THE MAPPING AND MODELS SET OF SINGLE SOFTWARE SYSTEMS IN BIG AUTOMATE PRODUCTION CONTROL SYSTEM CREATE PROCESS

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Abstract
This article concerns to mapping and models set of single software systems. Decomposition of special program systems create process on some parts help to understand act sequence in it. It is strongly important for big automate production control system on fuel energy objects. Mapping and models set is a base line for creating special program systems of all support control systems.

Keywords: application create process, big automate enterprise control system, support control systems, model, program, programming, application

High-tech processes to produce various products of oil and gas processing require special attention to automation, especially in the era of widespread use of digital technologies and artificial intelligence. At the same time, for fuel and energy objects (FEC), the main tasks are to increase labor productivity, maintain the required level of quality and reduce labor costs per unit of production. For specific operators, this means the active use of automated information processing and the use of automated workstations (AWS) in their areas.

Integration of individual AWS at fuel and energy facilities during their operation in real conditions has traditionally been carried out within the framework of application of corporate information systems (CIS) and automated production control systems (APCS). The most important part for both was always the software (S) which component had special program systems (SPS). It is in the SPS that the functions of specific AWS were implemented and are currently being implemented when the performers work in a real production process.

SPS synthesis is done using programming systems (PS) and programming languages (PL). Together, they are part of information technology (IT), the application of which allows fuel and energy facilities to increase productivity to achieve other stated goals. There is a dual understanding of the term “AWS” in IT terminology. The meaning of this abbreviation in some cases means a computer with an SPS installed on it, and in others - only a specific SPS for the performer in APCS. In order to avoid ambiguity in understanding the meaning of this term, it is advisable for individual APCS AWS to refer to the SPS as a single software system (SSS).

Any process, including the synthesis of SPS, is a sequence of actions. Due to the fact that the SPS APCS is a complex scientific and technical product, it always involves different persons and performers at different stages (in this case programmers and managers, as well as possible testers and technical writers), who spend resources in different ways when creating it. The main objective of their activity process is synthesis of individual EPF and APCS SPS as a whole.

The main problem of their joint activity is the accumulation of distortions in the SPS APCS, related to the variability of the participants 'interpretation of both the general goals of the project and the tasks solved at its individual stages. In order to reduce the effect of accumulated distortions in the projects being implemented, especially if they include tens and hundreds of SSS (as in real-world FEC objects), it is advisable to present the flow of data in the process of SPS synthesis in the form of a set of maps and models.

Based on the large number of participants in the process, it is possible to speak of a multiplicity of decisions of the same questions within its framework. In addition, it can be argued that the shared data between different process participants is used differently ([1]). It is only natural that this results in an avalanche-like accumulation of unexploited errors during the synthesis process. This, in turn, leads to the fact that the joint work of SSS created by different performers in the unified management system of the fuel and energy plant is threatened. The uniqueness of each concrete decision, dependent not only from the platform SPS chosen for synthesis (PL, the joint venture or database management systems are DBMS) is the main to that the reason. In addition, it should be noted that:

- In the IT industry, many standards have been developed for the synthesis of SIS "not fully or unevenly meeting the requirements for standardization of objects and processes for the creation and application of complex IC";

- "The most complex and creative processes of creation and development of large distributed information systems... almost not supported by the requirements and recommendations of the standards due to the difficulty of formalizing and harmonizing them "([2], p. 71-72).

The two main obstacles to a positive solution to the issue of ACS SPS synthesis cannot currently be overcome by the means available to all stakeholders. In fact, it is necessary to try to simulate the creative processes of synthesis of APCS STS again, which will possibly yield a certain result to overcome these complications.

If we focus on the fact that the process of SSS synthesis (and SPS as a whole) can be considered from the point of view of relationship theory. We will get a sequence of mappings and models of their interaction with each other, from objects of the subject area for SSS to objects by means of which operators of FEC objects

interact with the APCS SPS at production lines. Such mappings can be obtained by sequentially refining the steps in the process of synthesizing the SPS.

The distortions that will then be introduced into these models by real people and real application development tools can be taken into account separately. But based on the practical experience of the SSS creation, it can be argued that distortions, which accumulate many times, will significantly reduce the probability of joint normal (within the requirements of organizational and administrative documentation of the fuel and energy plant object) SSS operation in APCS.

Use the following models and mappings corresponding to the process steps to decompose the SPS synthesis process:

1) mapping of concepts of subject area, formulated by customers of SSS, to many concepts of the contractor of works on SSS synthesis;

2) mapping of concepts of SSS synthesis works performer to objects of data model selected by him;

3) mapping of data model objects selected by the contractor to development tool objects;

4) models of customer interaction with SSS and SSS with customers;

5) models of mapping of objects of the development tool to objects of data models of the SSS and objects of models of work of customers with the SSS.

Thus, the decomposition of the process of synthesis of SPS gives several directions of possible research. Each of them corresponds to one of the listed elements.

The first direction corresponds to the first display in the list above. Its main purpose is to establish a correspondence between the concepts of the subject area formulated by the customers of the SSS and the concepts of the specific performer of the works on the synthesis of the SSS. In other words, a person reads a job assignment and listens to the customer, and then "pretends" how he will solve the issue. In the technical literature, it is common to relate with C- and D- requirements (e.g. [3]). The first correspond to the concepts of the subject area that the customer described. The second - concepts of a specific performer of works on synthesis of SSS. The quantitative indicator for estimating the number of works in this direction in the simplest case can be the total number of requirements recorded by the contractor documented and agreed with the customer.

The second direction in order and in the list and in the SSS implementation is related with built-in DBMS PL or utilities that allow to create data structures for their storage in files on disk. In fact, this is the main purpose of this display. When performing this set of operations, the SSS synthesis contractor needs to establish a clear correspondence between the concepts that he has understood from communication with the customer at the previous stage and the objects of the data model he has chosen when working with a specific DBMS. The quantitative criterion and main characteristic of operation in this direction can be the degree of compliance of data model objects obtained during operation with DBMS with objects described by the customer. To do this, divide the number of data model objects by the number of customer requirements. The closer this indicator is to one, the better the data model. The simplest and most natural quantitative criterion for evaluating data model objects in this case can be the number of fields in database tables.

The next step in modeling the process of synthesis of SPS is to map the objects of the data model chosen by the contractor of the works to the objects of the development tool. Its purpose is to map these sets of objects. It is no secret that PLs as objects used for the synthesis of SPS are subject to significant changes. The result of the process of changing the PL over time is a slightly different (and sometimes very radically altered) interpretation of the objects used for the SSS synthesis. And this is the fastest path to distortion. Therefore, often in case of updates of PL or platforms of CIS creation, distortion in SSS occurs automatically. The efficiency criterion, which in this case is rather difficult to calculate, can be the number of objects used for the synthesis of SSS by the development means. For a particular CIS, the number may range from several hundred to several hundred thousand. This value depends on the number of project performers, the number of platforms used, and the number of synthesis methods used by the performers. It is generally assumed that for different SSS, one performer will use one of the methods. But in the real situation, everything depends on the specific circumstances and how the programmer works with the documentation. And this is perhaps the most inexhaustible source of distortion in the SPS.

Models of customer work with SSS and how SSS work with customers represent the "user interface." Different companies organize it in their own way. It accumulates distortions so correct implementation of customer requirements as their semantic content can be under threat. It can actually characterize how effectively the performers of works on synthesis of SPS APCS of FEC objects. The performance criterion in this case may be the ratio of the quantity of functionality implemented to the number of elements in some basic set of semantic elements. Such a set of semantic elements can be developed for all SSS in the APCS SPS of the FEC facility. And it can also be generalized for different objects, making a general measure of the quality of SSS implementation by performers in the process of SSS synthesis.

In addition, an important criterion for evaluating the efficiency of implementing the semantic part of functionality in the SSS can be the basic algorithm of SSS operation. It should be a sequence of "issuing" the required standardized functionality to SSS users. The logic of this algorithm should be linked to complex tree information, divided by levels and categories, necessary for processing on specific different SSS. The structure of the information used in it should be stored separately from the information model of the different SSS to unify the work with the different subject areas. In this case, it is possible to create for them such a typical scenario of work with the operator, in which changing requirements of the subject area will not affect the general order of how user works with SSS. Presence or absence of the specified scenario of their operation in each SSS

of APCS can serve both as a local criterion of SSS evaluation and be used for calculation of integral criterion.

Models for mapping development tool objects to SSS data model objects and SSS customer work model objects complete the list of steps in the given sequence. In order to synthesize the source code, the SSS data structure defined by the data model, the form of implementation of the user interface and the implementation strategy chosen by the specific performer on the specific PL. All three elements of the process were described above, and at the last stage of SSS synthesis, the performer links them together. This means that the applied distortions in each of the previous steps in each phase of the synthesis process can be detected or fixed in the source code. In addition, since, as noted above, the existing regulatory framework does not fully meet standardization needs in the synthesis of SPS, the fifth phase model groups are distorted in the SSS.

Each of the directions can be worked out independently. At the same time, development of them as scientific problems can significantly reduce the influence of the contractor of works on synthesis of SPS. Some attempts in this direction was made earlier. For example, part of such tasks are described in the first, second and fifth directions in [4] and [5]. However, there are no systematic study of these directions and attempts of their practical implementation. Texts of sources [6] and [7] say that future researches aren`t planning.

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METHODOLOGY OF RESEARCH OF WORKS ON 3D-VISUALIZATION OF HOUSES

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МЕТОДОЛОГІЯ ДОСЛІДЖЕННЯ РОБІТ З 3D-ВІЗУАЛІЗАЦІЇ БУДИНКІВ

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Abstract

3D-cadastre is considered as an information element of the state land cadastre with the underground parts of buildings and communication networks that go beyond the aboveground part of the land.

Using geographic information technologies, it became possible to conduct an upgraded cadastre system through the introduction of 3D-visualization. Visualization is seen as a key component of any cadastral system, which in turn can provide instant vision, clarity about the boundaries of land or any type of property, including the