ALGORITHMS FOR DESIGNING PROCESSES OF ELECTRONIC INTERACTIVE SERVICES

Ozod Radjabov
Tashkent university of information technologies (TUIT), Uzbekistan, uznis2015@gmail.com

Follow this and additional works at: https://uzjournals.edu.uz/tuitmct

Part of the Computer and Systems Architecture Commons, and the Data Storage Systems Commons

Recommended Citation

This Article is brought to you for free and open access by 2030 Uzbekistan Research Online. It has been accepted for inclusion in Bulletin of TUIT: Management and Communication Technologies by an authorized editor of 2030 Uzbekistan Research Online. For more information, please contact sh.erkinov@edu.uz.
ALGORITHMS FOR DESIGNING PROCESSES OF ELECTRONIC INTERACTIVE SERVICES

УДК: 004.04

Radjabov O.S.
TUIT, Head specialist Department of scientific research

Today, the integration of electronic interactive services is based on the correct placement of algorithms to ensure solidarity in information systems, the design stages of information systems based on interactive services and the corresponding events, the implementation of functions in a strict sequence.

It is necessary to define the elements and functions in the design of processes of electronic interactive services. To do this, the main elements of electronic interactive services listed in the previous paragraphs are as follows:
1. Employee (E)
2. Citizen (C)
3. Government (G)
4. Businessman (B)
5. Non-commercial sector (N)
6. Foreigner (F)

There are two most popular approaches to designing e-interactive service processes: system-based and object-oriented.

The first difference between these approaches lies in the principles of decomposition and structural organization of the elements (components (elements), modules (sets of functions) of the system. According to these principles, the process design is interconnected by certain relationships which is a structure consisting of clearly defined modules.

When using a structural approach (the first type of decomposition), a functional (procedural, algorithmic) decomposition of the process design is performed, it is used as a hierarchy (tree) of interrelated functions. At the highest level, the system is presented as a single whole with the highest level of abstraction, and as detailed (adding levels), it is divided into functional components with more specific content.

The second approach to decomposition in process design is object-oriented design. In this approach, the system is divided into a set of objects that correspond to real objects that interact with each other by sending messages.

The second difference is that object-property data (properties) and events (functions, methods) are combined, so that functions and data are stored separately in function-oriented systems.

The third difference between the two approaches is the structural functions within the system modules. In the structural approach, the project consists of functions that are hierarchically related to the compositional relationship, i.e., the function consists of a subfunction, a subfunction, and so on. In an object-oriented approach, hierarchy is constructed using two relationships: composition and subcomposition. In an object-oriented approach, an "object-property" can be entered
into several "object-functions" at once. Thus, in the structural approach it is possible to create as a project structure, and in the object-oriented approach - as a directional graph, that is, a more general structure is used.

The design of information systems processes was chosen using an object-oriented approach. Here are some of the most popular ways to support this approach today:
- Unified Process, UP;
- eXtreme Programming, XP;
- Agile Modeling, AM.

The main means of recording the results of system design using these methods are modeling UML, EPC-diagrams.

For an object-oriented approach, an event-driven process chain (EPC) is a type of diagram used to model, analyze, and design business processes, and to reorganize (functional modeling) [39]. However, EPC diagrams can be used to model individual parts of the system when performing functions and to replace traditional processes.

Based on the above, we divide it into two to design e-interactive service processes. These are,

1. The process of interactive service in the information system of the organization (A)
2. Process in the public interactive service information system (B).

These processes are described in the first chapter, the introduction of interactive services in information systems.

These A processes are designed differently depending on the internal nature of the organization and, most importantly, to whom it is addressed. It is also divided into sending and receiving processes. But process V is done in the same process for any type IX. In this regard, based on the above IX elements (E, C, G, B, N, F), it is possible to design through the functions of the corresponding processes, regardless of its type. Given that the process consists of several stages, they have similar (same) stages and separate stages.

The stages of information technology for the types of electronic interactive services are defined below.

1. $L_1$ – system input (E, C, G, B, N, F);
2. $L_2$ – Selecting a software application from an automated workplace (E, C, G, B, N, F);
3. $L_3$ – Permission To the Human Resources Department and to the trade union (E, G, B, N);
4. $L_4$ – Select the type of interactive service (E, C, G, B, N, F);
5. $L_5$ – Wait for permission to automatically generate data (E, G, B, N);
7. $L_7$ – Sending the result to the organization's database of interactive services (E, G, B, N)
8. $L_8$ – Sending the result to the information system of the state interactive services (E, C, G, B, N, F);
9. L9 – Receiving results from the information system of public interactive services (E, C, G, B, N, F);

10. L10 – Sending from the organization’s information system database (E, G, B, N)

11. L11 – Complete the work (E, C, G, B, N, F);

12. L12 – Verification of personal information (C, F);

13. L13 – The legal attitude of the state body (G, B, N);

14. L14 – Higher organ approach (G);

15. L15 – Transfer of the interactive process of information to the software application (E, C, G, B, N, F);

Based on these definitions, the following sequence of steps can be expressed for the elements of electronic interactive service types:

1. For the employee of organization (E):
   \[ E = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12\} \]

2. For citizen (C):
   \[ C = \{1, 2, 4, 13, 6, 8, 9, 12\} \]

3. For the government organization (G):
   \[ G = \{1, 2, 4, 5, 6, 14, 15, 7, 8, 9, 10, 11, 12\} \]

4. For the businessman and non-commercial sector (B, N):
   \[ B = \{1, 2, 4, 5, 6, 14, 15, 7, 8, 9, 10, 11, 12\} \]

5. For the foreigners (F):
   \[ F = \{1, 2, 13, 4, 6, 8, 9, 11, 12\} \]

For the types of electronic interactive services, each stage of the information system is designed using an EPC-diagram.

1. L1 - access to the system (E, C, G, B, N, F) EPC-diagram project

   ![Figure 1. Draft EPC-diagram of L1 stage.](image1)

2. L2 – Selection of software application from the automated workplace (E, C, G, B, N, F) EPC-diagram project

   ![Figure 2. Drawing of EPC-diagram of L2 stage.](image2)

3. L3 - Draft EPC-diagram of Human resources department and trade union access (E, G, B, N)
4. **L₄** - Selection of interactive service type (E, C, G, B, N, F) 

**EPC-diagram project**

**Figure 3.** L₃ босқичнинг Drawing EPC-diagram project for L₃ step.

**L₅** - Waiting for permission to automatically generate data (E, G, B, N) 

**Draft EPC-diagram**

**Figure 4.** Draft EPC-diagram of L1 stage.

6. **L₆** - Representation of service classification (E, C, G, B, N, F) 

**Draft EPC-diagram**

**Figure 5.** Draft EPC-diagram of L1 stage.

7. **L₇** - Draft EPC-diagram of the transfer of the result to the database of interactive services of the organization (E, G, B, N)

**Figure 6.** Draft EPC-diagram of L1 stage.

8. **L₈** - Transmission of the result to the state interactive service information system (E, C, G, B, N, F) 

**Draft EPC-diagram**

Radjabov O.S.

2019, 2 (45)
Figure 7. Draft EPC-diagram of L1 stage.
9. L9 - Draft EPC-diagram of the reception of the result from the state interactive service information system (E, C, G, B, N, F)

Figure 8. Draft EPC-diagram of L1 stage.
10. L10 – Draft EPC-diagram of transmission from the database of interactive services of the organization (E, G, B, N)

Figure 9. Draft EPC-diagram of L1 stage.
11. L10 – Sending of information to the software application for the interactive process (E, C, G, B, N, F) EPC-diagram project

Figure 10. Draft EPC-diagram of L1 stage.
12. Completion of L11 (E, C, G, B, N, F) EPC-diagram project

Figure 11. Draft EPC-diagram of L1 stage. 13. L12 - Draft EPC-diagram of personal data verification (C, F)

Figure 12. Draft EPC-diagram of L1 stage.
14. L13 - Draft EPC-diagram of the legal attitude of the state body (G, B, N)
The designed stages and the corresponding event, the performance of functions are carried out on the basis of a strict sequence. Therefore, if these step-by-step processes are interconnected through a data structure, an appropriate process is implemented for each element of the interactive services. Social development can also change these elements and their processes. Therefore, planning should be done for the dynamic organization of interactive services.

References


8. Энциклопедия компьютерных вирусов Евгения Касперского //Электронная версия 2010.