Governance / low-tech

Open Source Hardware Seminar
Governance / low-tech

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TOC

Governance in OSH communities

- What are governance models / their elements?

- How does community work in FOSS / OSH?
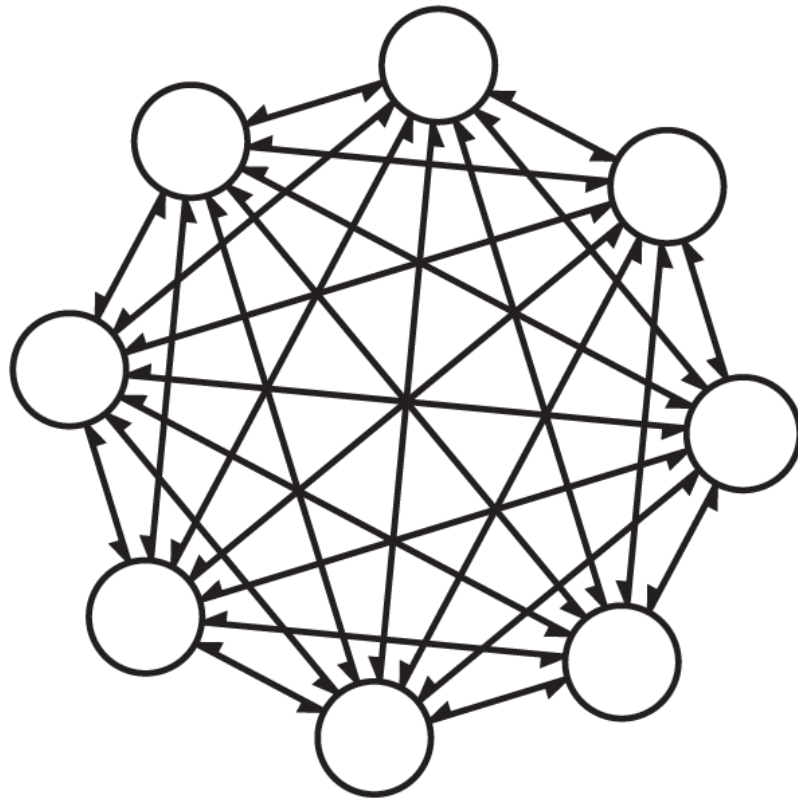
- Implications of governance choice

Frugal and low-tech OSH

- What about is the low-tech movement?

- Advantages of the low-tech approach

- Low-tech OSH cases

Governance

What is a governance model?

Basic concepts and definitions

“*For everyone to have the opportunity to be involved in a given group and to participate in its activities the **structure must be explicit**, not implicit.*
*The **rules** of **decision-making** must be open and available to everyone, and this can happen only if they are **formalized**.*”

Jo Freeman, “The Tyranny of Structurelessness”

Source: Community Rule project, https://communityrule.info [emphasis added]

Governance

Elements of governance models

Element	Description	Some examples
Culture	What are the core missions, values, and norms?	Autonomy, diversity, solidarity, origins, purpose, etc.
Decision	Who can make decisions and how?	Consensus, lazy consensus, approval voting, *"do-ocracy"*, referendum, proof of work, etc.
Process	How are policies implement-ted, and how do they evolve?	Accountability, code of conduct, debate, meritocracy, polling, initiation, petition, etc.
Structure	What kinds of roles and internal entities are there?	Board, bureaucracy, committee, council, roles, executive, ownership, etc.

Source: communityrule.info, based on Schneider, N., De Filippi, P., Frey, S., Tan, J. Z., & Zhang, A. X. (2021). Modular politics: Toward a governance layer for online communities. Proceedings of the ACM on Human-Computer Interaction, 5(CSCW1), 1-26.

Governance

What is a governance model?

Frequently found models

Benevolent Dictator

The Benevolent Dictator holds ultimate decision-making power, until the group is ready for a more inclusive structure.

| Values | Membership | Autocracy | Delegation | Expiration | Executive | Lobbying |

Circles

Units called Circles have the ability to decide and act on matters in their domains, which their members agree on through a Council.

| Values | Membership | Council | Delegation | Lazy consensus |

Consensus

Decisions that affect the group collectively should involve participation of all participants.

| Values | Membership | Exclusion | Consensus | Deliberation | Do-Ocracy |
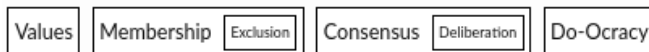
Source: communityrule.info, Schneider, N., De Filippi, P., Frey, S., Tan, J. Z., & Zhang, A. X. (2021). Modular politics: Toward a governance layer for online communities. Proceedings of the ACM on Human-Computer Interaction, 5(CSCW1), 1-26.
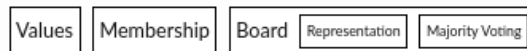
Governance

What is a governance model?
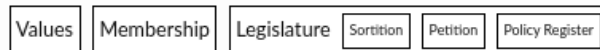
Frequently found models

Elected Board
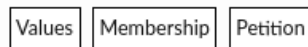An elected board determines policies and organizes their implementation.

| Values | Membership | Board | Representation | Majority Voting |

Jury
Proposals are shaped and decided on by randomly selected juries.

| Values | Membership | Legislature | Sortition | Petition | Policy Register |

Petition
All participants can propose and vote on proposals for the group.

| Values | Membership | Petition |

Self-Appointed Board
A board that selects its own members determines policies and organizes their implementation.

| Values | Membership | Board | Majority Voting |

Governance

How do communities collaborate in FOSS?

The "onion model"
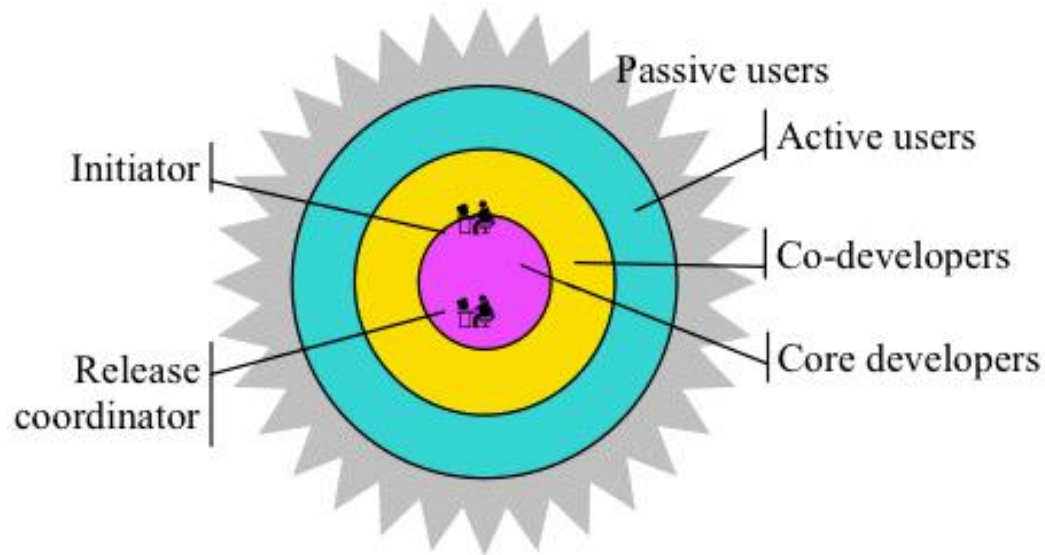
Alternatively:
- *Maintainers / core team*
    - *Contributors*
        - *Users*

Core developers *assume the role of coordination of heterogeneous contributions in terms of quality and frequency*
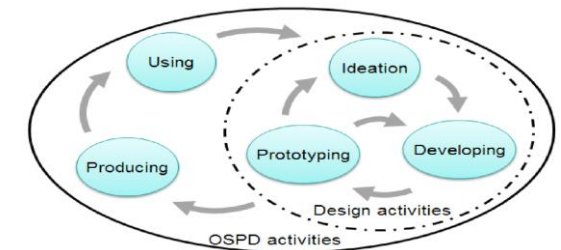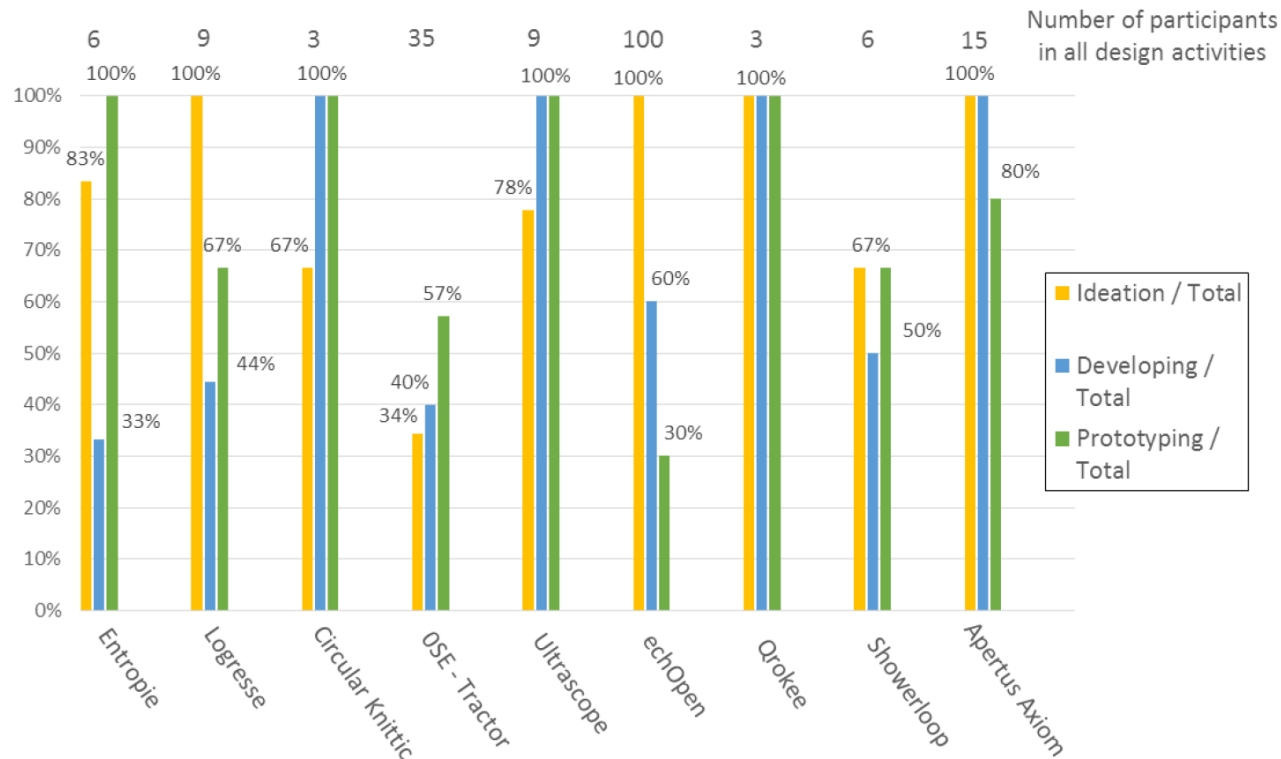
K. Crowston and J. Howison. The social structure of open source software development teams. First Monday, 10(2), February 2005

Governance

How do communities collaborate in OSH?

Basic concepts and definitions

Number of participants in all design activities

Legend:
- Ideation / Total (yellow)
- Developing / Total (blue)
- Prototyping / Total (green)

Expected profile

Boujut, J., Pourroy, F., Marin, P., Dai, J., & Richardot, G. (2019). Open Source Hardware Communities: Investigating Participation in Design Activities. Proceedings of the Design Society: International Conference on Engineering Design, 1(1), 2307-2316. doi:10.1017/dsi.2019.237

Governance

How do communities collaborate in OSH?

Challenges for knowledge management

Knowledge "codification"	Knowledge socialisation
- A precondition for project openness	- Always through computer-mediated communication
- Necessary for HW personalisation	- Facilitated via workshops
- May mitigate turn over effect	- Contributes to collective decision-making

Prerequisite:
overall coordination to resolve conflict and misalignment

Boujut, J., Pourroy, F., Marin, P., Dai, J., & Richardot, G. (2019). Open Source Hardware Communities: Investigating Participation in Design Activities. Proceedings of the Design Society: International Conference on Engineering Design, 1(1), 2307-2316. doi:10.1017/dsi.2019.237

Governance

Challenges in OSH

Issues:
- Lack of cohesion, disorganised contributions
- Unwanted behaviours (spam, harassment)
- Community conflicts ("flame wars")

As communities grow...
- Coordination work is time-consuming
- Moderators burn out
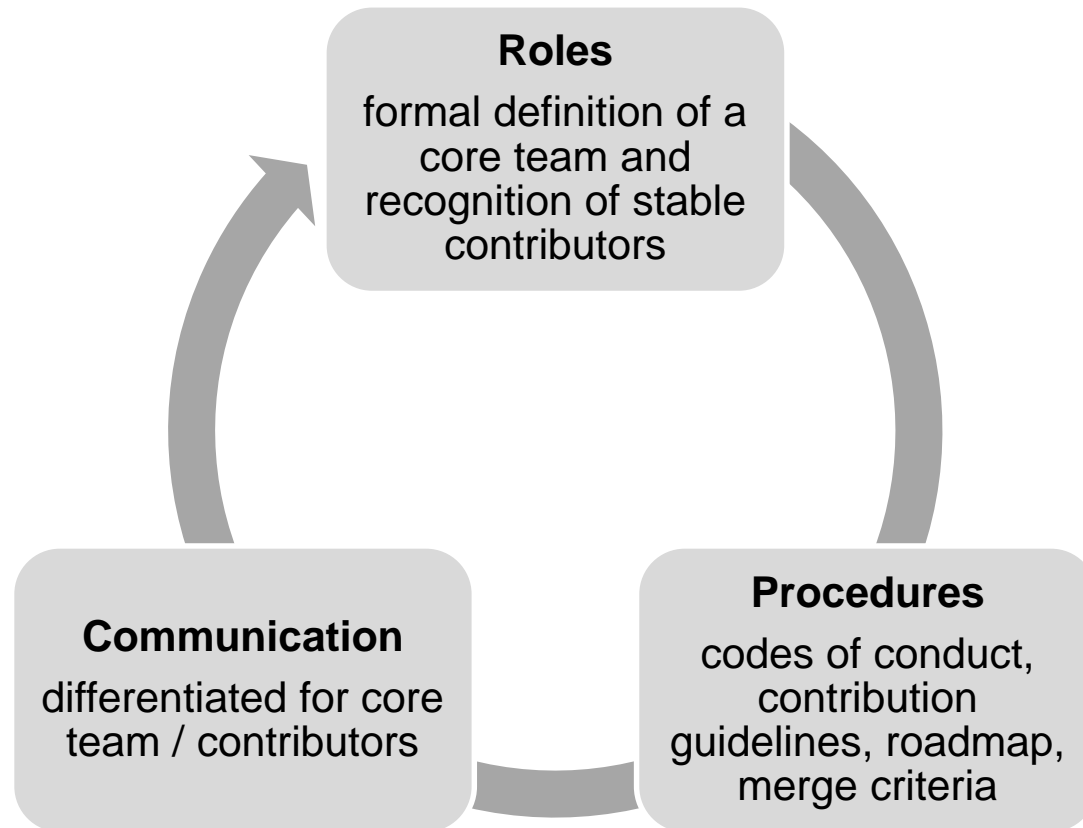- Very strict rules deter newcomers

Consequence:
Communities tend to develop governance models "ad-hoc" once it's too late

Schneider, N., De Filippi, P., Frey, S., Tan, J. Z., & Zhang, A. X. (2021). Modular politics: Toward a governance layer for online communities. Proceedings of the ACM on Human-Computer Interaction, 5(CSCW1), 1-26.

Governance

Implications of model choice

What is affected in everyday practice?

Roles
formal definition of a core team and recognition of stable contributors

Procedures
codes of conduct, contribution guidelines, roadmap, merge criteria

Communication
differentiated for core team / contributors

Source: https://opensource.guide/leadership-and-governance/

Governance

Implications of model choice

Consequences in the long-term

| Models with...	Consequence
- More rigid structures	- Less novel contributions, lower user/maintainer conversion ratio
- More procedures	- More time demand from core and maintainers
- More centralisation in a few people	- Less sustainable communities

Low-tech

Low-tech - background

Sustainability

Basic concepts and core values

- Respecting the planetary boundaries

- Ensuring decent and fair life conditions for all

- "Absolute sustainability principles" acc. to. Hjalsted et al.

- Democratising technological choices: What is <u>sufficient</u> for us to flourish collectively in a constrained world?
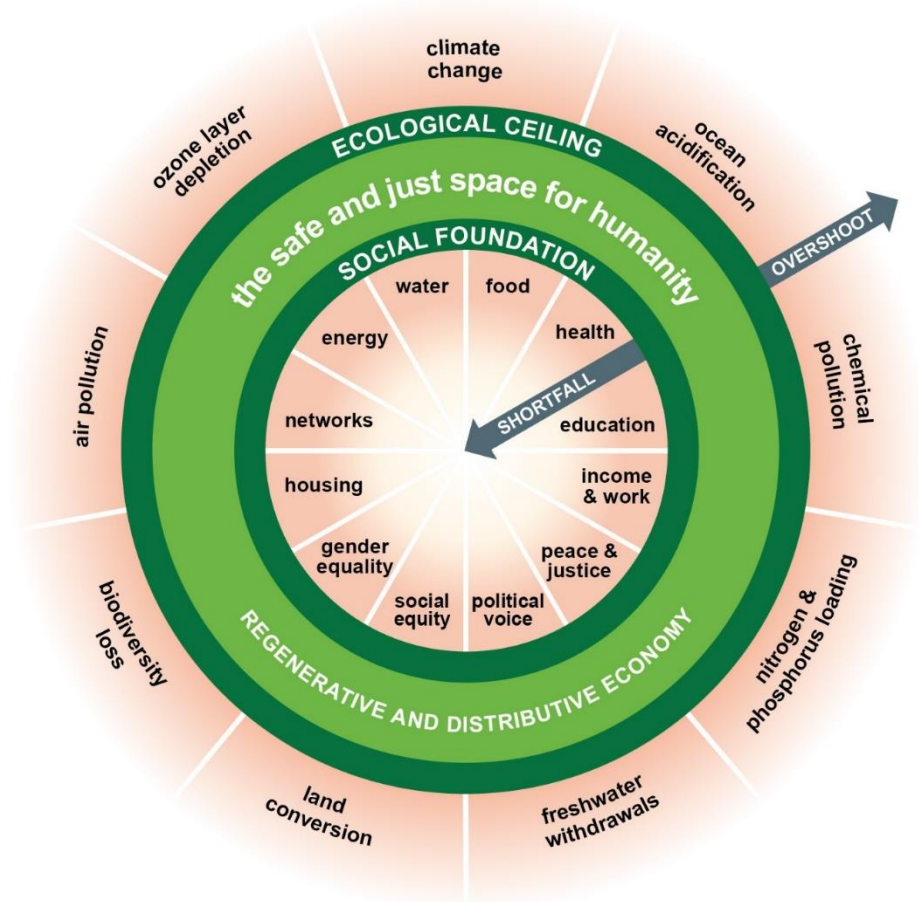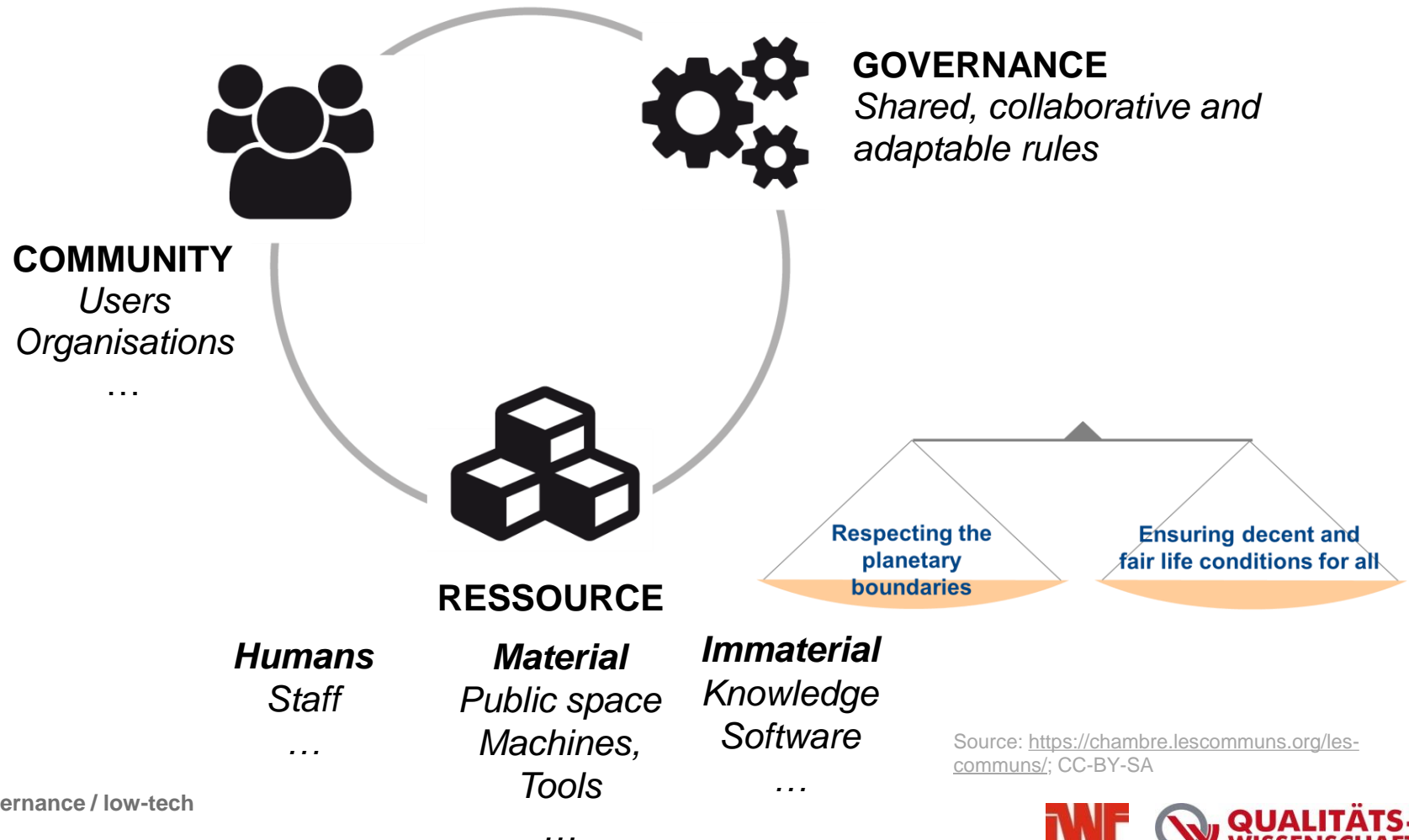
Low-tech - background

Research as a commons?

Collective exploitation mode can be efficient, just and sustainable (Ostrom 1990)

GOVERNANCE
Shared, collaborative and adaptable rules

COMMUNITY
Users
Organisations
…

RESSOURCE

Humans
Staff
…

Material
Public space
Machines,
Tools
…

Immaterial
Knowledge
Software
…

Respecting the planetary boundaries

Ensuring decent and fair life conditions for all

Low-tech

Research as a commons?

Governance

Access to knowledge
- Open Science practices

Research orientation
- Alternative public funding instruments

Scientific activities in and out of laboratories
- Citizen Science

Knowledge development
- Deliberation, procedures

Materials development and uses
- Large instruments, ICT

Low-tech

Advantages of the approach

Responsible research & innovation (RRI)

Putting an end to the 'research as usual' towards a responsible research:

- that takes responsibility for its involvement in a context

- that assesses the consequences of its actions

- that evaluates and compares future alternatives to guide through deliberations & decision making.

→ "Negative Commons": *need for democratic choices about what is disposed of (e.g. coal power plant)*

Low-tech

Advantages of the approach

Responsible research & innovation (RRI)

> *"Are we going to look back 50 years from now and see how we designed our world around digital, with the same regret that people look back at how we designed cities around cars ?"*
>
> ([Ben Reinhardt on Twitter](#))

– People are attached to it and are working on it

. Need for **democratic choices** about what we're getting rid of [Monnin 2021]

Low-tech

Strongly French-influenced movement

Basic concepts and core values

Plural definition of low-tech

- <u>Low-Tech Lab</u>: **useful, sustainable, accessible**

- <u>ADEME</u>: …& local, favouring autonomy

- Philippe Bihouix: sufficient, dignified, **societal concept** (Bihouix 2014)

Semantic question: low-tech = technology…

- "Not using the most recent equipment or methods" Cambridge Dictionary

- Appropriate (E.F. Schumacher); Conviviality (I. Illich) ; autonomous (A. Gorz); liberatory (M. Bookchin) ; democratic (L. Mumford)

- Small scale, sufficient, environmentally-friendly, labour-intensive

  → **"Non-neutrality" of technology**

Low-tech

Fields of application

Where to find some examples

Solar Generator Trailer- Electrical System

Garde-Manger: Pantry Storage

Coco soap

Ceramic water filter

Multifunctional Crankset

Low-tech Computer

Parabolic solar cooker

توربین بادی

Electrically-assisted bicycle

Bio-sand filter for drinking water

Energy use in households

Domestic biodigestor

https://wiki.lowtechlab.org/

Low-tech

Examples

Rotor (Brussels) - http://rotordb.org/en

Architecture / civil engineering: *cooperative design practice that investigates the organisation of the building material environment*

Low-tech

Examples
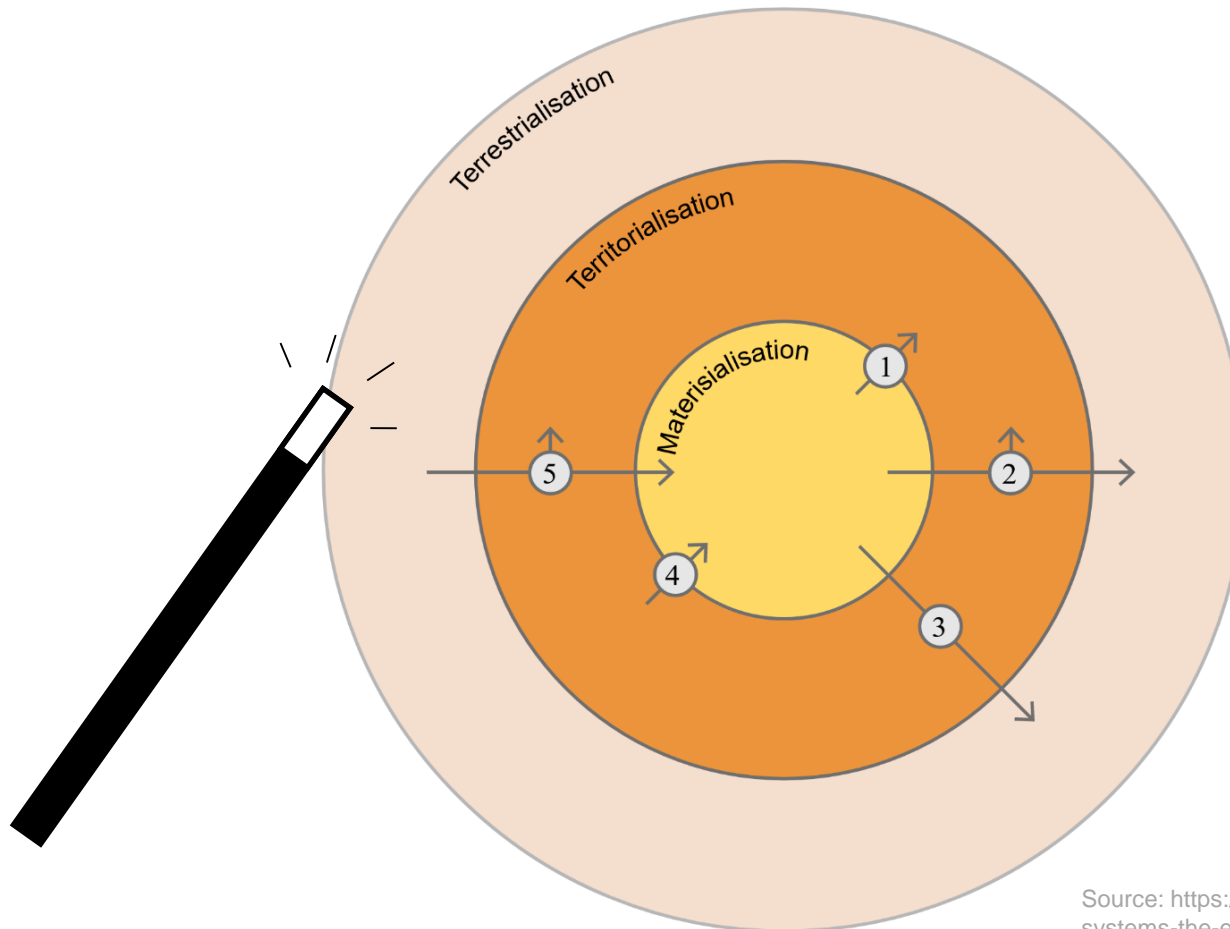
Cargonomia (Budapest) - https://cargonomia.hu/

Mobility:
non-profit with the goal of making different types of
cargobikes and trailers available around the city for the
citizens and organisations

Low-tech and ICT infrastructure

How to look at digital technology?

Territorialising (Gauthier Roussilhe)

1. Describing the physical infrastructure and services in a territory

2. Describing / reducing the identified in relation to transition targets

3. Describing the global infrastructures mobilised

4. Territorial changes influence the design and operations of infrastructure and services

5. Earth changes influence lifestyles and conditions of production / operations

Source : Nova et Roussilhe, 2020

Source: https://gauthierroussilhe.com/en/articles/territorialising-digital-systems-the-example-of-data-centers

Summary

- Governance models are a set of rules defined by the community to make explicit how members interact, contribute, make decisions, what is accepted and what not.

- OSH communities tend to be self-organised according to the onion model.

- Often, communities work on their governance models once they're too big, which brings problems for accepting the rules and enforcing them.

- Governance models have four main elements: culture, decision-making, structure and process. Different combinations of those elements give origin to various models.

- The model choice can affect participation in the community, time demand from the core team and overall project sustainability.

- Low-tech is born out of the idea to engineer more sustainable technologies in terms of ecological impact, sufficiency and accessibility (openness).

- Various projects have emerged within the community, yet they are struggling with practical issues such as limited availability of ICT infrastructure tools.

Thank you for your attention!