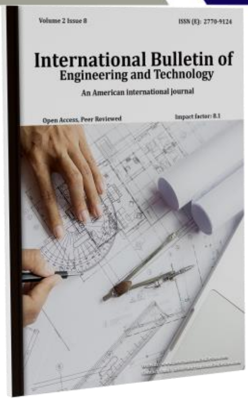

IN THE MANAGEMENT OF TECHNOLOGICAL PROCESSES A PROCESS MODEL THAT SUPPORTS DESIGN AUTOMATION

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Abstract: Mass customization in the management of technological processes is therefore a way to meet individual requirements attracting and retaining customers is a major challenge in the design industry. The growth of design automation offers new opportunities for high-speed design of customized products and this is a cost equivalent to mass production. Design automation is built on product reuse and implements based on knowledge processing processes. Ontologies have proven to be actionable, highly aggregated knowledge and we observed the control model in technological automation in engineering design. Product and process knowledge from other life cycles stages are expressed and produced in several approaches, along with the product design process there is no process for matching product variants, which leads to breakpoints or additional iterations slows down the design automation process. It is therefore appropriate to provide knowledge adapted to design automation and this method is still being developed. Accordingly, this contribution proposes a new approach to knowledge representation and it will be necessary to enable design automation for mass customization. Methodologically, this new approach uses semantics and design task, enriching the system environment to automatically extract information about the design the rationale and design process are represented by a formal ontology. Integration of the design process the approach is significantly different from the previous ones.
Keywords: Automation knowledge, technological process representation, ontology, design automation, automatic control system.

Introduction

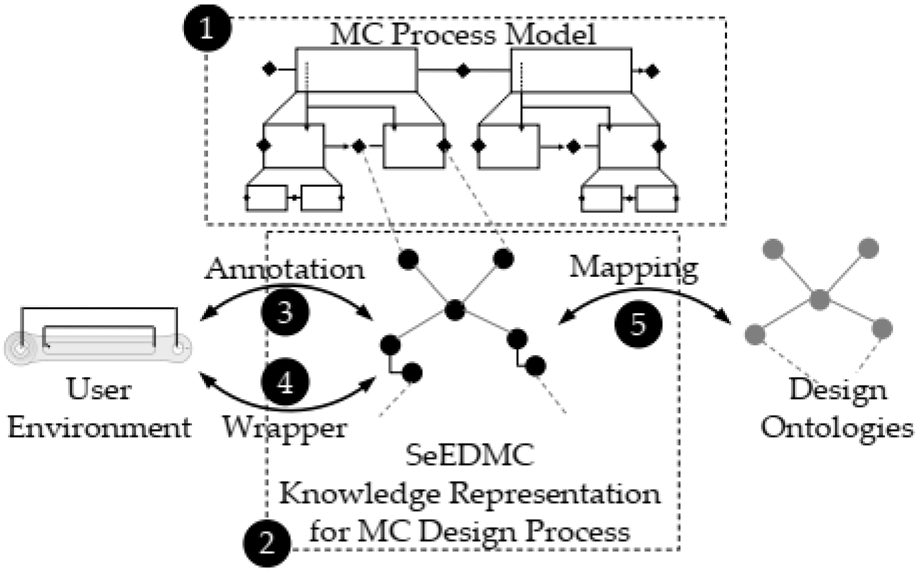
In the management of technological processes, the engineering design industry is concerned with the need for constant involvement and the need to retain customers, maintain and increase its market share and profitability and the need to meet the needs of different communities must be taken into account. To satisfy the customer requirements are best incorporated into the design is a process leading to individual products. Take advantage of this opportunity and have mass privatization, increasing market share and industrial profitability has become a mainstream trend. Technology design design process and producing customized products to meet user needs, but at speed and equal to the costs used for mass production. Technological processes rely on very fast reactions, taking into account the client's needs, it forces routine tasks to be changed relatively faster than a human designer are automated aids by reusing relevant product and process knowledge. Usually, knowledge-based engineering applications focus on automating one specific thing a design task that changes design features to fulfill at least one design basis reusing product knowledge. This reduces engineering time spent on a single task, but it leads to independent solutions for specific tasks. It is available to monitor design parameters and their changes during the design process it will be necessary to consider the constraints and sequence of design tasks as knowledge Enable technological management of design processes instead of independent tasks. This requires integration and process knowledge because within a specific country within a product-oriented approach the design process is characterized by geometric configuration and potential facts. This configuration can be enriched with a design rationale that describes why it was chosen. However, the adaptation process itself is not explained in a logical way based on process knowledge in engineering design. Hypothetically, a certain design task of the process can change which features are needed, allowing for a more seamless automatic mode. It gives knowledge about this information in the context of a specific technological process and the basic design process and, if reworkable, allows the network of the system to move from single design tasks to entire design processes. Innovative design processes for construction The presentation of knowledge is very ambitious. However, compared to other designs processes, technological system processes are very simple. Accordingly, this contribution proposes to provide new models and knowledge. A design process should be provided to enable design automation for mass customization design processes are classified in several stages. The presentation of knowledge must meet the following requirements: First, knowledge representation must be processed by humans and computers. Second, knowledge presentation should emphasize compatibility with existing knowledge competencies in engineering design and thirdly, the demonstration of knowledge should be subordinated minimum commitment. Fourth, the instantiation of knowledge must be automated to process modern products with many design parameters. Fifth, it should be implemented in a typical design environment to reduce user interference design automation poses initial hurdles for process control engineers.

Terms and definitions in technological automation processes

A representative of a technological system is a branch of artificial intelligence that deals with and with the question of how knowledge can be represented by a machine can draw a conclusion from it, get additional knowledge or find a solution to a given problem, and the system we can solve the problem. Following the definition provided by process engineers and others, we can manage the processes through the system. Ontology is obvious the specification of the conceptualization, that is, the ontology, is clearly defined concepts, relationships, and other objects that clearly represent domain knowledge is a guiding information system. In the context of knowledge-based applications, ontologies aim to overcome misinterpretation and thereby optimize and optimize communication between humans and machines human and machine communication can be developed. Design automation is an evolutionary step in computing is achieved through knowledge-based engineering that represents the amalgamation of object-oriented programming, artificial intelligence and computer-aided design technologies. In general, design automation in engineering design requires an in-depth study of the design process provides an opportunity to cover and formalize principles in the field of design. Mass Customization is the process of designing and manufacturing products tailored to meet the needs of the user, but at the same speed and cost used in mass production. In the mechanical domain, adaptation is sequential design adaptations such as resizing, shaping and placement of geometric elements, as well as changing the material or production consisting of specifications. The fundamentals of design are important knowledge for the next generation are product development systems. In general, it refers to the explanation of why and the artifact is created as is. Without carefully noting the fundamentals of design, the time and effort to search for relevant answers must be greatly increased.

Method

From related works, it can be concluded that human and computer-processable knowledge a presentation that includes a detailed design process to ensure reusability of the design process knowledge in technological management applications is not currently available. To achieve this we we need to implement new approaches and research. An overview is shown in Picture 1. First, a model for the MC process presented (Picture 1, 1), which defines the concepts necessary for humans and computers and display of processable knowledge (SeEDMC, Picture 1, 2). Defines SeEDMC general intensional knowledge, meanings of terms used, MC process and thus enables DA applications to process sequences, constraints and design objectives and MC processes provide technological control. Validation knowledge is dependent on the MC process in question. Three sources of information are collected from the initial development process to visualize, Before the MC process, the following must be done: first, design specifications; second, principles of resolution; and third, a modular structure containing the requirements. Although design features and solution principles are reviewed automatically, a few errors may occur. Thus, SeEDMC is integrated into the design environment with the help of an annotation scheme (3 in Picture 1). With its support, product developers can define process models, which are then automatically loaded into SeEDMC by the wrapper (4 in Picture 1). Since SeEDMC's scope is the representation of the design process, other knowledge representations that map other knowledge sources are needed. For this purpose, we introduce a mapping scheme (5 in Picture 1).



Picture1. Illustration of the approach consisting of the model used for the MC process (1), its provision of knowledge (2, SeEDMC), through its integration into the development environment annotation scheme (3) and packaging (4) as well as integration into existing knowledge images using a mapping scheme (5)

Conclusions

To define the conditions that the knowledge representation must satisfy enable design automation for mass customization, this contribution presented a model. For the public customization process, concepts, and axioms of the SeEDMC ontology state intentional knowledge about the model, annotation scheme, and process used to integrate knowledge presentation into the work environment of the product and ensures a quality process for developers. Finally, a mapping scheme is given for the implementation of confirmatory knowledge and manages individual mass privatization processes. SeEDMC's primary objective is to represent and design process and enable continuous design automation by reusing this knowledge. Can be found in a more complex description of design intent. This achieved through two-dimensional, hierarchical modeling of the mass privatization process and represented by chronological arrows. The first represents the relationship between design intent, as the basis of design, can manage technological processes from requirements to design parameters. The second represents provides a temporal sequence of adaptations using states and transitions. Together they are Concepts and axioms will need to be formulated as intentional knowledge of SeEDMC. For a meeting requirements one through three for knowledge demonstrations listed in the introduction SeEDMC is characterized by an ontology that can be processed by humans and machines and is technological with a minimum number of concepts focused on the engineer's vocabulary and therefore can be easily adapted to other forms of knowledge. Integration into the technological process The environment is implemented by the product developers with the annotation scheme and process. Design parameters are used as targets, while other concepts of SeEDMC are presented in this paper is the main part of the comments. Since this meets the fourth requirement, the fifth and final requirement achieved by automatically transferring design parameters and annotations and SeEDMC using mapping scheme and design wrapper. checked by performing a mass adjustment process for an individual bike. Future work should include user studies in industry to validate the method environment should be created. Otelbayev Azizbek, a student of the Nukus Mining Institute under the Navoi State University of Mining and Technologies, is conducting research on the automation of processes in mining enterprises. We can also use automation of technological processes in mining enterprises. For example, we can monitor the mining system using GPS technology, this system works with high accuracy. In mining enterprises, this system ensures the quality and safety of processes. Many of Azizbek's articles on technological processes in mining enterprises have been published in magazines. There is a high level of interest in processes in mining enterprises, metallurgy, chemical processes, the structure of metal melting furnaces, processes such as metal flotation enrichment.

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