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## **KNOWLEDGE BASED ASSISTANCE FOR CONCEPTUAL DEVELOPMENT OF INDUSTRIAL PRODUCT-SERVICE SYSTEMS**

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### **Abstract**

The conceptual development of Industrial Product-Service Systems (IPS<sup>2</sup>) requires the integration of different domains, i.e. mechatronic and service engineering. Considering this integration, an IPS<sup>2</sup> concept model and an IPS<sup>2</sup> concept development methodology have been proposed. Applying model and methodology to an evaluation example reveals that even simple IPS<sup>2</sup> can reach a high level of complexity in the conceptual design phase. To handle this complexity and to optimise the development of IPS<sup>2</sup> concepts, developers need comprehensive knowledge of participated domains and effective development tools. In this paper an approach for a knowledge-based assistance is presented, which supports developers in different tasks of IPS<sup>2</sup> concept development. Focus of the paper is the knowledge based support of the IPS<sup>2</sup> concept development methodology by deducing concepts for IPS<sup>2</sup> from given requirements. Starting with the basic understanding of IPS<sup>2</sup> concept modelling and conceptual development, the paper describes the requirements for a knowledge based assistance system. Based on these requirements, an approach has been developed and implemented in a software prototype. This paper concludes with the application of the approach on an evaluation example.