WAYS OF ACHIEVING FAULT TOLERANCE OF HETEROGENEOUS INFORMATION SYSTEMS UNDER CONDITIONS OF EXTERNAL INFLUENCE

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The concept of fault tolerance in relation to the functioning of information systems is the key indicator of reliability [1]. As a rule, classical information systems that can be described using tuple mathematics are rare. Instead, in practice, heterogeneous information systems are created. They have properties of other systems, including technical.

At the planning stage of information systems, it is important to consider the factors that affect their fault tolerance. For heterogeneous information systems, these factors may include the redundancy of critical nodes, duplication of functional capabilities, etc.

For example, work [2] considers a method for ensuring the guaranteed provision of digital services in similar systems. The authors propose technological principles to maintain a satisfactory level of the indicator of the stability of the information environment. However, this approach in the conditions of heterogeneous information systems does not consider the problems of external influence on such systems.

The purpose of this report is to review the ways of achieving fault tolerance of heterogeneous information systems under conditions of external influence. Within this study, specific methods such as redundancy, clustering, and dynamic architecture reconfiguration of heterogeneous information systems are examined and their critical analysis was performed. This analysis reveals that the primary differences in these approaches to achieving fault tolerance lie in the complexity of their implementation. Secondly, the uncertainty in the dynamic behaviuor of individual nodes within a heterogeneous information system can lead to a shortage of time needed to solve quasi-local optimization tasks**.** Consequently, this publication is devoted to the use of an adaptive approach that provides quasi-optimal solutions at each stage of the life cycle of these information systems.

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