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Information components of legal processes and their complexity

Complexity measures allow reflecting critical issues and estimating efficiency of various processes and systems. Thus, to better organize functioning of the legal domain, it is logical to use complexity measures. In essence, any legal process is an information process in the legal domain involving one or several legal systems. Thus, our goal is the development of theoretical and practical tools for estimation of complexity of information processes, that is, complexity measures, in the legal domain with the goal to ameliorate functioning of the legal domain. Legal processes go in accordance with the rules of conduct in the legal domain. It is possible to separate three classes of such rules:

1. Laws, which are explicitly formulated and upheld by authorities.
2. Formal rules or norms of two types social and organizational.
3. Informal rules or norms of three types social, organizational and individual.

Rules also have deontic modalities: obliged, forbidden and permitted. To represent systems of operational legal rules, we use logical varieties. The first step in elaboration of legal complexity measures is formalization of descriptions of legal processes. We use the Logic of Reasonable Inferences (LRI), as the tool for building a formal model of legal knowledge and formalizing descriptions of legal processes. LRI was utilized in the software system Argumentator implemented and empirically validated against a multitude of real life legal cases. To elaborate legal complexity measures, we use the theory of direct and dual complexity measures, as well as inductive complexity providing a system approach to estimation of complexity of information processes in the legal domain aimed at upgrading and modernization of its functioning based on information technology. Different aspects of legal processes demand specific complexity measures, which have different types. We construct, study and apply the following types: organizational, operational and representational complexity measures.