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THE BRIEF VIEW OF COMPONENT PARTS PRELIMINARY COST ESTIMATION

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Abstract: The article is concerned area of preliminary cost estimation of engineering parts. The paper in short describes estimation methods based on empirical fundament, group technology and expert systems principles. The article is focused in application possibility of computer support in pre-production stage frame in this area too.

Key words: cost estimation, estimation methods, parts classification, group technology

1. INTRODUCTION

The preliminary cost estimation of parts at the initial stage of design is important because right estimate at this point in the design process gives notion about applicability of product process. Cost estimation should be quick with correct information output values. But this matter of fact is not simple.

2. EMPIRICAL METHODS

The key problem of cost estimation is time calculation of part production too. The empirical methods determine total produce time largely without the particular operations analyse.

Some empirical methods:

- Method of summary empirical formulas
- Comparative method
- Statistic method
- Method of summary estimate

The advantage of these methods is mainly their simplicity, but it is too little. As for disadvantages it is primarily high inaccuracy, limited flexibility from aspect of production batch, etc. These factors derogate foundation their major using.

2. GROUP TECHNOLOGY AND PRELIMINARY COST ESTIMATION

The main aim of group technology is to simplify design, manufacturing, purchasing, and other business processes on base of similar parts items. It reduces the variety of component parts [5]. Therefore using of this benefit has also foundation in cost estimation process too.

The classification and part coding may be done by several methods. It depends on many attributes. It may be for example sort of production process (Fig.1). The component

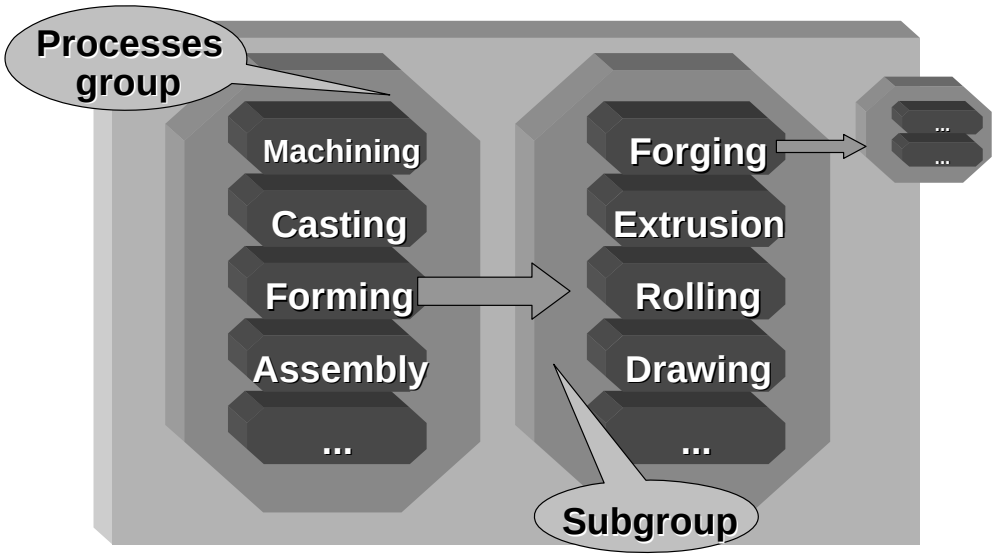

Fig.1 Sort of production process

classification is done according to their similar properties and conditions of production process.

The main key problem of information system for cost estimation is collecting and handling dates and their management by suitable computer tools (SQL, PDM, etc.). For

higher level of output precision it is necessary the large amount of information about part and production process, which are according to shape dimensions technological parameters, etc. Further it is needy system of regulations and cost formulas for each created group of parts with similar properties. For creating of rule system may be used expert systems principles - ("IF" … "THEN") e.g. [1].

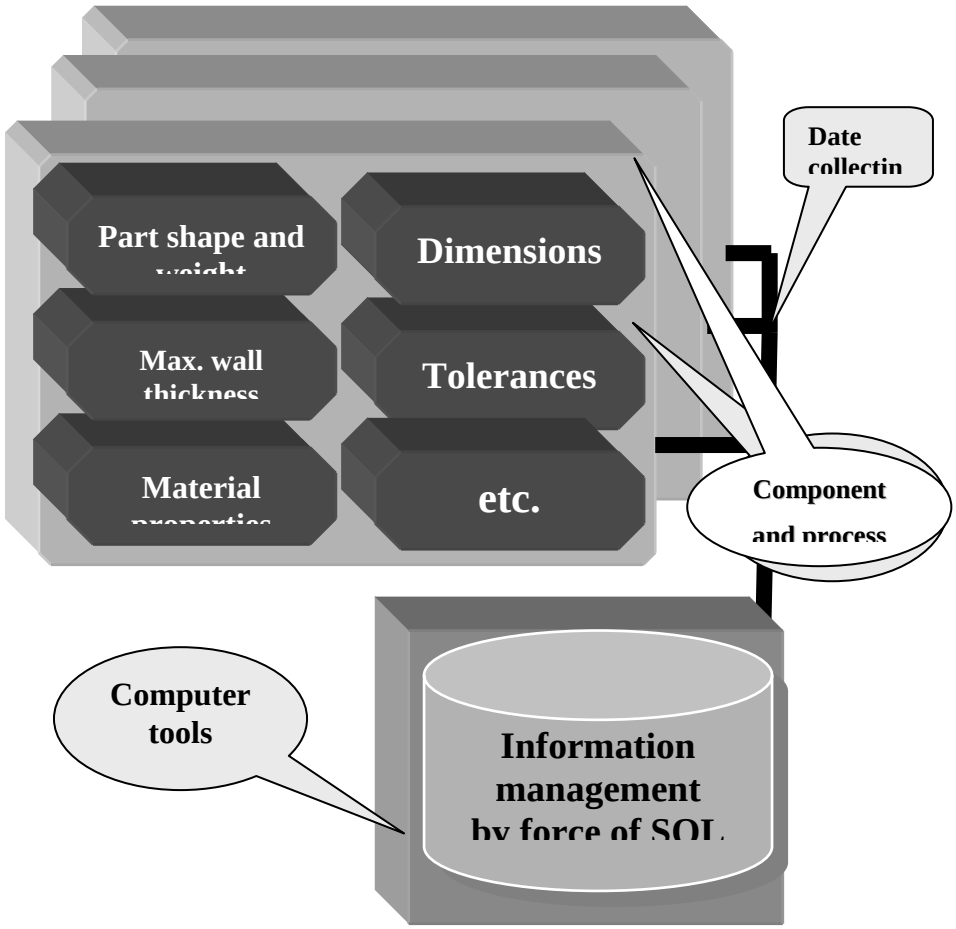

Fig.2 Information about part

The vague parameters determination may be done by methods of fuzzy set theory or theory of probability e.g. [2].

The cost of product increases as complexity of product increases. The product complexity is influenced shape complexity, maximum dimension, tolerance range, surface roughness, wall thickness, weight etc.

The heavy query may be description of shape complexity of part. Answer for this question is creation of graphical shape classification for example (Fig. 3). suitable information about shape complexity is also number of dimensions and middle wall thickness of part. In respect

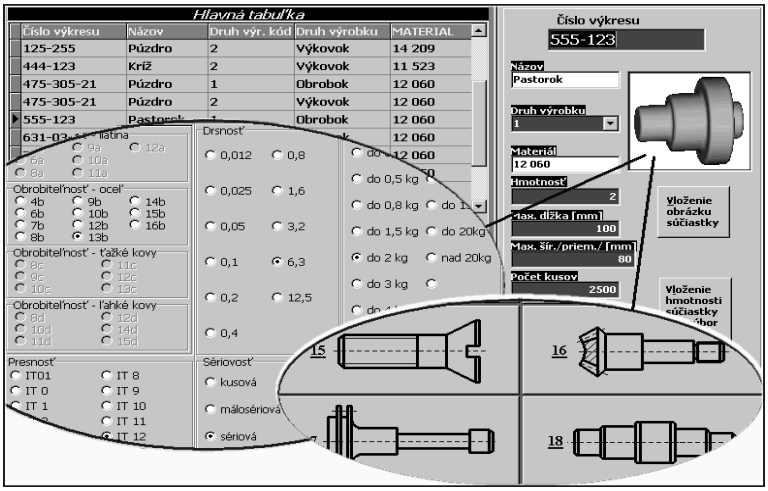

Fig. 3 Graphical and digital information

of the all or at least the major properties of part and process the hybrid systems look to be optimal problem solution to improve accuracy in this area.

3. CONCLUSION

This paper has described an overview of a variety of accesses to part cost estimate. The model of cost estimation system would be based on the multi - spectrum principles. It depends on many factors relevant to production and product features. The development of versatile system for this area is probably very difficult.

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