Modelling Sustainable Systems and Semantic Web

Cooperative Action in Digital Change

Lecture in the Module 10-202-2309
for Master Computer Science

Prof. Dr. Hans-Gert Gräbe

`http://www.informatik.uni-leipzig.de/~graebe`

July 2021

Cooperative Action. Practical Examples

Examples of cooperative structures

- ▶ OEIS – The online encyclopedia of number sequences
- ▶ The Debian Project –
  http://www.debian.org/index.de.html
- ▶ The Apache Project – http://www.apache.org/
- ▶ Java Community Process – https://www.jcp.org
- ▶ Wolfram Alpha – http://www.wolframalpha.com/

Theoretical considerations: The GNU Manifesto

https://www.gnu.org/gnu/manifesto.en.html

Cooperative Action. Practical Examples

▶ What similarities can be seen?
▶ Which priorities characterise internal and external relationship?
▶ Which hints for a *theory of forms of cooperation* can be derived?
▶ How does this relate to the considerations of the *1985 GNU Manifesto*?

Example: OEIS – The Online Encyclopedia of Integer Sequences

https://oeis.org/?language=german

OEIS – The Online Encyclopedia of Integer Sequences

Observations:

- ▶ In the internal relationship, power structures have emerged that are based on well-known academic reputation structures.
- ▶ Central moments of an internal personal structuring are Bylaws, Board of Trustees, Advisory Board, Editorial Board.
- ▶ There is a "History of the OEIS". Today's structures can only be understood on the background of this historical development.
- ▶ Four "goals" are defined
  - ▶ To own the intellectual property known as "The Online Encyclopedia of Integer Sequences®" (or "OEIS®").
  - ▶ To maintain the OEIS as a service that is freely accessible by the general public.
  - ▶ To act so as to maintain its own existence indefinitely.
  - ▶ To collect and distribute funds in order to carry out the first three goals.

The 5-Level Model

1. User: Uses the given options without having to take part in its extension. Interested in the *existence* of the platform.

2. Contributor: Posts own content. Contribution to the *development* of the platform content.

3. Editorial Board: Review of submissions. Contribution to the *quality assurance of the content* of the platform.

4. Platform operator: Reproduction of conditions for the platform to be running smoothly (in a comprehensive socio-technical sense) as management of the internal relationship.

5. The core of the OIES Foundation: Reproduction of conditions that ensure that running the platform is even possible. (Management of the external relationship).

What is the relationship between the individual levels and the 5-level model?

The 5-Level Model

Users
Editors
Office
Platform Operator
Financing

Users
Content Provider
Organisation and quality assurance of the platform
Socio-technical organisation of the infrastructure
Financing

This relates to five system levels – the coupling between the system elements is organised in the system of the next level.

The 5-Level Model

Observation:

▶ The model is typical for today's platform structures and can be found in different forms.

▶ E.g. Amazon:
   ▶ Level 2: Different shop owners.
   ▶ Level 3: Organisation of the shop operator by Amazon, establishing an institutionalised code of conduct and its monitoring as a social level of the infrastructure.
   ▶ Level 4: Technical level of the infrastructure. Research and further development of the algorithmic basis as requirement for level 3.
   ▶ Level 5: Amazon as a private capitalist company.

Forms of Cooperative Action

Observations:

- ▶ The (legal as well as economic) functional logic of civic capitalist relationships shapes the internal relationship.
- ▶ Level i creates the infrastructural prerequisites for the level $i - 1$.
- ▶ From level 1 to level 5, the scope of personal involvement in the cooperative project increases.
- ▶ It is not a relation between equals: From level 1 to level 5 the possibility to influence the development of the cooperative project increases.
- ▶ There are fluctuations of staff between these levels: Intensive users become contributors, hard-working contributors participate in the editorial board, etc.
  - ▶ In the example, reputation and power structures are formed that are heavily oriented at academic reputation patterns or, conversely, are influenced by them.

Forms of Cooperative Action

Observation: Prosumer approaches can be observed at all levels; there is no typical division into producers and consumers.

- ▶ The transition from level i to level $i + 1$ means to move from a *user* of the service of the infrastructure to a *producer* of this service within the framework of the cooperative context.
- ▶ Every contributor remains a user, every editor remains a contributor etc., and brings in the knowledge about the "what?"
- ▶ Hence the question of the identification of "Customer needs" (what?) move in the background in favour of questions of the implementation (how?) of cooperative goals on the respective level.

Forms of Cooperative Action

The internal structure of capitalist companies follows a similar "top-bottom logic". From such a perspective the following forms can be distinguished.

1. The classical owner-managed company.
   - ▶ With the notions "ingenious inventor" and "wage labourer". "Intellectual Property" is a right of a person and basis for the expropriation of the wage labourer.

2. Stakeholder-driven company forms such as Stock Corporation.
   - ▶ With the notion "legal person". Copyright as economically useful legal title in the *external relationship* and basis for expropriation of the "ingenious inventor". Copyright, Closed Culture.

3. Network cooperation.
   - ▶ Copyright law as a functional basis of the *internal relationship* required to reproduce the infrastructure. Copyleft, Open Culture.

4. (Hypothetical?) Free cooperation.