

論文 / 著書情報
Article / Book Information

題目(和文)	DEMOにもとづく情報システム開発
Title(English)	DEMO-based Information Systems Development
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出典(和文)	学位:博士(学術), 学位授与機関:東京工業大学, 報告番号:甲第10281号, 授与年月日:2016年6月30日, 学位の種別:課程博士, 審査員:飯島 淳一,妹尾 大,永田 京子,中田 和秀,佐伯 元司
Citation(English)	Degree:Doctor (Academic), Conferring organization: Tokyo Institute of Technology, Report number:甲第10281号, Conferred date:2016/6/30, Degree Type:Course doctor, Examiner:,,,,,
学位種別(和文)	博士論文
Category(English)	Doctoral Thesis
種別(和文)	論文要旨
Type(English)	Summary

(博士課程)
Doctoral Program

論文要旨

THESIS SUMMARY

専攻 :
Department of 経営工学 専攻

申請学位 (専攻分 博士
野) : Doctor of (philosophy)

Academic Degree Requested

学生氏名 :
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Academic Advisor(main)

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要旨 (英文 800 語程度)

Thesis Summary (approx.800 English Words)

Information Systems Development (ISD) has encountered a variety of challenges in identifying complex requirements from multiple stakeholders. Therefore, users and their information environments have been a central issue for developing an abstract model of the early stages of information system development. To address this issue, modeling methodologies have considered modeling the enterprise as a social system. DEMO is a social system modeling methodology that addresses diverse social theories and multiple stakeholders' requirements. Additionally, the DEMO model has improved not only the quality of the requirements but also reduced the time for implementation during the early stages of ISD. However, how to utilize DEMO models in developing information system is still new filed of study. Therefore, this research focuses on developing an information system based on the DEMO model by deriving the conceptual artifacts of an IS from the DEMO model. First, to understand the advantages and disadvantages of DEMO, I conducted a comparison between DEMO and I star (i*) framework. Because the later one is widely used in information system development. And it is similar to DEMO in the concept of modeling enterprise as a social system. They focus on modeling the people and the interaction between them within the enterprise. The comparison is to highlight the strong and the weak part of both modelings. Moreover, this research draws guidelines for improving both methodologies in modeling enterprise as a prior step in developing information system. As a result, the concept of modeling the interaction between DEMO and i* is different. DEMO is more formal in modeling the interaction rather than i*. DEMO differentiates between the three levels named ontology, infology and datalogy. Moreover, DEMO models both the structure and the behavior of the enterprise through its four different models. But i* does not capture the behavior. In contrast, i* allows to model the non-functional requirements, too. Sometimes it is useful to analysis them during the first stages of requirements analysis. Secondly, based in the result of comparison, a framework for developing information systems based on DEMO is proposed. The framework utilizes all the diagrams of DEMO to construct the important artifacts in information systems. Those are the use cases diagrams, entity relationship diagram and other related artifacts. Third, to analysis the transaction pattern of DEMO and know how to present it in information system, a case study of project management is used to develop a data base schema based on the complete transaction pattern. Forth, to maximize the utilization of DEMO, a simulation method of DEMO is proposed for validating the DEMO models in the real world that enable debugging and testing the model before developing any information system. The methodology is based on mapping one to one from the DEMO model to Coloured Petri Net. The reason for choosing CPN is to use the richness of the Petri Net research results on, e.g., performance, deadlock analysis, animation, etc. Furthermore, CPN has a mathematical representation, which can initiate research on analysing DEMO models mathematically. Finally, based on real world project, this study proposes that use of the DEMO model could lead to important discussions associated with actor roles, responsibility, and authority. These discussions are critical when defining the objectives and requirements of any information system to be developed. The result of this research shows the capability if DEMO models to define the scope of information system by defining the actor roles with the transactions that are involved in the information system. Since DEMO use the concept of actor roles, then defining the responsibilities for each user could be achieved by defining the actor roles for each user. Based on the fact model of DEMO, the data structure is derived directly from it. Therefore, the proposed methodology for developing information system is capable of specifying the scope, users, functions and the data structure in a comprehensive way.

備考 : 論文要旨は、和文 2000 字と英文 300 語を 1 部ずつ提出するか、もしくは英文 800 語を 1 部提出してください。

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