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Tool Means of Organization and Support of Electronic Services to the Population

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Abstract

Approaches to creation, tool support and realization of services with usage of information technology – creation of business of services in electronic form are considered in this article.

Keywords: electronic services to the population, information technology, a producer of electronic services to the population, language for formalization of regulations of services.

One of the most actual directions of social and economic development of any modern state is modernization of sphere of providing the population with services with the help of information and telecommunication technologies and its transformation into an electronic form.

Electronic services to the population (ESP) are any kind of services which are delivered by organizations of all patterns of ownership and of various areas of a national economy, by businessmen, physical and juridical persons, citizens of the country, foreign citizens and stateless persons with the usage of means, instruments and methods of information technologies [1].

Creation of business which, on the one hand, with usage of information technology will provide a large-scale appearance of services of professional resources suppliers in the market, and possibility to expand a spectrum and to raise the service quality that is offered to consumers, on the other hand, is the extremely actual nowadays. Thus, for providing of an effective realization of ESP it is necessary to create technologies and tool means of creation, support and realization of ESP including management of orders, of processes of objects and subjects interaction of providing of ESP, the coordination of actions of all

participants of this process, management of databases and databanks, monitoring of service realization, etc.

Now there is a set of the isolated tool means providing support for realization of services, including the realization in an electronic form. Each organization independently determines the principles and functions of such systems.

The generalized scheme of realization of ESP offered by authors is presented in Figure 1.

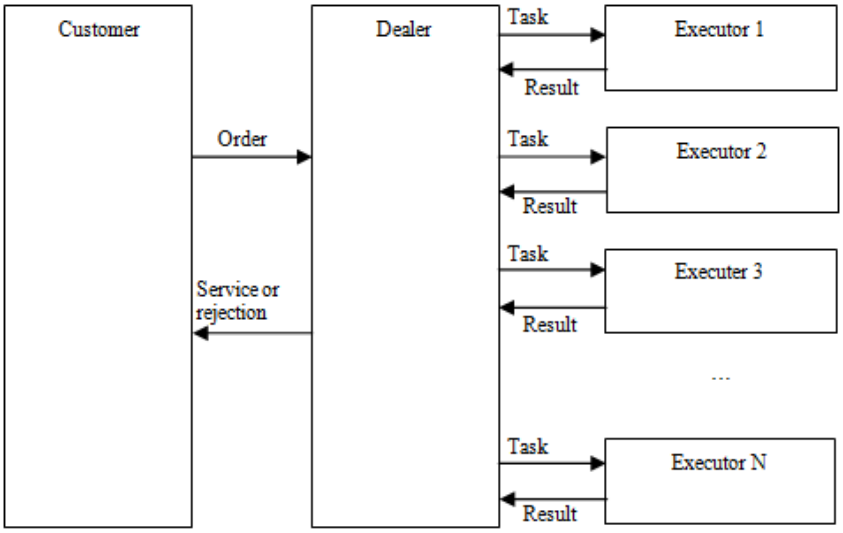

Figure 1. The generalized scheme of ESP providing

Three parties participate in realization of any service: the customer, the dealer and the executor. In the course of carrying out of one concrete service one customer and one dealer are the compulsory participants. The number of executors can vary. The customer receives service. Both for state, and for other services, a businessman, a physical or juridical person can play the role of a customer. The dealer is the organization where a person addresses wishing to receive service. Each dealer has its own list of services he can fulfill.

It is necessary to develop the universal mechanism providing effec-

tive interaction of the customer, the dealer and the executor at ESP realization.

It's worth mentioning that for the purposes of the adequate and developed infrastructure of e-services business creation it is necessary to involve an intellectual resource of the country, first of all, the young specialists having enough knowledge and skills in modern sphere of information and telecommunication technologies, of economy and jurisprudence. It is the extremely important that while working in this sphere they will not only participate in the development of the real national economy but also create professional collectives of software developers, of creation and adoption of modern automated control systems in social and economic sphere. It also determines the necessity of a specialized professional training.

The first obstacle on the way of ESP realization is the absence of accurate regulations of all operations and their components. The detailed description of electronic service promotes the future improvement of the quality of regulations, effective realization of the control of providing an electronic service, an objective estimation of the participants in the process.

At present there are several tools which we can use to describe the ESP's regulations: IDEF methodology; block diagrams; UML; Petri net.

The following Table 1 sets the advantages and shortcomings of these tools. All tools considered above are universal enough and excessive at once but not all of them are evident and simple for understanding. In addition there's no tool that can reflect the specificity of the process of the ESP providing.

The main conclusion of the analysis is that special language is required. This language must have the following features:

- it should be a graphical one for more evident and easy understanding of the service providing, drawing up and edition;
- it should correspond to principle of decomposition as services can have quite a difficult structure and its levels decomposition will simplify understanding and making the regulations;

Table 1.

Tool means	**Advantages**	**Shortcomings**
IDEF	Decomposition Glossary Junction	Absence of conditions Don't reflect the specific of e-services
Block diagram	"if-then-else" construction Easy to describe the actions	Unable to show the concurrent actions There is no unconditional transition
UML	There are many points of view Easy to show the interactions of actions, terms of services, the role of participants in service providing	It is necessary to use several kinds of diagrams at once
Petri net	Support of the parallelism and asynchrony	Hard for understanding

- it should be able to mark out the operations that can be carried out in parallel with indicating the time of their end;
- it should have an element that lets make branches depending on carrying out of this or that condition;
- it should be able to use unconditional transitions;
- it should have a special element for representing the service having the only input and two outputs (successful accomplishment and refusal);
- it should have a special element for describing an action having just one input and one output, so for describing such an operation that will be fulfilled anyway;

- it should be simple and should not contain a big deal of different operators;
- it should be able to determine an executor, cost, resources and other information for services;
- it should be able to point out the deadline for carrying out the service or the set of services.

According to the specific requirements mentioned above the language of services description LOGI [2] has been developed. The usage of the given language allows to get such advantages as improvement of description of regulations quality, implementation of control of the service providing, making the rating of dealers and suppliers of electronic services. One of the main features of the LOGI language is availability of the only input corresponding to the request of the customer, and two outputs – successful accomplishment and refusal. And quite not a big amount of elements of this language ("Simple action", "Compound action", "The action Beginning" and "The action End", "Simple service", "Compound service", "The Positive exit of service" and "The Negative exit of service", "The Choice of alternatives", "Concurrent actions", "Unconditional expectation", "Expectation on a condition", "Connecting vector") allows completely to describe any regulations with the needed level of detalisation [2].

The example of compound action "To make an application for foreign passport receiving" described in LOGI is presented in Figure 2.

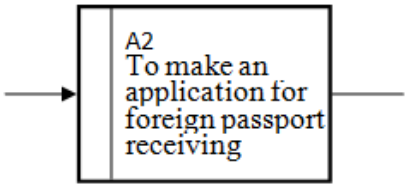

Figure 2. The sample of compound action

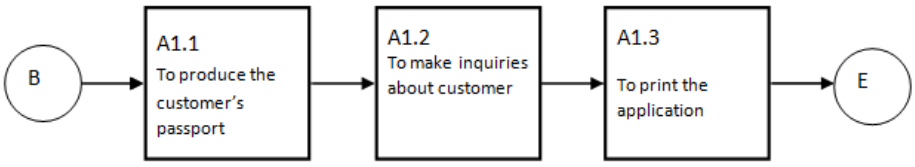

Figure 3. The sample of compound action's decomposition

Let's have a look to the example of an order of creation and the description by the presented language the state service "The State registration of an ownership of object of inhabited appointment as inheritance for natural persons". The providing of the given service demands presentation of many documents and includes a considerable quantity of other subservices, that is why its description is divided into some levels.

Zero level is presented in Figure 4. The service here is an action as at any conditions accomplishment should come to the end with the giving out of documents or certificates of the state registration of the ownership or the written notice of the reject of state registration of the ownership.

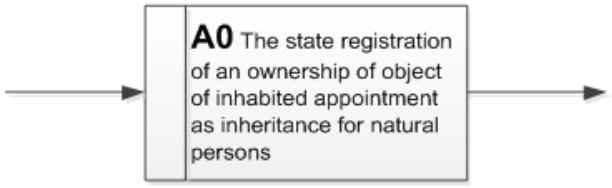

Figure 4. The zero level of service description

Operations of the giving out of the mentioned documents are presented as simple actions at the first detail level shown in Figure 5 (considered service is designated S1).

The detailed elaboration of S1 is presented at the second level (Figure 6). It is clear from the description what documents are necessary for the service providing. The operations of documents providing are

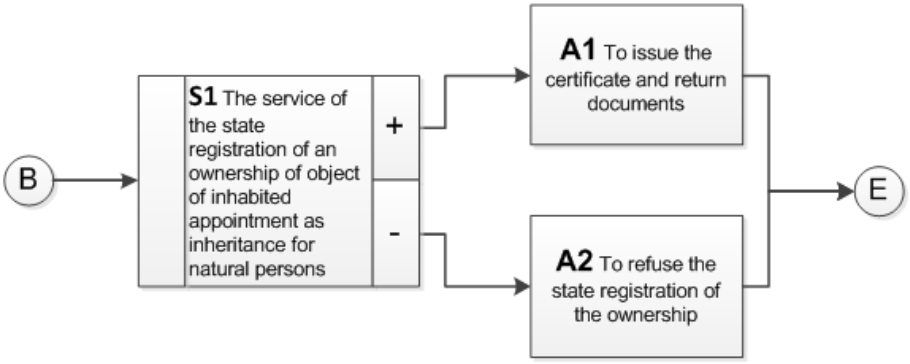

Figure 5. The first level of service description

described as compound actions.

It is necessary to confirm the competency of the applicant for service fulfillment (S1.S3). This operation is allocated in a separate compound service, the detailed description of which is presented in Figure 7.

The applicant or his holder of power can initiate the service. The holder of power can do this only if he has the notarially certified letter of attorney. Also for minors, incapacitated and partially capable customers the permission of the guardianship and trusteeship body is required.

The detailed elaboration of subservice S1.S4 is presented in Figure 8. After accomplishment of all necessary actions and positive completion of all subservices, there is a decision making to issue the certificate or refusal in the state registration of the ownership.

Decision making procedure is described in detail in service regulations, but it is identical to any customer and consequently is described as the simple service (S1.S5). Then, depending on the agreed conclusion, there is a certificate registration, or refusal (S1.A1 or S1.A2).

The regulations have been developed is the basis for the plan-schedule. This schedule determines the time parameters of service's works. There are special time marks of works that have been finished.

It is necessary to notice that the constituted plan-schedule gives

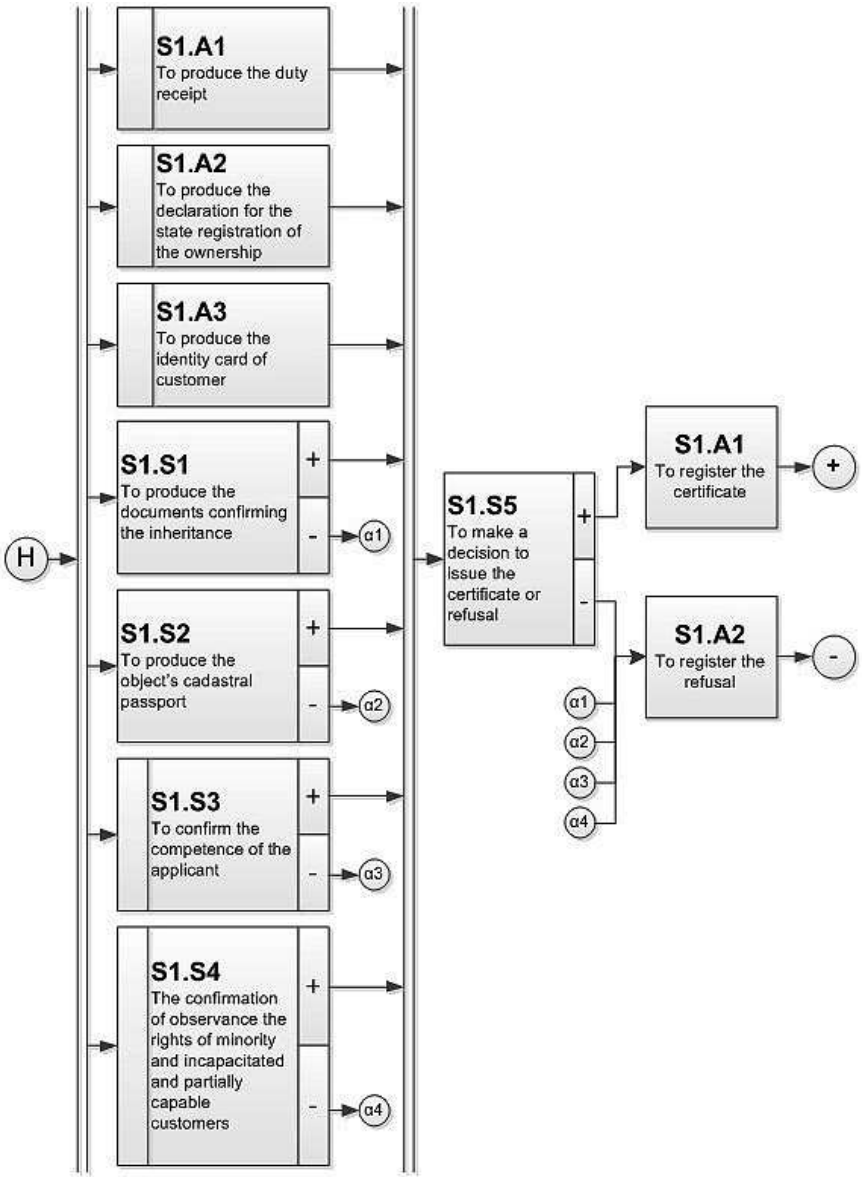

Figure 6. The second level of decomposition

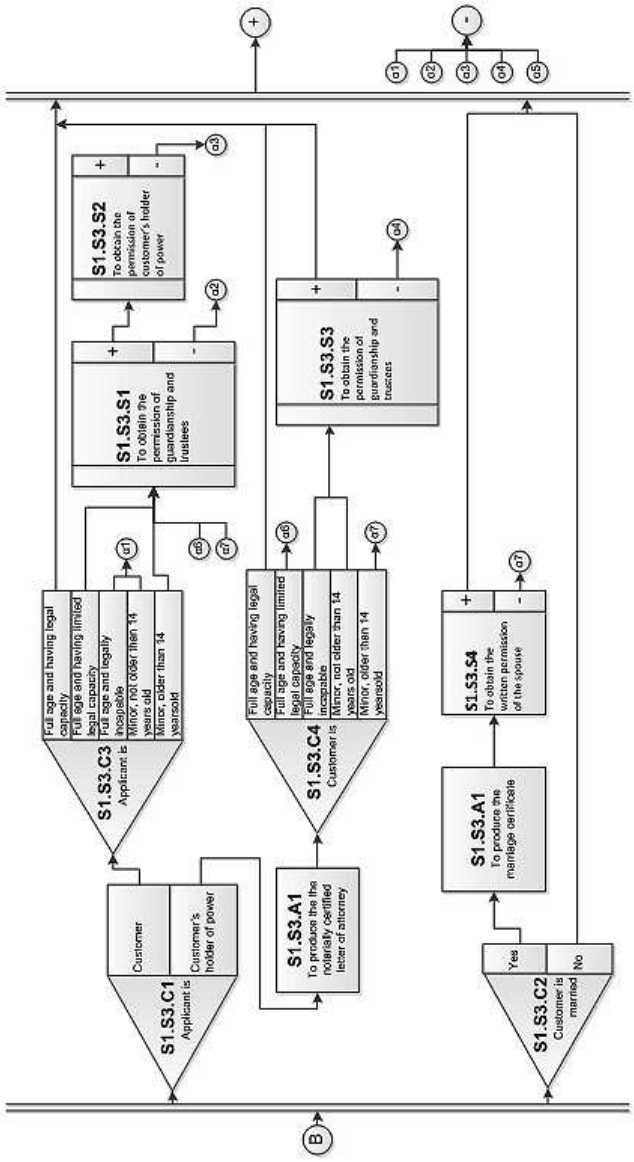

Figure 7. The third level decomposition (S1.S3 description)

to supplier possibilities for the control of the service providing. For this purpose, check points are put down automatically on the created chart. They will be placed at the end of each operation carried out consistently and at the end of each concurrent frame of regulations. But it is not always the most successful variant – too much, or not enough amount of check points. In this case service supplier can move, remove or add some check points.

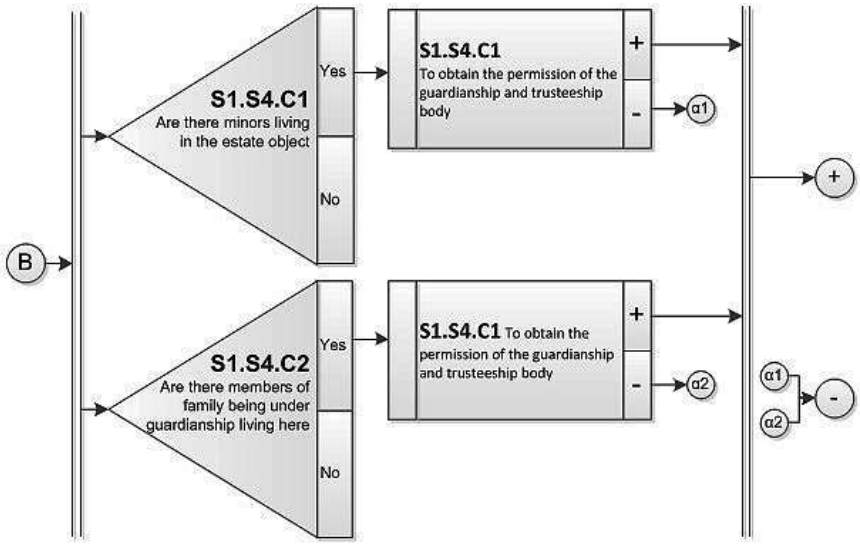

Figure 8. The third level decomposition (S1.S4 description)

Each service or action has its own executor and assigned resources. It is possible to make a choice whether exact executor or the group of executors can be stated for the given operation. After acceptance of the request the dealer can choose the concrete executor from the list. Also it is possible to add new or change the resources. Thus, the detailed plan-schedule is formed. It will be the basis for the further control of service providing and resultant indicators forming. These are: difference between the regulated and real lead time of service as a whole and each stage separately, list of the executors who have done their work in time, etc.

The plan-schedule example is represented in Figure 9. It demonstrates actions and services which are necessary for executing while service providing, the terms of the given actions and services. The check points placed and corrected by the operator are represented in the figure by black triangles.

In Figure 10 the plan-schedule state by 4/20/2011 is represented. Works which have been finished in time have diagonal shading; those which term of execution was higher than planed but it hasn't led to critical consequences – have vertical shading; the critical operation is marked with the shading by the small grid.

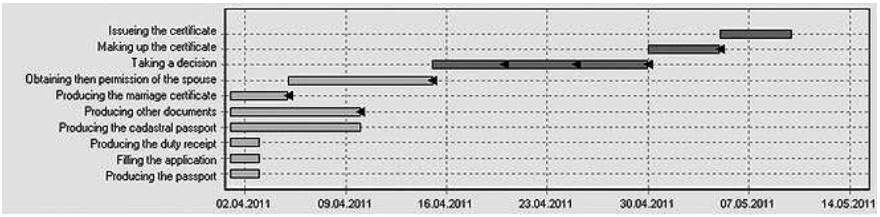

Figure 9. The plan-schedule example

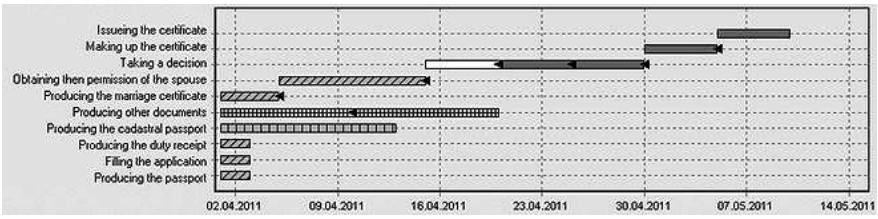

Figure 10. The actual plan-schedule

In case of violation of the total service terms, plan-schedule will be rebuilt. New plan-schedule is represented in Figure 11.

The developed language LOGI allows to develop the regulations and the corresponding plan-schedule for any kind of ESP, including new services for which there are no analogs of regulations.

Creation, introduction and business development of ESP providing in modern Russia will provide corruption decrease in this sphere; intellectual work intensification; information development in social and

economic sphere; essential time reducing and labor costs for services.

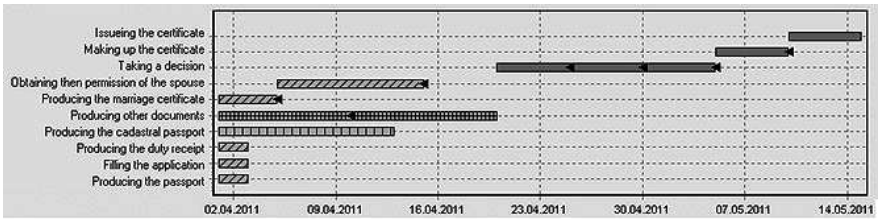

Figure 11. New plan-schedule

It is necessary to notice that for creation of the adequate and developed infrastructure of e-services business it is required active involving of an intellectual resource of the country, first of all the young specialists possessing necessary knowledge and skills in modern area of information and telecommunication technologies, of economy and jurisprudence. It is extremely important that they will not only participate in development of real national economy, but also form professional collectives of domestic software developers and ones for creation and introduction of the modern automated control systems in social and economic sphere. It determines the necessity of a specialized professional training as well.

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