

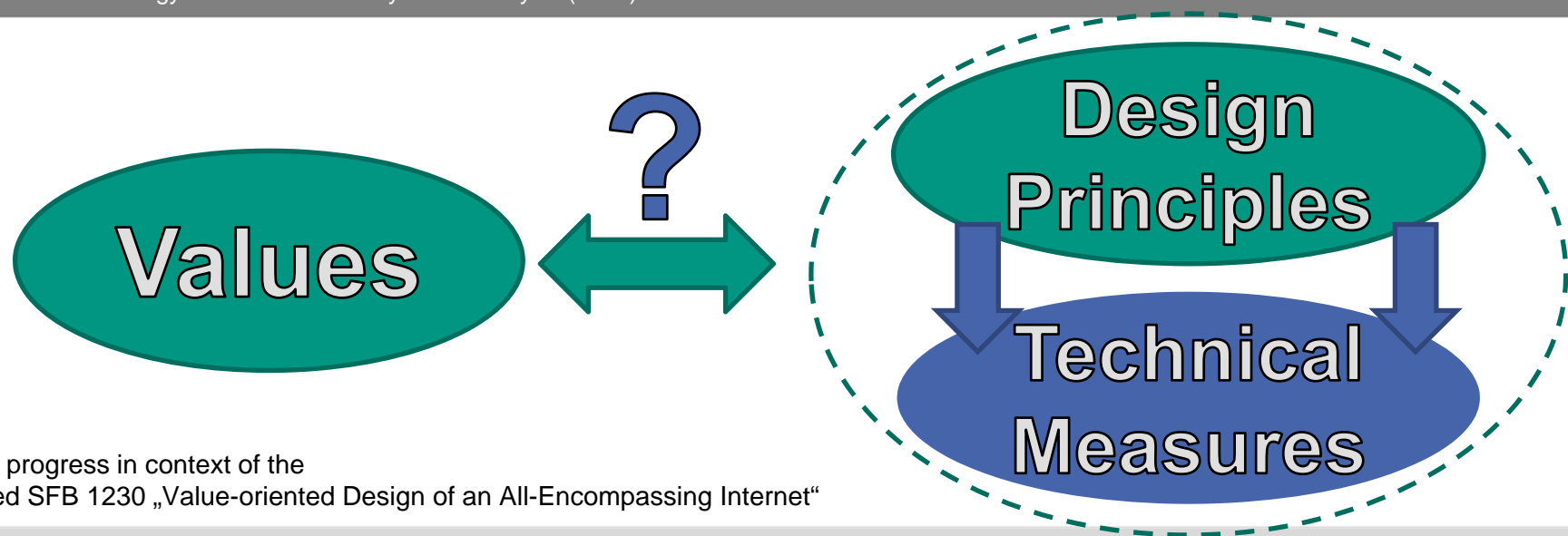
Values and Networks

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Work in progress in context of the
proposed SFB 1230 „Value-oriented Design of an All-Encompassing Internet“

Introduction Values

- **Values:** lasting convictions or matters that people feel should be strived for in general and not just for themselves to be able to lead a good life or to realize a just society [1]
 - They are **not individual preferences**. They are considered of being of **importance for everyone**.
 - They provide means for **orientation, justification, and evaluation** of **decisions** of actions and preferences
- At a global level: **human rights** as value catalogue
 - Universal Declaration of Human Rights (UDHR), agreed upon by UN member states
 - Translated into constitutional laws and **interpreted** by rulings of (supreme) courts: possibly narrower specifications of values
 - **Value conflicts** no exception, but **usual**; mainly handled at national level

[1] Poel van de, Ibo and Lambèr M. M. Royakkers (2011): Ethics, Technology, and Engineering. An Introduction, Malden, Mass.: Wiley-Blackwell.

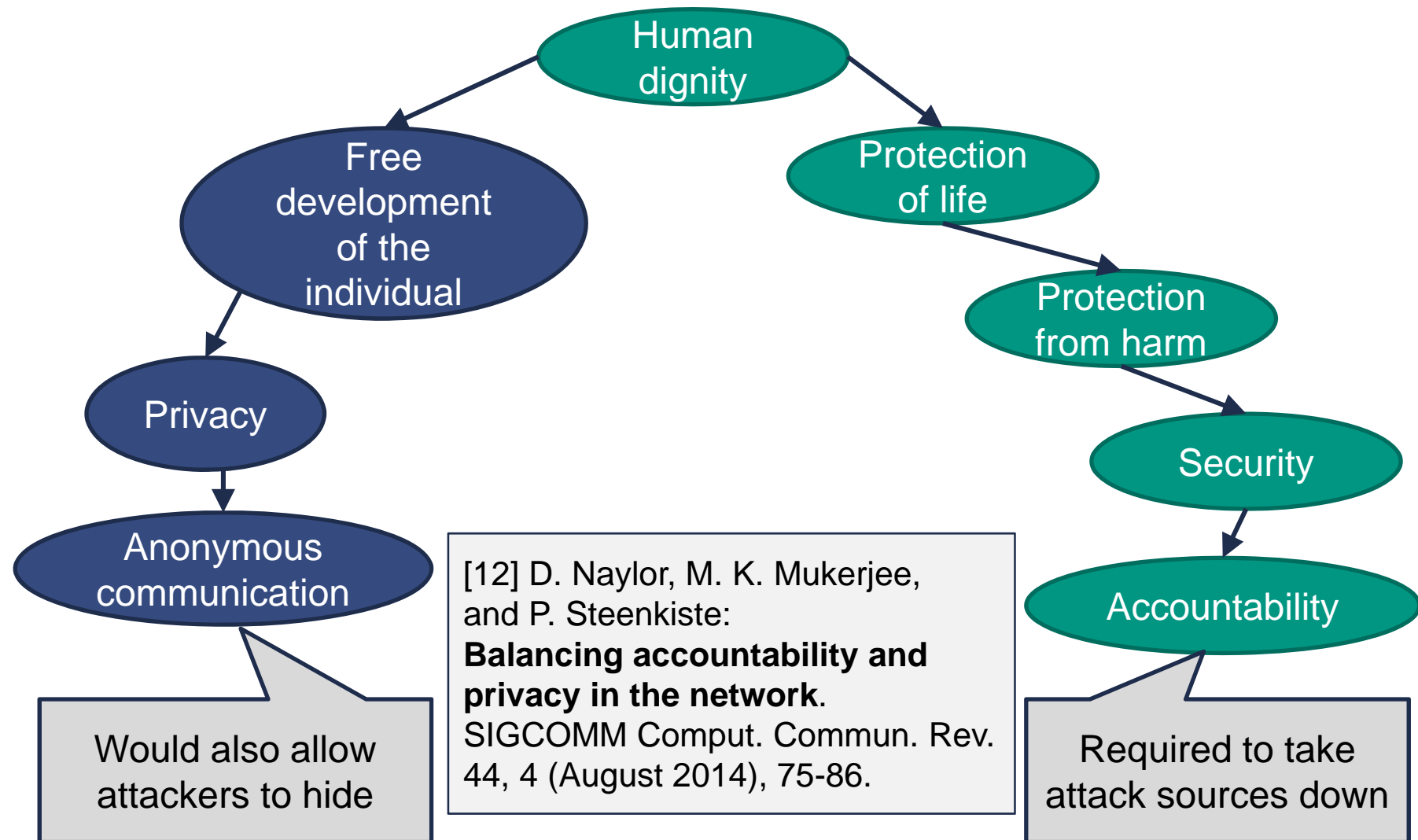
Values

■ Relevant values of UDHR for ICTs

Human dignity (Art. 1)	Freedom of religion (Art. 18)
Non-discrimination (Art. 2)	Freedom of opinion and expression (Art. 19)
Right to life, liberty and security (Art. 3)	Freedom of assembly (Art. 20)
Equal protection (Art. 7)	Rights for political participation (Art. 21)
Right to be presumed innocent (Art. 11)	Right for education (Art. 26)
Privacy (Art. 12)	Rights for cultural life, arts, and science (Art. 27)

Source: Rundle, Mary and Chris Conley (2007): Ethical Implications of Emerging Technologies: A Survey, Paris: UNESCO - United Nations Educational, Scientific and Cultural Organization.

Examples of Conflicts



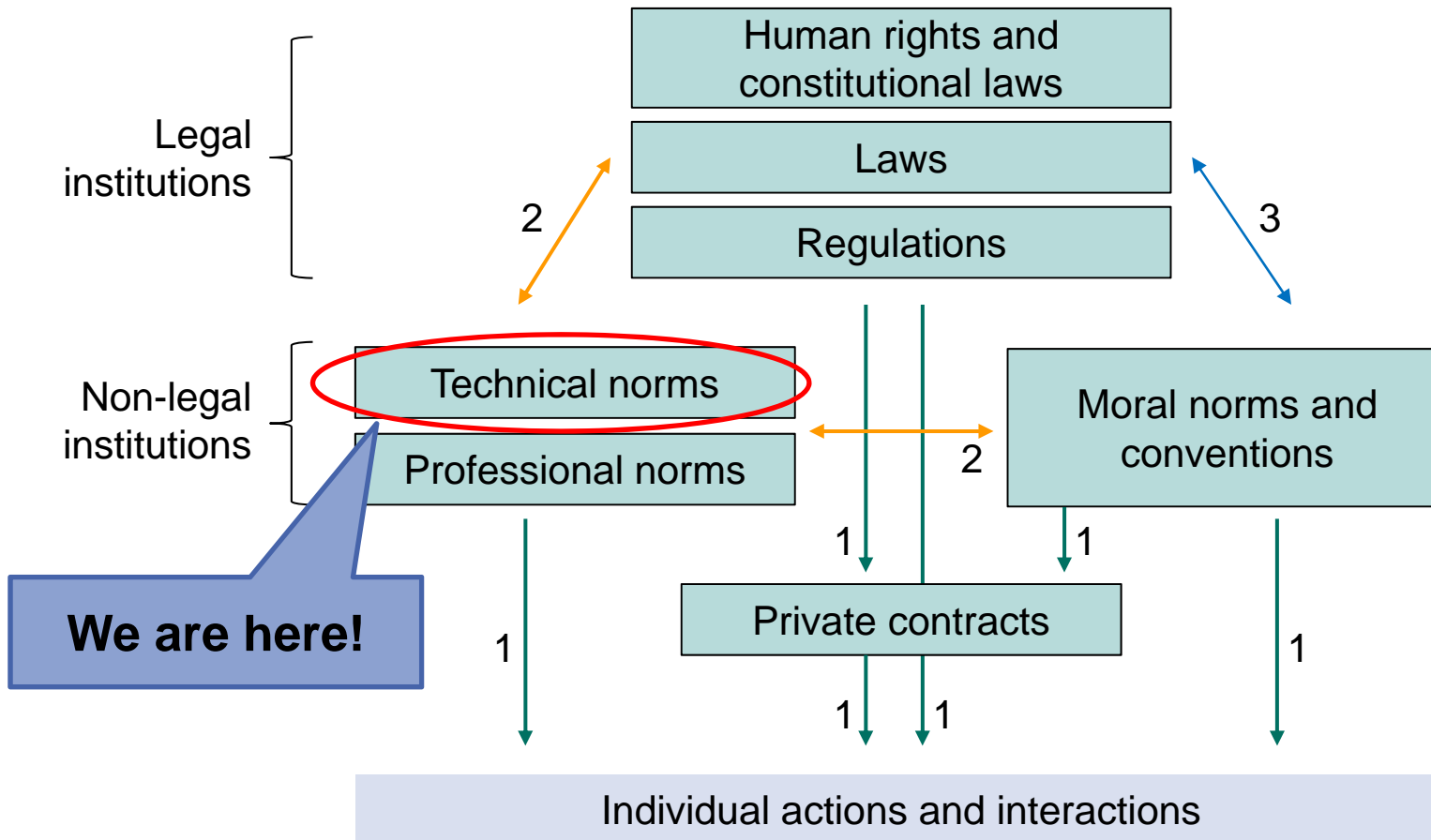
Ways to handle value conflicts (1)

- (At least) three main, interweaved ways to handle value conflicts:
 - By **engineering** – technical solutions for conflicting requirements
 - Calculations, setting thresholds, argumentative reasoning, values in design concept
 - But in private companies often insufficient incentives to include specific values
 - By **choice and markets** – different products according to different values
 - But several market failures possible
 - By **policy and regulations** – balancing of interests, societal decision-making by **legislation and court decisions**
 - But regulation capture by partial interests and dominance of state interests possible

Ways to handle value conflicts (2)

- → Interplay of measures decisive for actual value realization
 - Coherent and socially acceptable institutional arrangement: adequate incentives for engineering, institutional frameworks for markets, global arenas for policy and governance of the Internet
- Take into account: institutions and their values can be implemented and enforced by software
 - Institutions are established systems of rules that enable, structure or restrict social interactions
 - See also Lawrence Lessig's „Code is Law“ [11], Lex Informatica [10]
- Internet Protocols as Institution
 - Protocols define formats and rules according to which interactions (e.g., data exchange) between communicating parties
 - Research on Internet Protocols and other software systems as part of institutional arrangements needed

Institutional arrangements and their relations



Legend: (1) enable, structure and restrict;
 (2) frame, substantiate and specify; (3) interpret and support

Forthcoming challenges

- Internet of Things/Smart Objects, Internet of Everything, ...
 - will have more influence on affected values
 - affects nearly all areas of life, provides many de facto rules of social interaction
 - implies a lot of machine-to-machine communication
→ automated trust, contracts? May require new institutions
- Which design options do we get by new technologies?
 - e.g., privacy in Named Data Networks vs. privacy in the Internet vs. privacy by overlay solutions like TOR
- Which Internet design principles are still applicable or valid?

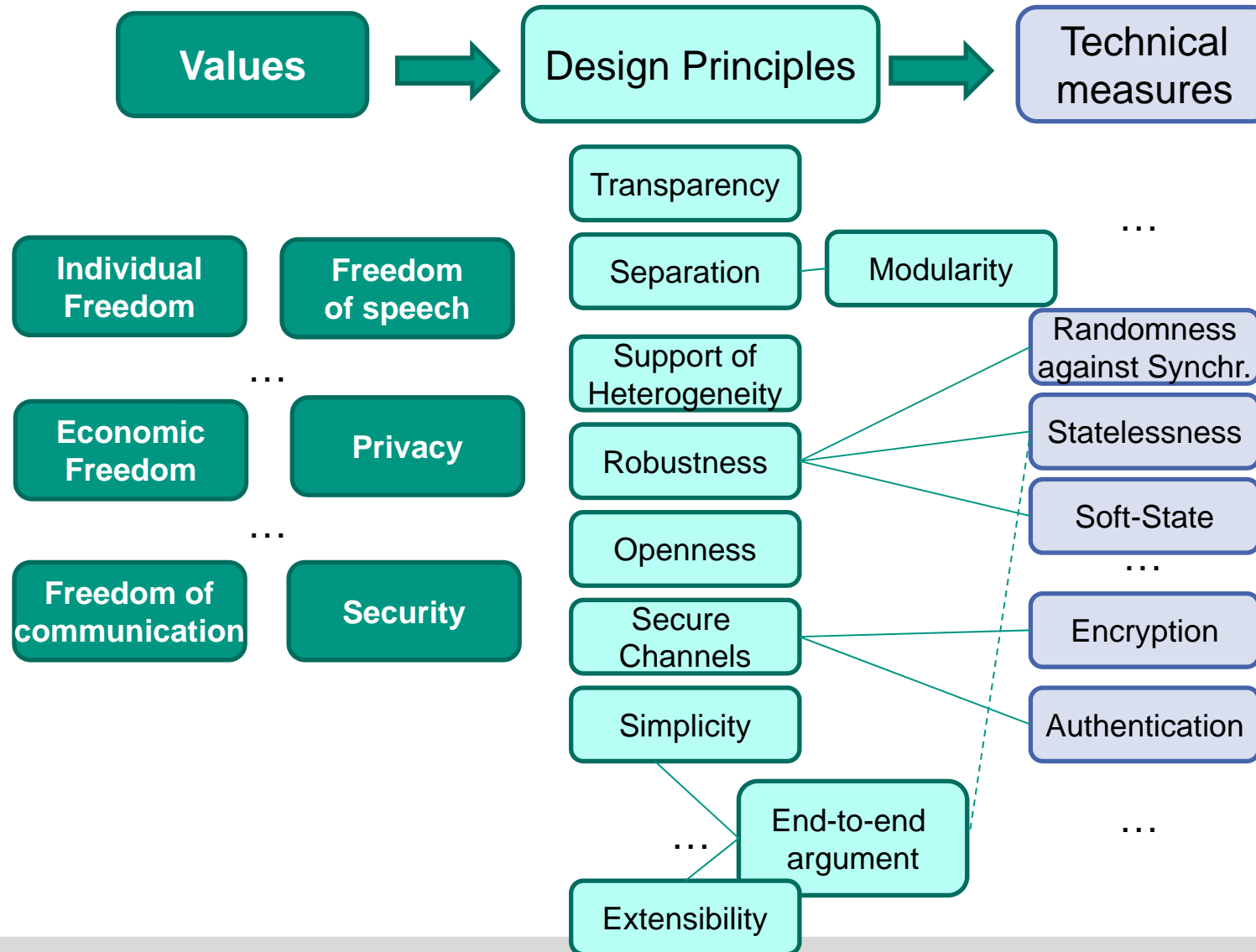
General Research Questions (1)

- Which values lie
 - behind protocols,
 - design principles,
 - technical and organizational measures in the Internet?

- Which values can be realized by networks in general?

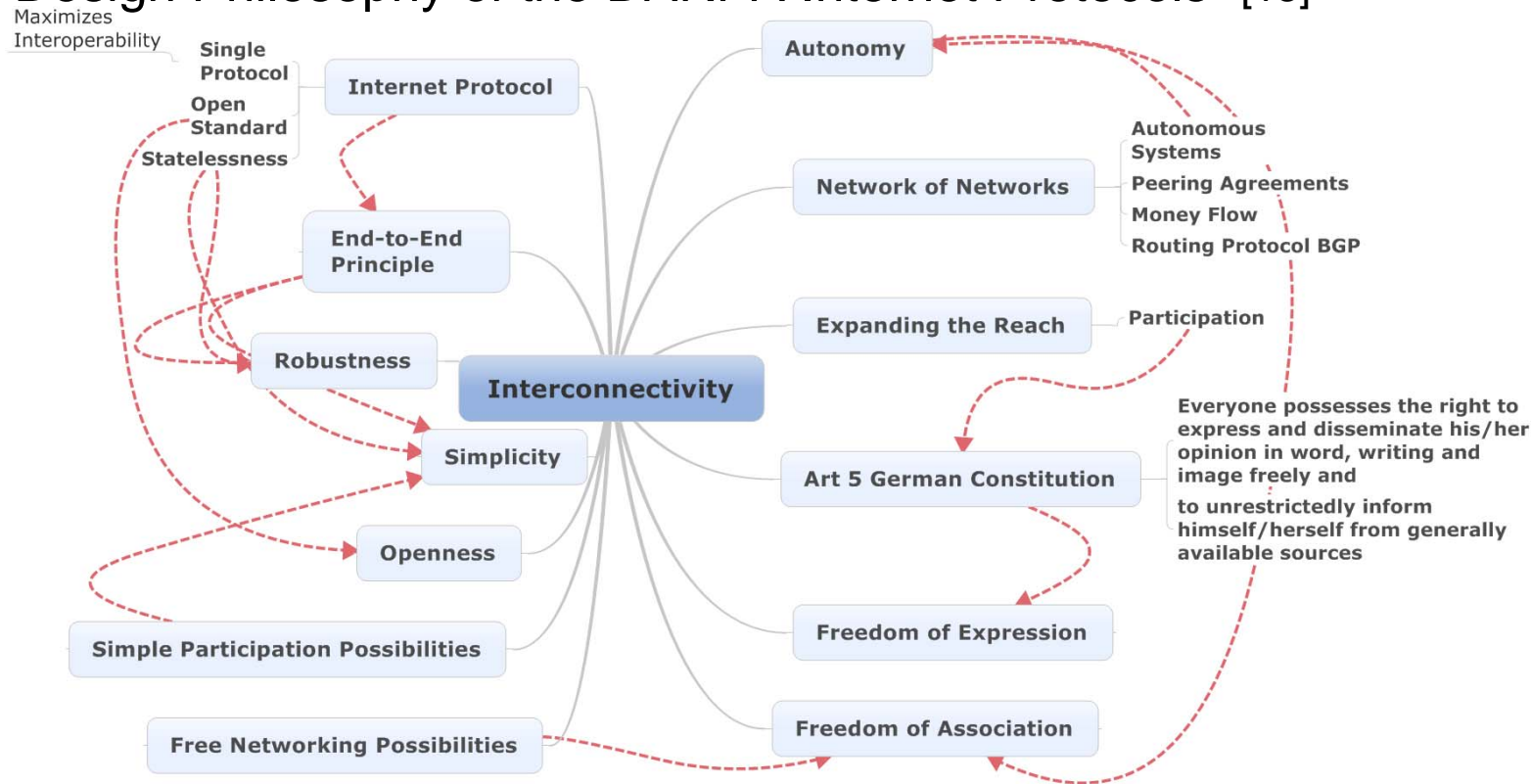
- Which technical measures affect or enforce values?

Example – „Top Down“ Approach



Example – Bottom-Up Approach „Interconnectivity“

- Engineers mainly consider **technical objectives and values** (e.g., good efficiency), but rarely their relation to related (social) values
- Main (technical) fundamental objective according to D. Clark’s „The Design Philosophy of the DARPA Internet Protocols” [13]



Research Questions (2)

- Which values should be regulated (or even enforced), **at which layers** by which design principles?
- How can one **assess technical implementations** with respect to **implementation of values**?
- How to get from human rights to technical requirements?
 - Objective: **reveal relationship between design principles and human rights**
 - Not every human right is applicable to networks

Conclusions

- Pure technical solutions for enabling, enforcing or restricting rights/values are often costly, insufficient, inflexible, may have unintended consequences or create stakeholders with too much power
 - Take institutional arrangements into account
- Not every rule needs to be built into technical systems
 - Simplicity and freedom may define guide rails leaving room for negotiations
 - How can one agree on the implementation of certain values?
- Next steps
 - Create awareness in the technical community about impact of design choices on social values
 - Work towards a methodology for co-design of technical and institutional systems

References (1)

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