Concept of the Lecture

Modelling Sustainable Systems and Semantic Web

Summer Term 2021

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General

The lecture will take place synchronously online (Thursdays 11-13 am.) and is based on the Flipped Classroom concept. The lecture consists of three parts.

In the first part we explore the concept of a *technical system* and introduce the main concepts of TRIZ as the most important systematic innovation methodology. In contrast to other creativity and innovation methodologies, TRIZ focuses on the systematisation of engineering experiences.

In the second part, we study more closely aspects of the creation of conceptual networks for data models on the basis of the *Resource Description Frameworks* (RDF), the *Linked Open Data Cloud*, the emerging *Giant Global Graph* and the importance of these developments for the organisation of contexts of cooperative action.

Finally, in the third part, we explore the role of data and information and the generation of new language for the development of technical systems in the context of a civil society and, in particular, the importance of concept formation processes in cooperative action.

In addition to the general bibliography, each lecture will be accompanied by literature for preparation which should be **studied before the lecture**, in order to be able to follow the explanations. In the lecture the topics are presented only cursorily, but there is room to ask questions about the literature and to discuss individual aspects.

Most of the material is available in the public material folder `Material` in the github project *Leipzig-Seminar*

`https://github.com/wumm-project/Leipzig-Seminar`

or is otherwise easily found on the internet. Nevertheless we will not dispense on classical printed literature and your ability to obtain it.

With the opening for an international audience, we want to switch step by step to English as lingua franca. Since most of the materials used so far are in German, the lecture will

take place in a mixed form, with English presentation and slides, but mostly referencing to German-language literature for self-study.

The progress of the lecture will be reported regularly in the above mentioned github Repo. There you will also find the schedule and the slides of the individual lectures.

Digital Privacy

We follow not only a theoretical but also a practical Open Culture approach and make course materials publicly available. This also applies to the (annotated) chat recordings of the lecture, in which your names are mentioned. We assume your consent to this procedure, if you do not explicitly object. The discussions themselves will **not** be recorded.

General Bibliography

- Robert Adunka (2020). TRIZ Anwendungsbeispiele.
  `https://www.triz-consulting.de/ueber-triz/triz-anwendungsbeispiele-2/`
- Iouri Belski (2020). Tools of TRIZ. A web repository of TRIZ materials on 12 simple TRIZ heuristics. `https://emedia.rmit.edu.au/triz/content/tools-triz`
- Karl Koltze, Valeri Souchkov (2017). Systematische Innovationsmethoden. Hanser Verlag, München. ISBN 9783446451278
- Andrei Kuryan, Dmitri Kucharavy (2018). The OTSM-TRIZ Heritage of Nikolai N. Khomenko. A General Theory of Powerful Thinking. Folien eines Vortrags auf dem TDS 2018 in St. Petersburg. As `OTSM-Folien.pdf` in the folder of materials.
- Nikolai Khomenko, John Cooke (2007). Inventive problem solving using the OTSM-TRIZ "TONGS" model. As `tongs-en.pdf` in the folder of materials.
- Alex Lyubomirskiy, Simon Litvin, Sergei Ikovenko et al. (2018). Trends of Engineering System Evolution (TESE). TRIZ Consulting Group. ISBN 9783000598463.
- Dietmar Zobel (2007). Kreatives Arbeiten. Expert Verlag, Renningen.
  ISBN 9783816927136.
- Dietmar Zobel (2020). TRIZ für alle. Expert Verlag, Renningen. ISBN 9783816985105.