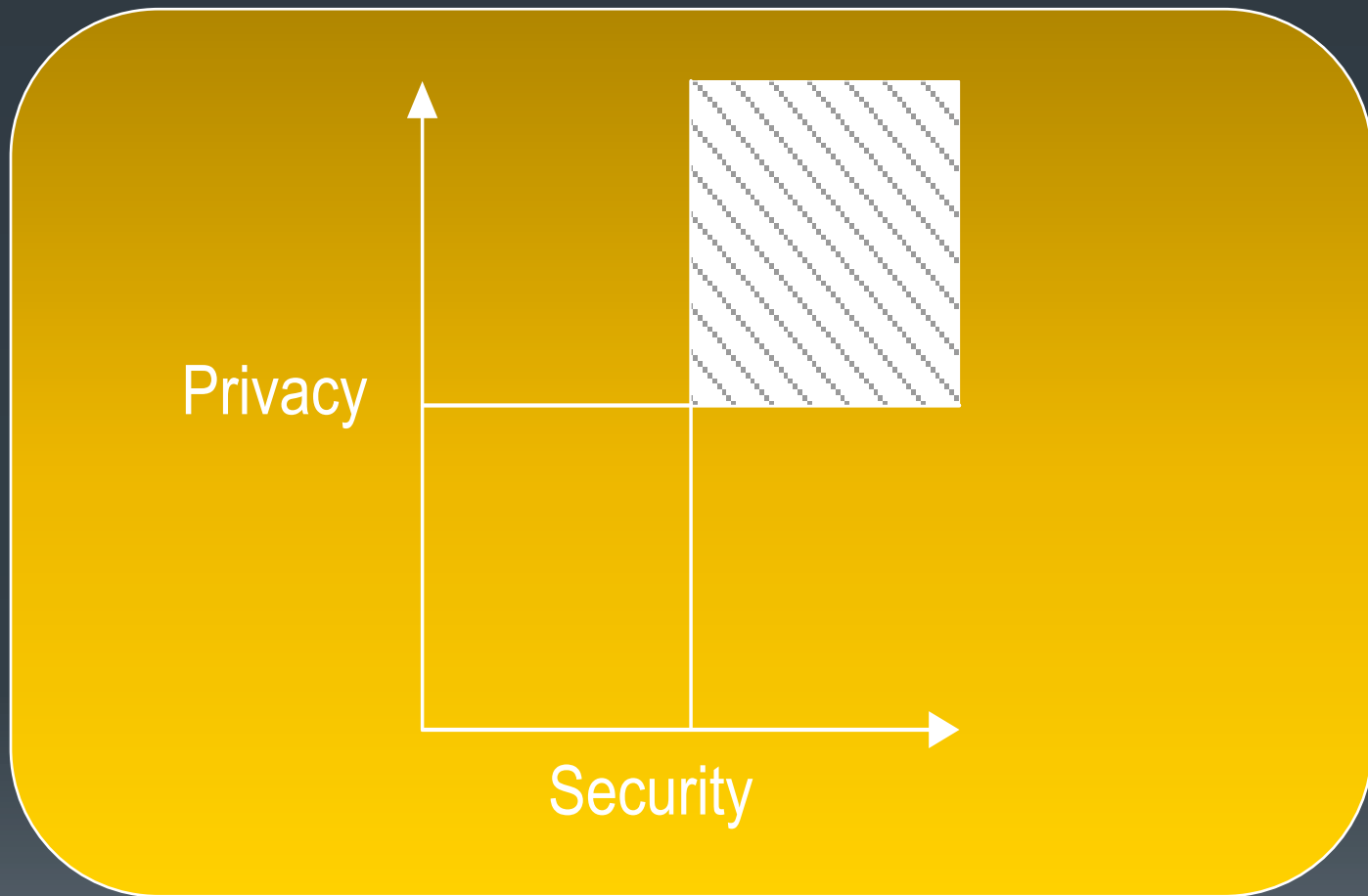


We want Security

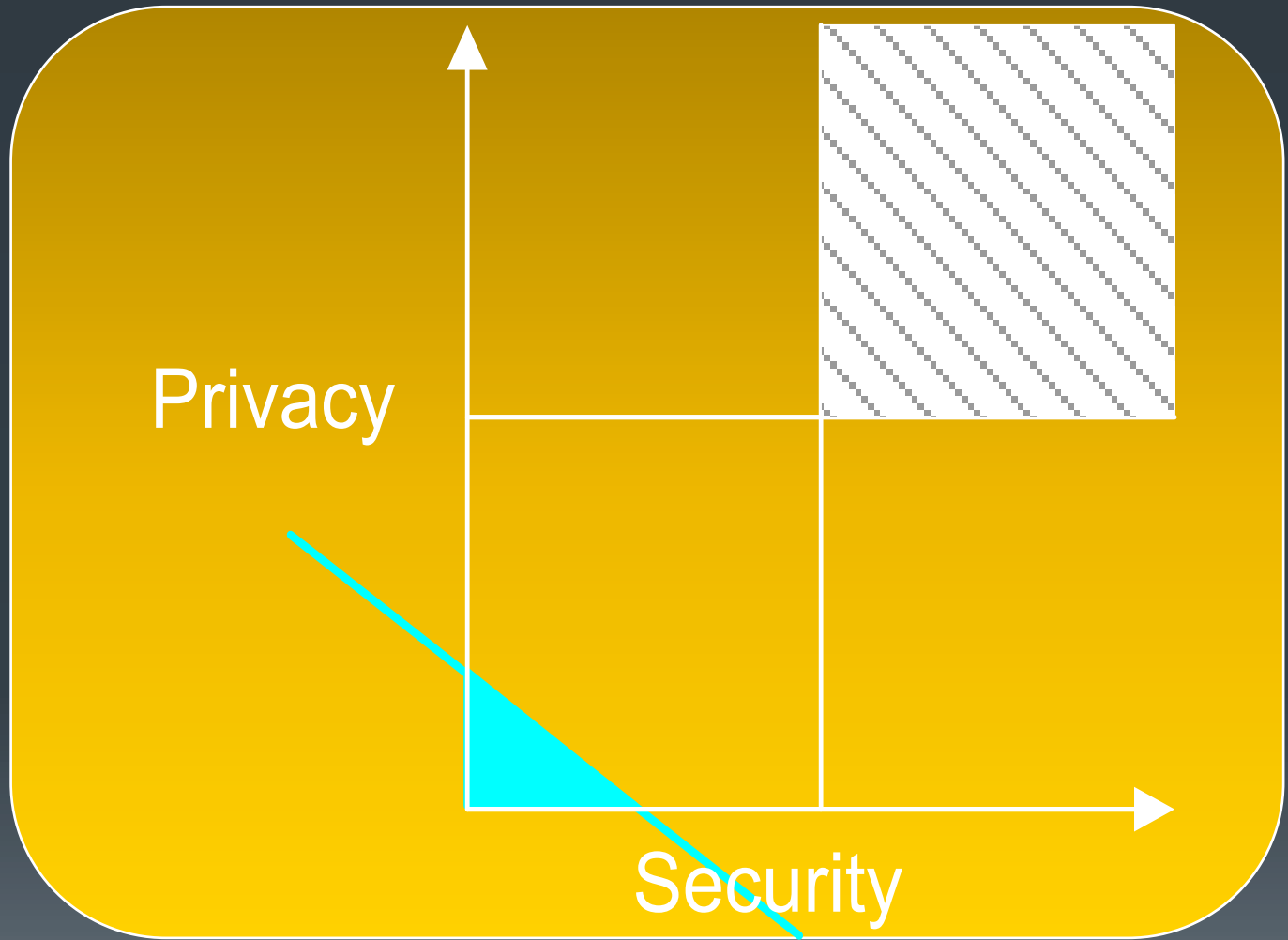


We also want Privacy

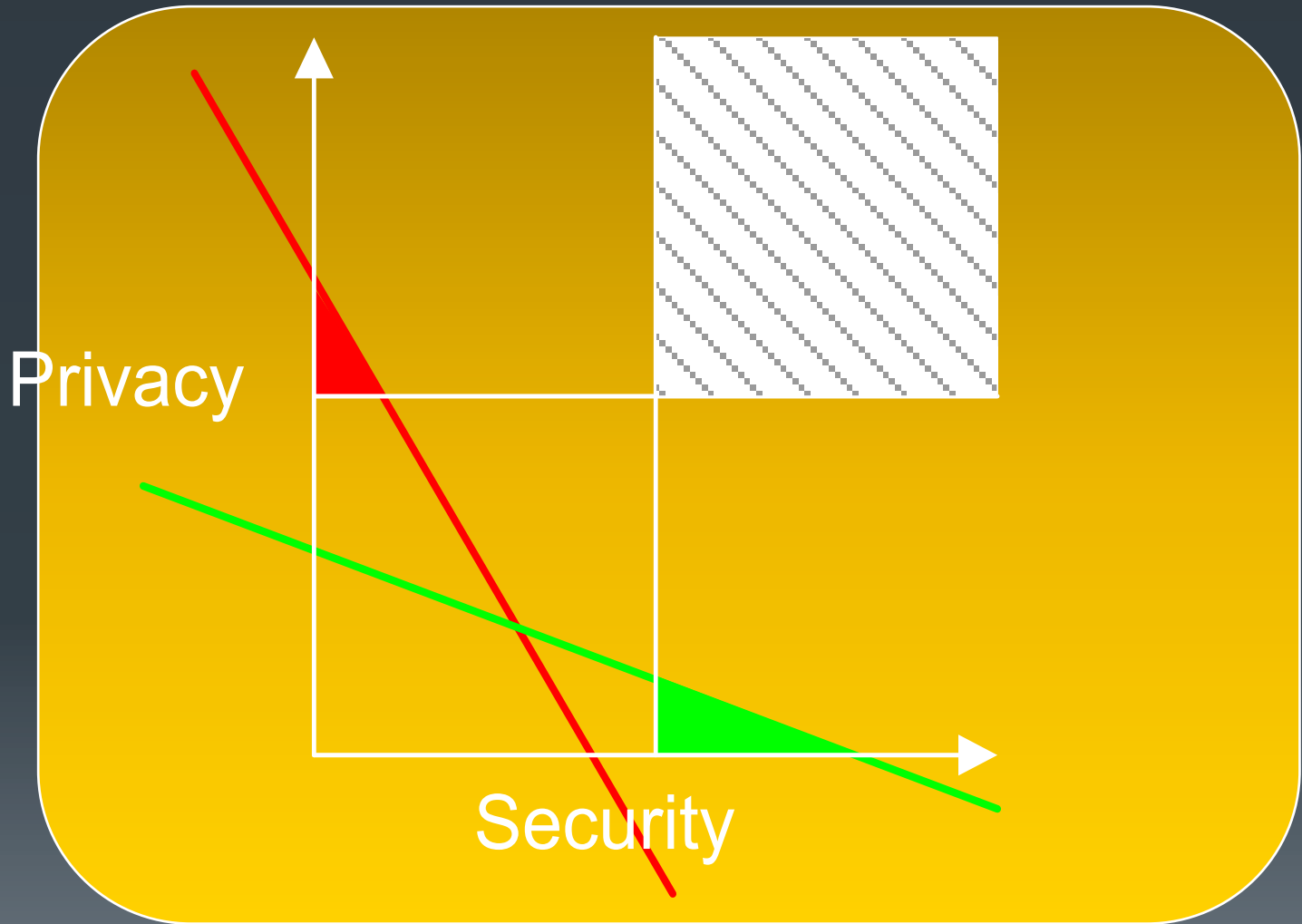




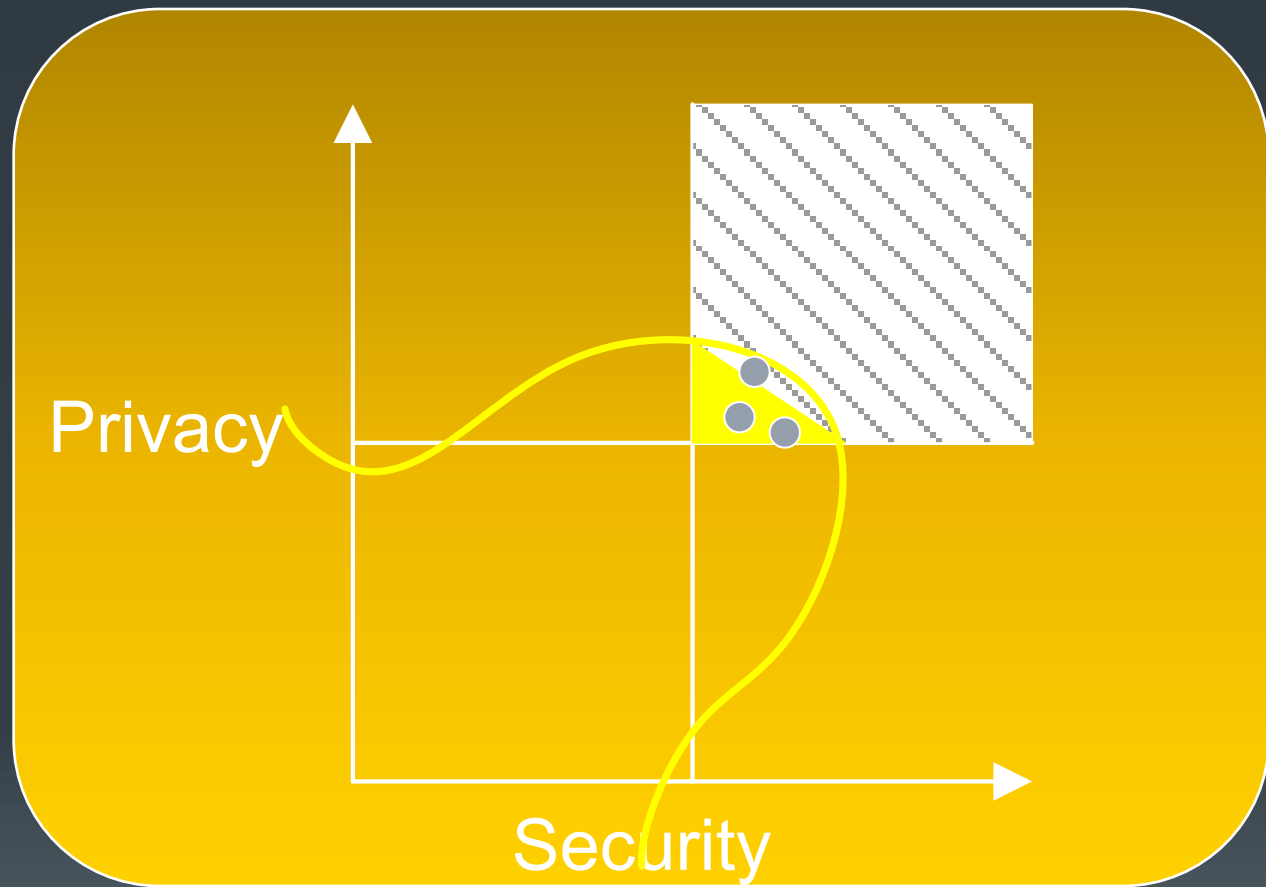
Moral Overload



No Privacy, no Security (1.0)



Privacy or Security (2.0)



Privacy & Security (3.0)



Design for Privacy

- 1. Informed consent
- 2. Right to be forgotten
- 3. Identity Management
- 4. Reciprocal Privacy
- 5. Coarse graining, anonymization

EX ANTE

- 5. Sous-veillance, counter veillance
- 6. Violation/intrusion detection
- 7. Big data applications to detect Big data violations of privacy

EX POST