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Standard and suggested information system development stages integration

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The paper deals with the comparison of standard and new suggested information system (IS) development logical stages. But not only comparison, and also the standard and suggested stages joining to design new CASE-tool for supporting high quality IS development in the shortest terms. The work includes some new and fundamental approaches and suggested specific concepts to IS development. Suggested software solutions have been tested by real experiment execution. As the result of it additional software solutions appeared. The designed software tools are also represented in the article

1 Chapter

Successful and productive work of enterprises is impossible without information system (IS) implementation in their functioning. While complex IS development, the business-process description, workflow processes and network data exchange supporting, computer-aided management of different processes execution and outer systems integration became the most important and topical tasks to be solved. For that propose, quite widespread and convenient CASE-tools are used.

Nowadays it's impossible to imagine modern informational systems functioning, supported and realized by only one specific type of software tool. Great variety of functions implementation for the whole system functionality realization needs several software tools integration into the unified and specific software complex. The suggested approach is intended for IS software development, which are network distributed applications, as the most progressive, perspective and useful direction in the variety of application programs. Modern, advanced and complex IS development make the demand for **new generation software**. The development of such software tool is the one of the main paper subjects. And it also contains all new approaches and ideas to standard development process steps [1] and widens some of its concepts.

2 Chapter

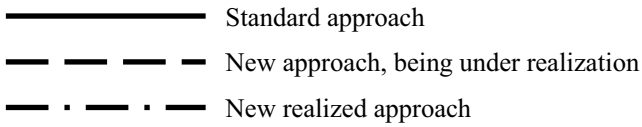
The research fields that include system architecture of distributed applications, information-telecommunication environment, problems and proposed methodology of the IS development, requirements to the platform, being under the development, basic application platform tasks were discussed earlier [2]. The detailed description of the main concepts, such as forms, functions, principles of their interconnection, forms-functions tree (FFT), forms-functions graph also has been made [2].

The article essence begins with standard IS development stages comparison with new modified suggestion of IS development process steps. Standard stages is the basis

of IS development, but they are considerably added with new ideas and approaches. That creates noticeably new approach to full and complete process of IS development. Standard and modern "Draft & Preliminary Design" integration can be shown on the Fig.1. The further IS development stage is realization, which is integrated with testing and logically transformed to new IS realization-testing approach (Fig. 2).

Maintenance is based on the whole software or its some part modernization. It is the forth stage of IS development which is successfully tested by experiment in real application field realizing (Fig. 3).

The investigation subject is busyness-processes, describing social protection management of Chernobyl accident victim population in ME (Ministry of Emergency) and in regional state administrations. The attempt to realize practically diagrams design, the model and the technical realization of data network exchange between CDB (Chernobyl Database) Regional and Central segments was made. In such a way, the attempt to integrate the distributed IS was made. Central segment is software of Ukrainian ME Central server and Regional segments are Ukrainian ME regional servers software.



2.1 Paragraph

Starting with the first stages and primary innovations (Fig. 1) some fundamental new approaches that modernize early discussed methodology [2] should be considered more carefully. In the article [2] the concept of **3** IS runtime modes on the basis of program system interface was discussed. hey are: demo mode, debugging, and deployment (normal). The consideration of demo mode IS development stage starts with the necessity to mention some software design realities. The most considerable part of the whole development process is related to exactly IS components look & feel and function model designing (Fig.4. It can also be seen on the diagram of IS development stages (Fig. 1) and database structure (Fig.5).

The central figure in the represented development stage is Customer. He fixes forms and functions interfaces, the way of their interconnection, and their parameters. As the result of such determination, customer needs to see not only every separate part of the future IS, but the IS look & feel and functioning model. There is no existing software tool for both IS look & feel and functioning model, based on FFT scenarios, development. It is to be developed. But there is one very important moment here: while the necessary tool development, already existing tool and informational technologies are used and integrated.

The question of the whole project representation in database form necessity is very important. It is necessary to find some useful and practical solution for the project database development. The development stages database structure is represented on Fig.5.

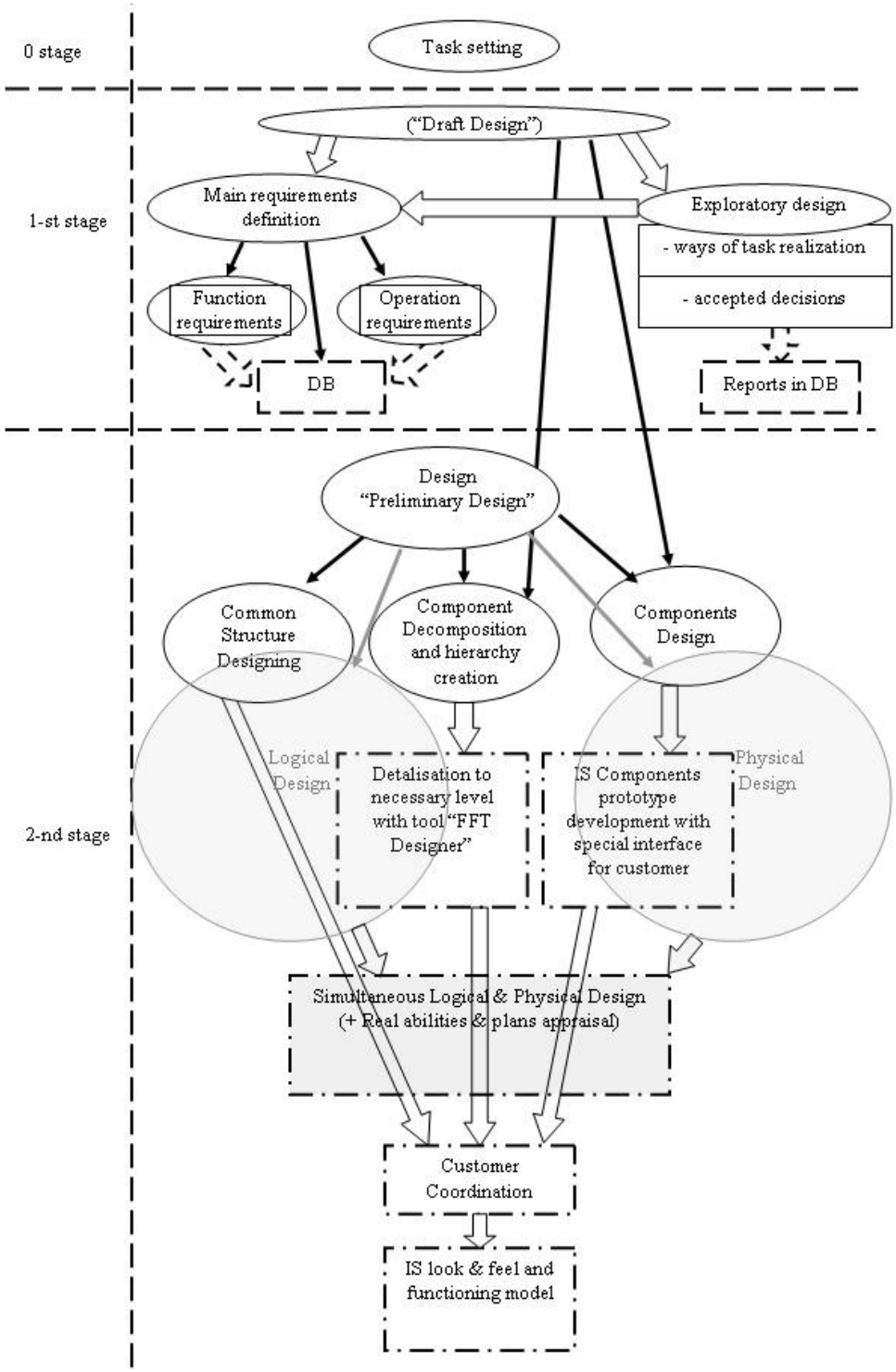


Figure. 1. Standard and modern "Draft & Preliminary Design" integration

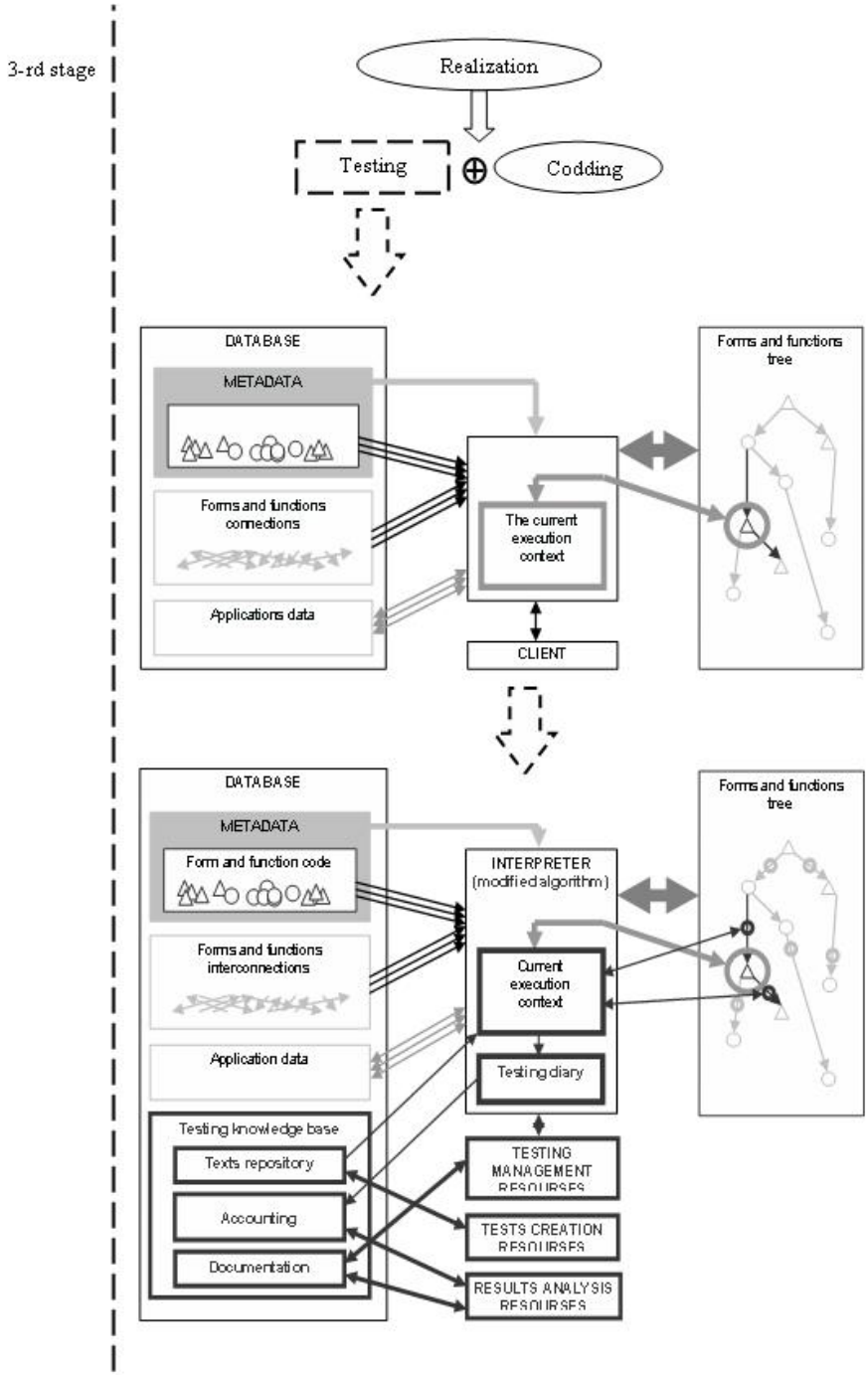


Figure 2. Standard and modern approach to IS realization stage

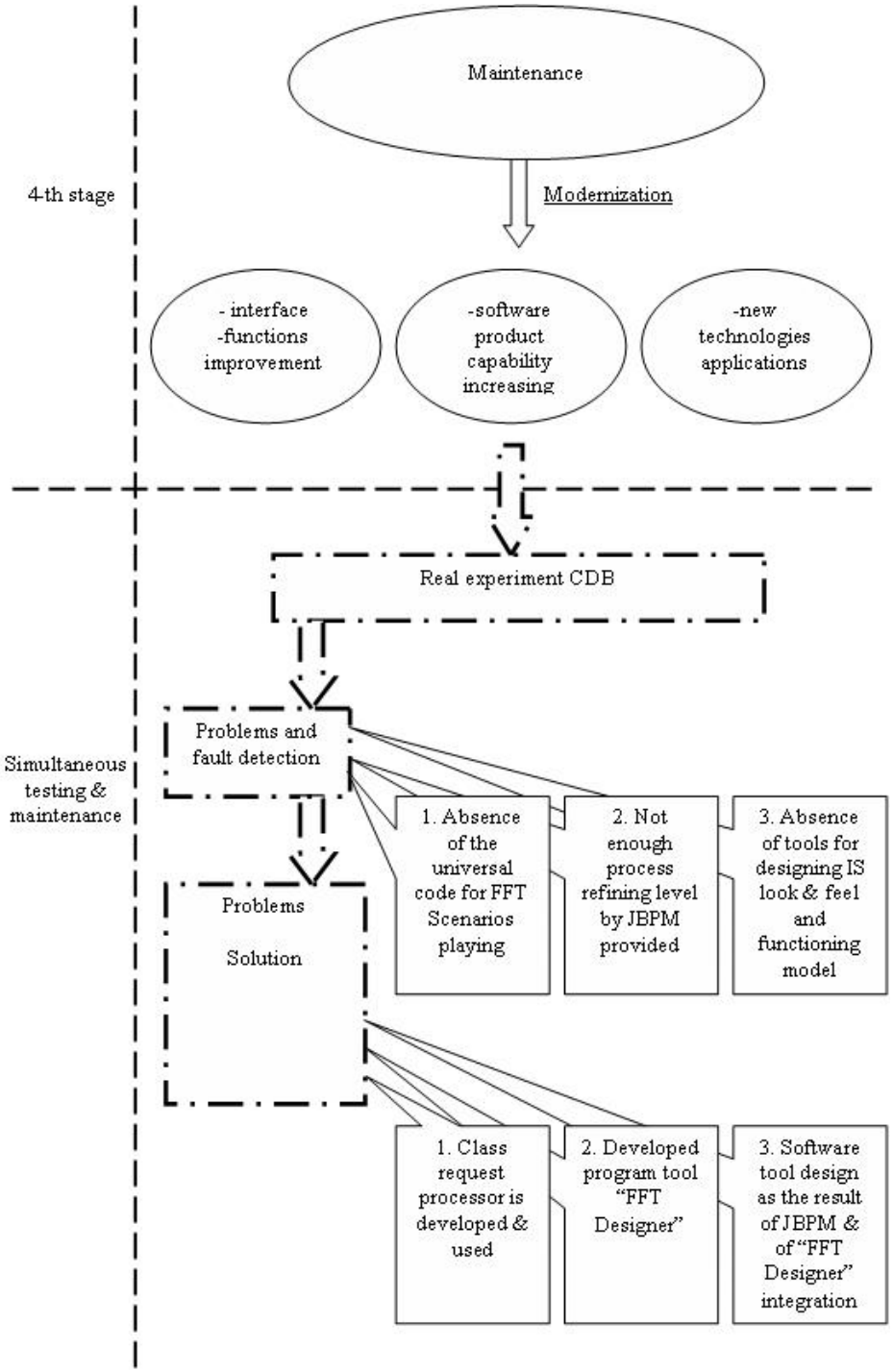


Figure 3. Modified points and problems in standard maintenance while real experiment

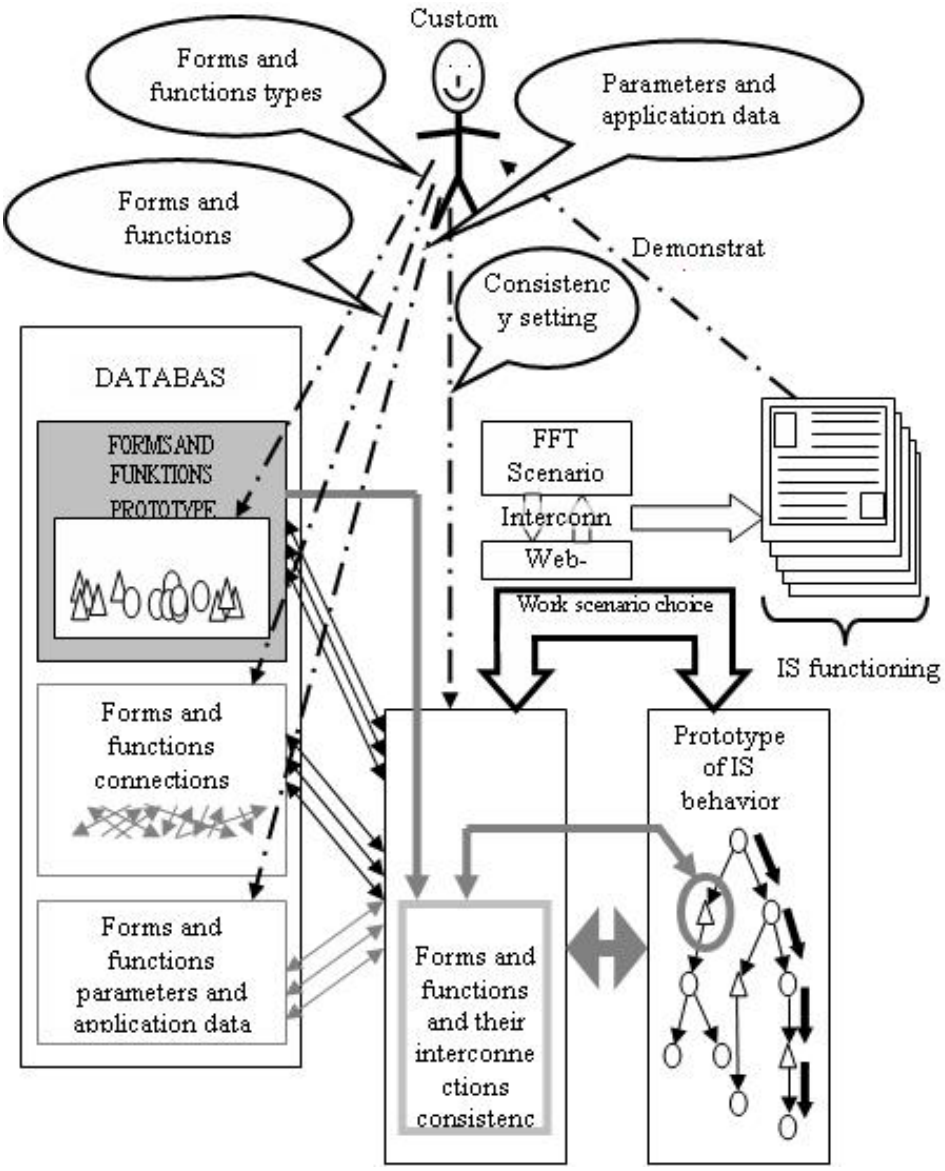


Figure 4. Demo mode designing process

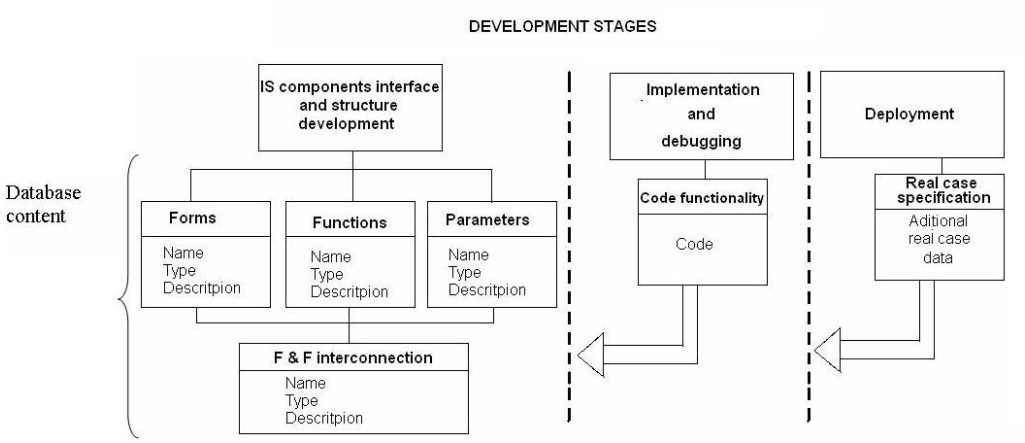


Figure 5. Development stages database

In the suggested realization, all project data, information, objects and entities are stored in separate blocks, corresponding to the development stage. As the result of such diagram designing, it becomes clear, that IS components interface and structure development is the key stage in IS development. It makes the greatest influence on the project completion success.

The second idea, connected with project database is 2 outer subschemas of database structure representation. They are:

Corporation Team Development Database (DB). It supports project development independence from developers (participants) and time and also provides project integrity.

File Form Database for Every Participant of Development Team. It provides portability of project parts, every part and development step independence from time and place.

Going to the fourth stage and real experiment, it should be said, that JBPM [3] was applied for experiment realization. Some problems appeared while realization of the informational exchange between CDB Regional and Central segments that can be clearly seen on the Fig.3. The solutions, which would remove appeared problems were successfully found (Fig.3).

3. Conclusions

1. IS all development stages were considered and applied, as the result – new software and methodological solutions were developed.

2. Modified solution of IS development process steps (Fig. 1, Fig.2, Fig.3) and its new conceptions (Fig. 4, Fig. 5) give the following advantages:

new developed software tools allow to design IS look & feel and functioning model;

simultaneous logical and physical design allows to appreciate real abilities and make IS design plans while “Preliminary Design”;

IS development stages DB provides:

convenient data structure representation and modernization;

easier error finding and their correction;

2 outer subschemas of database structure representation provides:
time & place independence of IS development process;
project parts portability;
3. JBPM mechanisms as the solution for FFT scenarios playing are applied.
4. New software solutions are realized: “FFT Designer” (Modified version of “Designer” [4]) and “Process Execution Core” (Designer and JBPM integration).

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