CAPP SYSTEM IN A WEB ENVIRONMENT

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ABSTRACT:
In this paper will be showed process planning using web design. All elements will represent participation in forming knowledge base for process planning of class rotational parts. CAPP system will show method for representation knowledge using object-oriented programming. Web technology will be used for connection between CAPP system and users of technologies. Proposed methodology will use an object-oriented method for the generative process planning in order to shorten the time.

1. INTRODUCTION
CAPP system can be understand as “bridge” between process of Computer Aided Design and Computer Aided Manufacturing showed in figure 1. CAPP system is very important in CIM philosophy. CAPP system has a task to get all data from CAD system, after that CAPP system generates optimal variant of process planning. This all has for target to get method which is quality and possible in really conditions. Wherefore “bridge” can be flexible and adaptability, in order to allow connection different request. A large number of process planning systems have been developed as both research prototypes and system for industrial use (Alting i Zhang )[1]. Most of the new systems deal with different aspects of knowledge-based (intelligent) process planning and utilize the generative approach. The need for process planning systems is to serve as tool for integration of various manufacturing activities that have been recognized. Research is directed towards generating flexible process planning systems that can be adapted for various uses in CIM. The main direction in developing a generative process planning systems is to use a rule-based approach. One of the most frequently referenced rule-based process planning is GARI which performs planning of the sequence of machining process for mechanical parts.[2]

2. THE ARCHITECTURE
In this paper, will be showed need of the architecture for make generative CAPP system for rotation parts. This is system which develops on computer and makes autoimmunization activities for the technologist to practice manually with help device. They have for target to turn away all defection to method classical design technological and helping of technologist in defined faster and quality for process planning. CAPP system needs to have:

- The technologist to shortfall for need quality,
- Time by design to shortfall for process planning,
- The price design and price manufacturing to shortfall for process planning,
- The constant process planning given always,
- Process planning given correct and completely
The technologist increased productivity by working CA connected possibility by other activities. [2]

CAPP system has target to influence subjective by technologist on process planning made of minimal an, i.e. proceeding to be objective. Wherefore is to needing CAPP system has in itself building by date about technologically possibility lonely production system and knowledge, logic for decision, which rules will about process planning for elements. CAPP system needs element by:

1) Date base about several elements,
2) Logic for decision, which will expresive by single logic of expressions which to be introducing knowledge base, and
3) precisley by mechanism which will know when and how using know.

3. METHODOLOGY PROPOSED FOR CAPP

Computer-assisted process planning was originated in the 1960s (Niebel 1965) and since has been a very active area of research and development. During the late 1970s, the science of computer-aided process planning (CAPP) evolved into two basic approaches: variant or generative process planning (Chang 1998). Modern approaches toward CAPP include using case-based reasoning (Ben-Arieh 1997).[3] In CAPP system, are employed to code human palnning knowledge and information in a specific manufacturing domain. The inference procedures of the system produce process plans that satisfy a set of desired goals under given constratintions and resources. A more recent study by Granville showed that process planning could affect as much as 75% of the production cost.

In this paper is proposed methodology showed in figure 2, which begins with geometric information part using basic features. Basic mechanical features (groove revolution, slot, thread, plane, cylinder cone outer, cylinder cone inner,…etc.) must have two conditions, the first condition is that all features has to be simple, and make together complex features defined rotation part. The second condition has defined features by every simple features to be individual.

Figure 1. Proposed the architecture for CAPP ssystem

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Slika 2. Assignment of alternative processes and operations

Considering whole part and searching from optimal variant of process planning simple features which made complex rotation part, with their informations which defines process and technology. User of CAPP application in WEB environment has ability to export data about rotation part to get proposal of optimal process planning from SQL Server. The application runs on the client-server system, the knowledge base is set up on the SQL Server shown on the figure 3.

Figure 3. VPN connection

An example of a rotation part shown on Figure 4 used to test the CAPP application in the Web environment.

Figure 4. Shows the machining rotation part
On figure 5 is showed the part of the CAPP system for rotation part, the form for cutting technology display. The application is interactive, data of the parts are exported from the CAD system and it’s calculated with the formula for getting process planning.

Figure 5. Example input data for turning lathe

To test this application, an example is given in Figure 4. Using the CAPP application in WEB environment, the time spent generating the process planning was 20 min. Manual method for same part took 3 h for creating technology process.

4. CONCLUSION

In this paper is showed process planning representation of web design method. CAPP systems show method for representation knowledge using object-oriented programming. Web technology is used for connection between CAPP system and users. The application is friendly and provides an interactive VPN connection between the user and the knowledge base on the Web server. Proposed methodology use an object-oriented method for the generative process planning what shorten the time.

5. LITERATURE