

# Business processes within enterprises providing public services: reference model development

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**Abstract.** This study focuses on the development of a reference model of business processes within enterprises providing public services in the field of real estate. The study revealed key features of process approach in the system of state regulation of the real estate market, considered organizational foundations of activities and technological processes of public institutions, and modelled the main business processes of public regulation enterprise at the top detail level. Based on a detailed representation of the main, managing and supporting business processes, the reference model was developed.

## 1 Introduction

The real estate market is an important sector of the national market economy. One of the main socially-oriented functions in this market is the provision of public services, which in its essence is an effective work with information. In connection with the need to provide conditions for the implementation of the company's powers in the field of providing services for cadastral accounting and registration activities and to maintain the existing potential for improving the quality of public services, the problem of solving problems of restructuring and optimizing processes, redesigning the functional structure and implementing automation systems becomes urgent.

The function presented above is primarily implemented by the Federal State Budgetary Institution "Federal Cadastral Chamber of Rosreestr", in this connection, the consideration of this institution in order to identify the typical characteristics of institutions that provide public services to the population is the most representative.

Moreover, in the most general sense, process-oriented state regulation of the real estate market includes setting tasks and choosing a strategy for market development, registration, cadastral registration and valuation of real estate, construction of buildings and structures, taxation, etc. In this study, the business processes of state institutions will be considered on the example of the Kirov region.

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## 2 Materials and methods

In order to identify the features and conditions of the functioning of the system of state regulation in the real estate market, as well as to effectively model the business processes of a state-owned real estate enterprise, we used modelling methods based on notations, such as IDEF and BPMN, statistical analysis, the method of classifications and groupings. The information base of the research consists of the works of Russian and foreign scientists on the problems identified by the research topic, as well as analytical and statistical data.

## 3 Results

Process-oriented state regulation of the real estate market includes setting tasks and choosing a strategy for market development, registration, cadastral registration and valuation of real estate, construction of buildings and structures, taxation, etc. Consider the example of the Kirov region system of state regulation of the real estate market.

The real estate market is an economic legal space that ensures the functioning of the supply and demand of all buyers and sellers of real estate and the totality of all current transactions with it [1,2].

The real estate market of the Kirov region, in the legal field of which the branch of the Federal State Budgetary Institution "Federal Cadastral Chamber of Rosreestr" operates, is influenced by the following factors:

1. The economic situation in Russia and the Kirov region: negative trends and forecasts are reflected in the increase in demand in the real estate market, as citizens and legal entities consider it a more sustainable source of saving funds.

2. The level of income of the population: here the principle works that the higher the level of income of citizens, the more actively they are ready to solve issues with real estate. At the same time, the lower the income level, the better things are in the mortgage market of Kirov, since about 50% of the total number of real estate purchases is a purchase on a mortgage.

3. Loan programs: Lower mortgage rates attract a large number of buyers with small incomes, since the lower the loan rate, the lower the monthly payment.

4. Construction volumes: the beginning of construction and commissioning of new residential complexes, blocks and districts has a positive impact on the activity of buyers in the market.

5. Changing the status of the districts: another positive factor in the dynamics of demand in the real estate market and the increase in housing prices are the development of the infrastructure of districts, changes in transport accessibility, the opening of schools, shops, etc.

6. Psychology: the constant desire of sellers in the real estate market to raise prices leads to cyclical micro-crises, after which there is an outflow of buyers and a decline in prices [3].

It is important to point out that the state plays a very important role in the real estate market, namely:

- the state is a regulator that determines and regulates the rules and norms of the functioning of the market;
- the state is the main investor in various areas of material production (for example, housing construction, socio-cultural environment);
- the state is the supreme arbiter in disputes between market participants through the judicial system;
- the state is a market participant in the trading activity of real estate objects;
- the state as the executor of the legislative initiative;

— state is a controller of market stability and security.

At the same time, state regulation is implemented using the following groups of methods:

— administrative (methods of direct intervention), which directly use the power of state power, since they include measures of prohibition, coercion or permission;

— economic (methods of indirect influence), which are provided by the directed action of state authorities on the totality of economic relations expressed in the laws and laws of economic development.

The existing mechanism for the provision of public services in modern realities needs a significant digital transformation. Receiving services at the moment is of an application nature, which means that the applicant is required to use either the office of departmental organizations, or the office of the MFC, or the regional portal of public services. The application itself is preceded by a preparatory stage—the collection of the necessary package of documents. The Kirov Region has developed a proposed plan for the transition of public services to a non-public nature, that is, automatic. The Smart Services information platform will become the necessary legal environment for this transition.

It is also necessary to develop an algorithm for the interaction of the system and the citizen in the environment of proactive services, which should not force applicants to do even more work [4].

Currently, in the Kirov region, about 700 specialists provide public services in the field of real estate, land management and ensuring guarantees of the rights of owners. The number of requests from citizens for these services is growing every year. However, the COVID-19 pandemic has had a significant impact on the growth of the Branch's e-services. If at the beginning of 2020 the share of such services was approximately 20%, then by the beginning of 2021 it had grown by one and a half times. Citizens were offered to use the state services of the Federal Registration Service online, for example, using the Internet service "Citizens ' Appeals" on the agency's website, or to send appeals in writing. In addition, the pandemic has affected the need to improve modern services and technologies, as during this period, the number of requests to the Federal Register for on-site reception of documents has significantly increased [5,6].

The project approach is a concept of allocating the opportunity to use the identified business processes as management objects in a timely manner. For an enterprise, using this approach allows you to move from a text-based point description of the activity to a formalized one based on graphical modelling of all processes. At the same time, the management vector of the organization changes from vertical (to the boss) to horizontal (to the customer).

The main concept of this approach is the concept of a process, which is defined in the ISO 9000 standard as "a set of interrelated and interacting activities that transform inputs into outputs" [7,8]. At the same time, any process must have a system of goals based on the requirements of the output streams for which it was created. It is important to consider

the basic approach to managing business processes and improving their efficiency, developed by the international organization "Business Process Management Initiative", which combines the modelling of business processes and their automation. This approach is called "Business Process Management" (BPM) or Process Management (PU) in Russian.

At the top level, the BPM approach involves defining a management strategy (mission, goals, objectives, strategies, etc.). Next, the strategy determines the use of certain methodologies:

— methodology for modelling business processes that can take into account process management strategies;

— process analysis methodology, which may include a logical analysis of the resource environment of processes, risks, simulation results, etc.;

— optimization methodology, which can include evolutionary and revolutionary ways to improve business processes.

The tools at the top level are responsible for describing and documenting, analyzing, and optimizing the organization's business processes. At the middle level, tools provide support for the information infrastructure, while lower-level tools are responsible for automating processes.

Process management is aimed at the formation of purposeful activity of the organization through the modelling and management of interrelated processes of the organization and their resource environment. Process design is directly related to the use of a reference model – a kind of reference model for the organization of business activities, developed for a specific area of the economy. The reference model is necessary in order to integrate processes, IT systems, information and data, to ensure accuracy and methodology, to see and analyse relationships, to provide an informative environment for rapid implementation of process changes.

The organization's business process modelling is based on the following basic principles:

- relevance or reasonable sufficiency: the model should not contain more information than necessary;
- integrity or consistency: integration of different types of models based on a single meta-model;
- comparability of costs and benefits: a balance is needed between the amount of effort to create a model and the usefulness of its use;
- decompositions: to make it easier to understand, break down the model into different types of representations;
- top-down modelling: building top-level models;
- comparability: a single modelling language and infrastructure
- focusing resources on the main aspects of the activity and on the "pain points" of the applicants [9].

The modelling process allows you to identify such errors of the organization when building its activities, such as:

- violation of information transmission: the information exchange between the source of information and its recipient is disrupted, which can lead to failures in the organization's work system;
- unused information: data is created that is not passed to other processes and is not used by any function of the process. All this turns into excessive paperwork and a huge number of unnecessary documents;
- unproductive business process: the process is not able to produce anything "useful";
- "hostile" business process: the process harms the organization's system of work;
- mismatch of process and management: methods of managing a business process do not correspond to its essence, etc.

A necessary condition for the successful implementation of any changes in the organization is to solve the problems of restructuring and optimizing processes, redesigning the functional structure and implementing an automation system. The use of the reference model allows you to significantly simplify and speed up the results. However, the development of a reference model is impossible without a detailed consideration of each business process of the enterprise providing public services in the field of real estate [10,11].

Next, we will discuss each of the three groups of business processes in more detail. Managing business processes cover the entire range of management functions at the level of the business system as a whole and each individual business process. The top-level

management business processes of the branch of the Federal State Budgetary Institution "Federal Cadastral Chamber of Rosreestr" in the Kirov region are presented in Table 1.

**Table 1.** Top-level management business processes of the branch of the Federal State Budgetary Institution "Federal Cadastral Chamber of Rosreestr" in the Kirov region.

Managing business processes at the top level of the branch of the Federal State Budgetary Institution "Federal Cadastral Chamber of Rosreestr" in the Kirov region	
Human Resources Management	
Department of Legal and Personnel Support	
Search and hiring of personnel	Staff adaptation
Staff training	Employee incentives
Evaluation and certification of personnel	
Financial Management	
Financial and Economic Group	
Management of cash flows of state budget funds	Planning of activities that generate additional income
Cost management	Financial risk management
Information Technology Management	
Information Technology Department	
Site operation management	Management of work on the protection of information and information constituting a state secret
Formation and implementation of a unified technical policy	Creating and maintaining up-to-date service catalog
Organization of activity planning and control	
Department of Control and Analysis of activities	
Analysis of the effectiveness of the Branch's activities	Monitoring the quality and availability of public services
Management and adjustment of the personnel policy of the Branch	Monitoring the execution of letters, orders and instructions
Summary of the results of inspections of structural divisions	
Managing interagency relations	
Inter-district department	
Interaction with the MFC	Interaction with public authorities
Interaction with the media	Informational interaction with cadastral engineers

The main business processes are targeted for the organization. The main business processes of the top-level branch of the Federal State Budgetary Institution "Federal Cadastral Chamber of Rosreestr" in the Kirov region are presented in Table 2.

**Table 2.** Main top-level business processes of the branch of the Federal State Budgetary Institution "Federal Cadastral Chamber of Rosreestr" in the Kirov region

The main business processes of the top-level branch of the Federal State Budgetary Institution "Federal Cadastral Chamber of Rosreestr" in the Kirov region	
Provision of public services	
Information Preparation Department	
Inter-district department	
Receiving requests and applications from applicants and informing them	Issuing statements and documents
Registration of rights and documents	Interaction with the MFC
Formation of analytical information	Formation of requests to state authorities
Maintaining the Unified State Register of Legal Entities	
Database Normalization Department	
Department of Document Processing and accounting Support	
Department of ensuring the maintenance of the Unified State Register of Legal Entities	
Entering information and identifying	Verification of USRN information

technical errors in the Unified State Register of Legal Entities (USRN)	
Maintaining an arrest record book	Restoring Information
Provision of information, reference, analytical and consulting services	Import of electronic documents
Conducting land management works	
Department of Cadastral and Land Management Works	
Drawing up a center drawing of the boundaries of the property	Setting object boundaries
Preparation of land management documentation	Determining the coordinates of OMS points
Preparation of maps of land management objects	
Determination of cadastral value	
Cadastral Value Determination Department	
Determination of cadastral value	Identification of technical and registry errors
Creating draft cadastre records	

**Table 3.** Providing top-level business processes of the branch of the Federal State Budgetary Institution "Federal Cadastral Chamber of Rosreestr" in the Kirov region

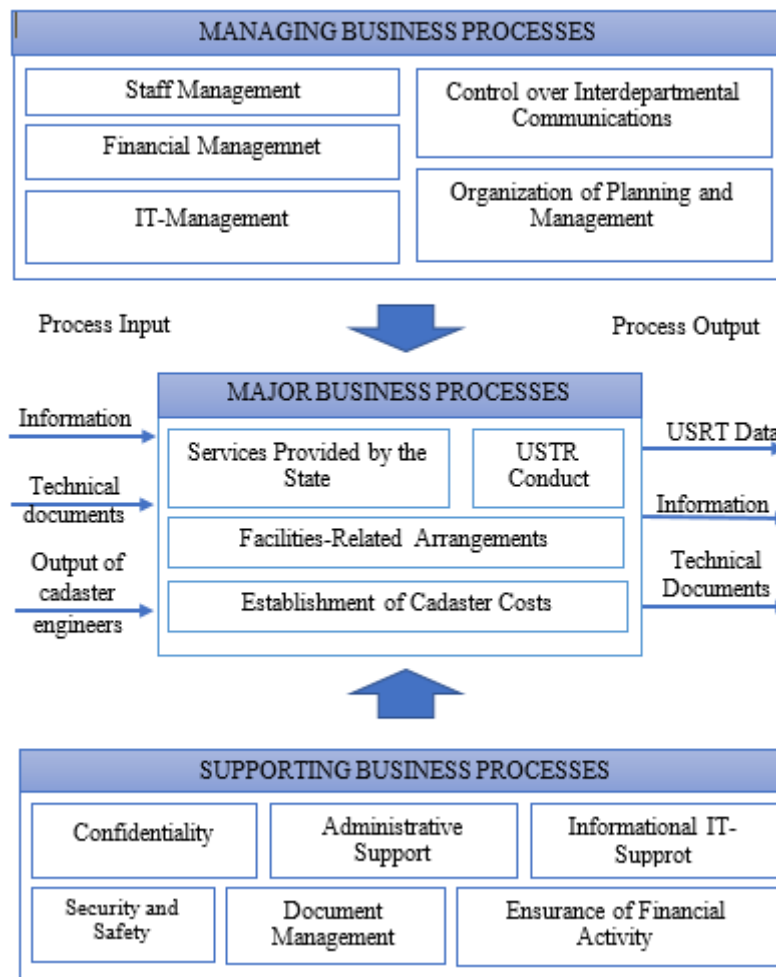
Providing top-level business processes of the branch of the Federal State Budgetary Institution "Federal Cadastral Chamber of Rosreestr" in the Kirov region	
Ensuring data protection	
State Secret Protection Group	
Licensing of the Branch's activities in the field of state secret protection	Organization and management of secret records management
Monitoring of compliance with the secrecy regime	
Administrative support	
General Support Department	
Record keeping on documents	Development of local acts and regulations
Maintaining a consolidated list of Branch cases	
Safety and security	
Mobilization Training Group	
Organization and conduct of civil defense events	Development of safety data sheets
Organization and implementation of fire safety measures	Organization of work on anti-terrorist protection
Protection of the object in case of mass riots	
IT information support	
Information Technology Department	
Providing the Branch with office equipment	Debugging video surveillance systems and data protection
Software installation, firmware, cloning, programming, BIOS setup	Access to communication services (Internet, telephony, etc.)
Testing new versions of software products	
Archive management and document management	
Archive Management Department	
Storage of registry file volumes	Organization of the document flow system
Formation and maintenance of the archive in paper and electronic form	Consideration of requests for information
Development and execution of documentation	
Ensuring financial performance	
Financial and Economic Group	
Maintaining accounting records	Maintaining tax records
Making payments	Preparation of reports

The main business processes are targeted for the organization. The main business processes of the top-level branch of the Federal State Budgetary Institution "Federal Cadastral Chamber of Rosreestr" in the Kirov region are presented in Table 2.

Providing execution of the main business processes and support their specific features of auxiliary or supporting business processes, the top-level business processes of the branch of the Federal State Budgetary Institution "Federal Cadastral Chamber of Rosreestr" in the Kirov Region are presented in Table 3.

#### 4 Discussion

On the basis of the business processes presented above, it is possible to create a reference business model for an enterprise in the field of public services in real estate.



**Fig. 1.** Reference business model for the public services enterprise in real estate.

The conceptual reference model developed in the framework of this study and presented above formalizes typical top-level business processes, horizontal and vertical connections of the branch of the Federal State Budgetary Institution "Federal Cadastral Chamber of Rosreestr" in the Kirov region.

## 5 Conclusions

The basis for the influence of the state on the relations in society that arise about real estate is created in the aggregate by cadastral accounting, valuation, registration of rights and taxation on real estate. Public services in the field of real estate in the Kirov region are mostly provided by the territorial bodies of ministries and departments and the MFC, about 700 specialists provide their provision. However, the COVID-19 pandemic has also had a significant impact here: if at the beginning of 2020 the share of electronic services was approximately 20%, by the beginning of 2021 it had increased by one and a half times; the number of requests for on-site reception of documents has increased; there is an urgent need to improve modern services and technologies [12, 13].

The branch of the Federal State Budgetary Institution "Federal Cadastral Chamber of Rosreestr" in the Kirov Region ensures the implementation of the Rosreestr's powers in the field of state cadastral registration, registration of rights to real estate and the provision of public services. Two strategic areas of development are of the highest priority: digitalization and improving the quality of services provided.

When analyzing the activities of the Branch, a process approach was used – a management concept in which the entire management of the enterprise as a whole is considered as a set of business processes that need to be managed to improve the quality of the organization's work [14, 15].

As a result of the research, a conceptual reference model of the organization was developed, consisting of three types of business processes (Fig.1):

- managing: personnel management, information technology, interdepartmental relations; financial management; organization of activity planning and control;
- main: provision of public services; maintenance of the Unified State Register of Legal Entities; management of land management works; determination of cadastral value;
- providing: ensuring the protection of information, financial activities; administrative support; security and safety; IT information support; archive management and document management.

Since the reference model is a set of interrelated functions, for each of which information objects and the performer are defined, and the elements of this model include references to the objects of the information system, in the future, on the basis of the proposed model, it will be possible to implement a number of measures to improve the work of enterprises of this type. For example, the prospect of reengineering business processes with a focus on the customer-oriented path, identifying the main problems in the work of enterprises, developing proposals to improve the quality of services, etc. is achievable.

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