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法令工学に基づく法令作成・検証の基盤構築

Development of Bases for Making and Verifying Laws Based on Legal Engineering

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# Abstract

The purpose of this research is to propose the method of making and verifying the law based on the knowledge of legal engineering, and to provide the foundation. In the proposal, the law is regarded as a kind of software and described and handled so that the law can be handled by an engineering methodology based on the similarity between the legislative process and the software development process. Based on this approach, it will be possible to make use of the knowledge and tools of software engineering as well as to show the basic methodology for handling laws and regulations systematically.

In the background of the start of this research for such purposes, although law is the foundation of safety and security for the establishment and sustainment of society, the handling of laws is too difficult for many people. Especially in the legislative field where laws and regulations are created, due to the handing down of techniques such as craftsmanship, many government workers who are not experts in law have to continue to prepare laws and regulations. Furthermore, regardless of whether it is legislative or judicial, the world of legal practice is a field of business with many analog aspects using natural language documents as popular media, and LegalTech's tools are attracting attention, but those tools are not still    enough available.

  Moreover, it cannot be said that they are widespread even in the legislative field. Also, these tools are not designed to directly contribute to the construction of logical side, which is an essential part of legal issues. Under such circumstances, in an increasingly sophisticated society, a rapidly changing society, and a society in which various problems arise due to globalization, institutional development through the legislative process requires labor and time, it prevents the state and local governments from taking prompt action. In addition, since legislative works are mainly done by hand, human error is likely to occur, which shakes the foundation of safety and security.

In order to address such problems, this research proposes a methodology so that laws to be handled as kinds of software based on the knowledge of legal engineering that handles laws in engineering manners. Based on this approach, we think that by systematizing the creation and verification of laws and regulations and improving efficiency and accuracy, we will be able to provide a basis for responding to the problems described above.

The methodologies and prototype tools that have been demonstrated by this research are law scripting method, legislation editor, legislation compiler, and law simulator. In addition to these, the legal information data required for our research was collected and organized and became the output of this research. In the first half of the research period, this legal information data was used in ordinance databases for local governments nationwide and have been actually made public to contribute to actual social contribution. The law scripts describe the laws in a programming language, and in this research, we propose a description method using the programming language Python. Since it is too difficult for the government workers to directly write such a law script, we have provided a software called "legislative editor" that can be used on the Web to easily describe the institutional structure, and automatically convert it into a law script inside. The software called

"legislative compiler" is to convert law scripts into ordinary law styles because law scripts cannot be used as real laws as they are in any congress. The software called "law simulator" is to utilize the fact that the law script is a computer program and directly executes the script to enable virtual simulation of functions of institutions constructed by laws.

It can be considered that these achievements are the first step of a completely new approach to solving the legislative problems mentioned above.