Model prototype development of interactive interface of information system for monitoring ship technical system

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ABSTRACT

The problem of model development of systems for monitoring marine engineering systems interactive interface prototypes of information. The primary requirements for prototyping interfaces of information systems for effective monitoring tasks of the technical systems of the vessel were grounded and formed, the example of ship power plant. The analysis of implementation characteristics of the of existing approaches for building the interactive interfaces prototype is carried on. The criteria of the developed prototype model, which are the basis for the convenience of the information systems use by dynamically monitoring the visual presentation of the basic characteristics and parameters of elements and inter-element relationships of ship technical systems were formed. The structural model of the interactive interface a prototype of information system for monitoring marine engineering systems was proposed and implemented. The results of the research during the development of the interactive interface prototype model of the information system for monitoring technical
systems of vessels allowed to reduce the level of potential errors of developers on the stages of the graphics layout and writing a programming code. The developed model can be used in the implementation of the software interface of information system for monitoring of complex technical systems.

**KEYWORDS**: interactive interface, prototyping, monitoring systems, marine engineering systems, modeling UML.

**Introduction.** Design and development of modern information systems for diagnosis and monitoring of various technical systems are widely used flexible prototyping technology. Ease of implementation and reuse of components developed a prototype information system is particularly important for monitoring tasks ship technical systems (STS) [1]. This is due to the fact that such systems are characterized by an ever-changing external and internal influences, to dynamically change the parameters of elements and inter-element relationships STS [2]. However, at the moment, there is no unified approach to the creation of prototype models that can thoroughly and consistently reflect all stages of its development according to specific monitoring systems STS [3]. The crucial task is the development of a prototype model of interactive interface of (II) information system for monitoring STS, which provides ease of use through a dynamic visual representation of the basic criteria and parameters of elements and inter-element relationships.

Unified Modeling Language UML is widely used for task of a development of a prototype II of information systems. Structural model II prototype information system for monitoring STS was developed on the basis of the language use with the help of software tools Rational Rose, using the example, of ship Power Plant (Figure 1). It consists of functional units of the system and indicators.

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The structural model of the interactive interface prototype of information system for monitoring marine engineering systems contains the essence: engine stop, exit, unblock, rev’s monitoring, start current, oil pressure, oil temperature, cooling system temperature, indicators and indicators array block (fig.2.).

**Fig.1. Structural model of the prototype II of information system for monitoring STS**

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**Figure 2 – Detailed block Indicators array structural model and prototype II information system for monitoring STS**

Indicators array unit includes: oil rate level, oil circulation level, gear level state, refuse of fuel pump, starter revs, fuel crane state, refuse of fuel-out pump, fuel pumping, warming-up level, oil temperature, engine revs, refuse of oil-in pump, air damper staten oil crane state.

**Conclusions.** The proposed structure of the prototype II of information system for monitoring STS can reduce the time spent by service personnel for analysis and evaluation of diagnostic data coming from the components. Formalization of each of the development stages of the prototype II can reduce the level of potential developers’ errors in the stages of the graphics layout and writing code. The developed model can serve as a basis for the implementation of the software interface information system for monitoring STS using existing IDEs.

**References**

