

## FEATURES OF COMPUTER VISUALIZATION OF GEOMETRIC MODELING OBJECTS

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Problems of geometrization of real or projected objects are determined by the features of geometric modeling, by used approaches to formation of geometric models, by applied methods of the geometrical descriptions of objects, the possibility of algorithimization of geometrical operations and the ability to create specialized computer technologies allowing for efficient processing of geometric information.

Geometrization of the object is focused primarily on getting the visual image (visualization) of studied or projected object, the main way to represent is a computerized way – video reflection (on screen display), you can save as binary file associated with the database of information that describe geometrical model of the object. Computer visualization provides visibility presentation of investigated object, is a tool for finding, analyzing, and making an informed decision of the functional, constructive, operational and other engineering practices.

Electronic model of the projected object is created in the 3D geometric modeling systems to effectively implement the necessary geometrical operations, to carry out the required measurements, consciously and detailed research the different elements of the object in the model image. Because the 3D model is stored in the computer's memory, together with a mathematical description of the object, then you can perform analytical studies and computational calculations in parallel with a geometric analysis of the visualization model. But you need to know the possible methods (practical ways) of geometric modeling and to be able to realize (in the appropriate software environment) model building process object, first in the form of a sketch, and then in the form of a working project. This will require detailed work procedure of geometric modeling, and also (based on a geometric object model) the formation of software production tasks, engineering analysis of strength and other technical characteristics of components and assemblies.

Features of computer visualization of geometric modeling objects are identified both at the stage of preparation and in the visualization process and are defined by a set of factors that affect the choice of method of visualization (the type of the geometric model), specifying the characteristics (parameters), reflecting the quality of visualization, form (the type description) and the content of the information provided, which can be (or should be) obtained from the rendered model. All of these factors are interrelated and interdependent.

Selecting the method of visualization is specified the targets of visualization (a more common – the targets of modeling) depends on both the level of competencies (knowledge, skills) of the researcher, his ability for 3D thinking (and 3D modelling) and the used hardware and software modeling tools (more specifically the geometric modeling). In addition, you must define the composition (characteristics) information system sufficient to implement the selected method of visualization to solve the target rendering. This information includes various (on geometric, functional, physical properties) data: spatial-metric, topological, morphological, structural, functional and technological, physical and technical, superficial (smoothness, roughness), etc.

Specification of characteristics (parameters), reflecting the quality of visualization, includes the exact formulation of the model property that should be reflected when working with a model, visually present when viewed from different angles, the model regulations and scale, give a clear view and the ability to describe (analytical or numerical) graphics (structural) model elements, obtaining its mass inertial, metric and other information. Should also take into account the technological aspects of the specification: composition (components and technological elements) models, and how to order these parts (the sequence of assembly), the practical implementation of the layout.

Optimization of the process model design (as a prototype of the project) in accordance with the selected criterion that can be based on time characteristics (minimizing the total time to physically

obtain components and technological assembly object prototype), or reflect the quantitative aspect of the modelling process (according to the number of source graphics primitives that define the composition model, by the number of the necessary operations), or determine the technological direction (the complexity of implementation, the sequence of assembly).