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| --- | --- |
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**Methodological recommendations on creation of**

**IT Services Catalog**

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# General statements

## Purpose and objectives of the document

This document provides methodological guidelines for creating the IT Service Catalog, Service Classifier and Service Specifications, as well as the Object Classifier, Object Catalog and Operations Directory.

The main objectives of this document are:

* assistance in implementation of the service approach to IT activity management at the Customer's enterprises.
* simplification of the Customer's Service (hereinafter referred to as “CS”) activity on regulation of services required by the Functional Customer (hereinafter referred to as “FC”).

The service approach to managing IT activities is embedded in the Customer's standards:

* “Standard of management of services in the field of information technologies of the Customer;
* “Standard for provision of services in the field of information technologies of the Customer.

This document develops the above standards in terms of:

* high-level description of the process of creating the IT Services Catalog, Service Specification, Service Classifier, Service Classifier, Object Classifier, Object Catalog, Operations Directory introduced by the above standards;
* methodological recommendations for creating a package of the above documents;
* description of the methodology for calculating the cost of services.

## Scope of the document

The scope of the document applies to the Customer (hereinafter referred to as the PROVIDER).

## Regulatory documents

This document was created on the basis of existing regulatory and methodological documents in the field of regulating the Customer's IT activities:

* Standard for provision of the Customer's information technology services
* Standard of management of services in the field of information technologies of the Customer
* Main provisions of the Customer's Information Technology Technical Policy

## Adaptation and development of the methodological recommendations

On the basis of these recommendations, each Enterprise should develop and approve: Classifier of services and Classifier of objects, for use at all enterprises and branches of the Enterprise. These documents shall be developed by the NW of the COMPANY in coordination with the Federal Law and shall be reviewed on a regular basis, at least once every two years.

Each enterprise and having its own Customer Service (CS) on the basis of this document should develop and implement: IT Services Catalog, Object Catalog and Operations Directory. The document IT Services Catalog is developed by the enterprise's CCO in coordination with the CCO, and the documents Object Catalog and Operations Directory are developed by the CIT in coordination with the CCO. These documents shall be updated as necessary, in case of new services or new IT infrastructure objects, in accordance with the principles described in this document.

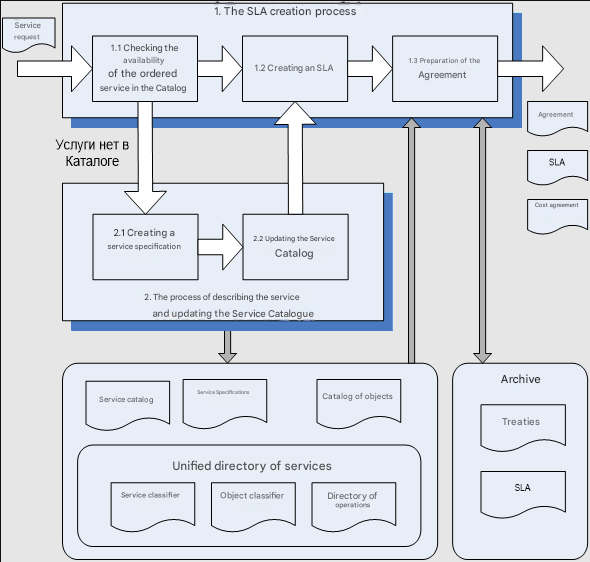
## Definitions and Abbreviations

Specific terms and abbreviations are defined in the text where they are used.

# Process Overview

This section is intended to provide an overview of the IT Service Catalog process, which is necessary for the process of creating Service Level Agreements (SLAs) for the services provided between the Functional Customer (FC), which is represented by Customer Service (CS) for all IT related issues, and the IT Service Provider, which is the IT Service Desk (ISD) or an external IT service provider.

Figure 1: Overview diagram of the process.



Service not in the catalog

The figure (Figure 1) shows an overview diagram of the process of creating SLAs and updating the IT Service Catalog. It depicts two main interacting processes providing SLA creation, in particular:

* **SLA Creation Process** - provides the development and preparation of SLA and Contract based on the request of the PE and the IT Service Catalog;
* **The process of service description and updating of the IT Service Catalog** - ensures that the IT Service Catalog (description of the full set of IT services that may be demanded by the Federal Law, including the definition of the basic functionality of the service, service level and cost of service) is kept up to date.

## Documents used in the processes

As can be seen from the figure (Figure 1), the following main documents are used in the IT Service Catalog creation process:

* **Service specifications** - full description of each service from the IT Services Catalog in terms of its functionality, service level and composition of operations to be performed to provide the service, as well as other attributes related to the service provision.
* **Object classifier** - functional classification of service objects assigned to the IT infrastructure. A single classifier for a given Enterprise.
* **Object Catalog** - a complete unified structured description of IT infrastructure objects used at a given enterprise.
* **Service Classifier** - a document that defines the principles of service classification, containing the main classes, subclasses and groups of services. Unified classifier for the Enterprise.
* **Directory of operations** - classified list of operations and works performed in the production (provision) of services at the given enterprise, in which each operation is matched with standards (metrics), fully characterizing this operation.

## Checking the availability of the ordered service in the IT Service Catalog

When drawing up an SLA, the NW analyzes the service to be ordered and searches for it or a similar service in the IT Service Catalog.

For this purpose the following actions should be performed:

* Check the availability of the ordered service or a similar service by name or functionality in the IT Services Catalog;
* Compare the following mandatory attributes of the ordered service with the found service from the IT Service Catalog:
  + Functionality of the service;
  + List of operations for the service;
  + Links to external services;
  + Service level;
* If the parameters of the existing service in the Catalog do not slightly differ from the parameters of the service to be ordered, then agree with the MO on the possibility of providing the service from the Catalog;
* If the parameters of the existing service in the Catalog are insignificantly different from the parameters of the ordered service, but the PE does not agree with the provision of the service from the Catalog, then consider the possibility of extending the functionality of the service from the Catalog of IT services;
* If the parameters of the existing service in the Catalog differ significantly from the parameters of the service ordered by the PE, or it is not possible to agree on the extension of the functionality of the existing service in the Catalog, then the process of service description and updating of the IT Services Catalog is started, which adds a new service to the IT Services Catalog.

## Process of service description and updating the IT Service Catalog

In case the service requested by the PE is not available in the IT Service Catalog, the work on the process of service description and updating of the IT Service Catalog is started.

The result of the process is an updated IT Service Catalog and, possibly, an updated Operations Directory and Object Catalog.

Creating the IT Service Catalog involves two main steps:

1. Create Service Specifications - prepare a detailed description of the service to be provided
2. Update the IT Service Catalog - replenish the IT Service Catalog with a new service for further use when creating SLA.

The process of updating the IT Service Catalog or creating the IT Service Catalog, in case of its absence, receives a Service Specification as input, and the output is an updated IT Service Catalog with a new service included in it.

Methodological recommendations for creating Service Specifications and IT Service Catalog are given in Chapters 4 and 5 of this document.

As it was mentioned above, for creating SLA, Agreements, as well as Service Specifications and IT Service Catalog, it is necessary to have auxiliary documents.

The interrelationships of the supporting documents are shown in the following figure:

Figure 2.31: Relationships of auxiliary and core documents.

The documents Object Classifier and Service Classifier are developed and maintained at the level of IT services of the enterprise. Methodological recommendations on creation of these documents are given in Chapters 6 and 5.

The Object Catalog and Operations Directory documents are created and maintained by the enterprise IT services. Methodological recommendations on creation of these documents are given in Chapters 8 and 7.

The documents Service Specification and IT Services Catalog are created and maintained by the enterprise's NW. Methodological recommendations on creation of these documents are given in Chapters 3 and 4.

# Methodological Recommendations for Creating Service Specifications

## Purpose of Service Specifications

Service Specifications are a complete description of each service from the IT Services Catalog in terms of its functionality, service level, and composition of operations to be performed to provide the service, as well as other attributes related to the provision of this service.

## Structure and design of Service Specifications

It is recommended that the service specification be organized as follows:

**Service Specification**

|  |  |  |
| --- | --- | --- |
|  | **Attribute** | **Attribute value** |
|  | **Service code (according to the IT Services Catalog)** |  |
|  | **Service name** |  |
|  | **Service classification code (according to the Service Classifier)** |  |
|  | **Users** |  |
|  | **List of operations for this service** |  |
|  | **External services**  (Service code - Service name) |  |

**Service functionality**

|  |  |  |
| --- | --- | --- |
| **General requirements** | **Parameter** | **Value** |
|  | **Power** |  |
| **Availability** |  |
| **Continuity** |  |
|  |  |

**Service level and unit cost of service**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Service level** | **Unit cost of service** | **Unit of service provision** |
|  |  |  |  |

Note: The unit cost of a service is calculated in rubles per unit of service provision. Different indicators may be used as a unit of service provision, for example: number of users, number of servers, number of cases of service provision, etc.

The following attributes shall be specified in the Service Specification:

1. Service code (according to the IT Services Catalog) is assigned to a service after its registration in the IT Services Catalog and is unique for this service. The service code should be formed on the basis of the Service Group Code field (according to the service classifier) by adding the serial number of the service. Mandatory attribute.
2. Service name.

The exact name of the service is specified, according to the “Rules of service naming and content”. Mandatory attribute.

1. Service classification code (according to the service classifier).

The service code is taken from the Service Classifier and is entered in the Service Specification. Mandatory attribute.

1. Users

Specifies for which users this service is intended. For example, for all users. Mandatory attribute.

1. Service functionality.

Describes the functionality of the service, which is explained below, in the form of a separate table. Mandatory attribute.

1. List of operations for this service.

Provides a list of operations from the Operations Directory that are performed to provide this service. If it is required by the Functional Customer or peculiarities of this service provision, in addition to the list of operations, it is possible for completeness to provide the list of works performed within each operation, formalizing them in the form of a list of a lower level in relation to the operation. Not a mandatory attribute.

1. Links to external services.

If the provision of this service depends on the provision of other services, it is necessary to list these external services, taking their codes and names from the IT Services Catalog. Not a required attribute if this service is not dependent on other services.

1. Customer Requirements.

Specifies the requirements for the customer of the service. For example, you may require support from the manufacturer of the equipment or the minimum necessary qualifications to work with a PC. Not a mandatory attribute.

1. Service Level.

Specifies the possible levels of service. Multiple service levels and/or one standard service level can be specified. Mandatory attribute.

1. Unit cost of service.

Specifies the unit cost of the service for each service level and/or the cost of the service for the standard service level. The unit cost is the cost per user, per server, and so on, depending on the service. Mandatory attribute.

1. Unit of service provision

Specifies in what units the provision of this service is measured.

Mandatory attribute.

1. Other attributes of the service.

Other attributes of the service are specified, if there is a need for them. Other attributes can be described not only by one given item, but can form a separate list.

Other attributes may be: IT budget items, items of the All-Russian classifier (“All-Russian Classifier of Products” in the edition of 24.05.2000 (OK 05-093), sections “40 0000 4 Computer hardware” and “50 0000 5 Software and information products of computer hardware”), etc.

**Not a mandatory attribute.**

The description of service functionality consists of two sections: general requirements, which are specified in an arbitrary form, and service parameters, for which a specific numerical value is specified.

The following parameters shall be mandatory functional parameters:

* **Service capacity -** volumetric parameters and performance parameters of the service.

When describing the capacity of the service, the following parameters must be obligatorily specified:

* + Number of users - total number of users who can simultaneously receive this service.
  + Commonly accepted parameters for this group of services. For example, for postal services it is the volume of the mailbox.

There may also be other capacity parameters that depend on the functionality of the service, for example:

* + Interactivity - delays in the functioning of the user interface or application.
  + Amount of storage space provided per user.
  + Computing capacity.
* **Service availability** - the period of time the service is available to the user. Possible description format: “hours per day” x “days per week” (for example, 24x7).
* **Service continuity** - fault tolerance of the service. The permissible amount of time during which the service may not be provided due to technical or other problems is specified.

## Sequence of steps for creating Service Specifications

The following steps are required to create a Service Specification:

1. Check if there is a service with similar functionality in the IT Services Catalog. If there is one, consider the possibility of extending its functionality. If this cannot be done, proceed to the next step.
2. Take the Service Specification template (see section 3.2.)
3. Based on the request of the Federal Law, formulate the name of the service, taking into account the requirements for the name of the service, specified below in the section “Rules for the name and content of the service” and enter it into the Service Specification.
4. Complete all mandatory attributes of the service, including:
   1. Functionality of the service.
   2. List of operations for this service, taking them from the Service Directory. If the required operation is not in the Operations Directory, it should be added there, following the guidelines for creating the Operations Directory (see Chapter 7).
   3. Links with external services.
   4. Service level
5. If necessary, fill in additional service attributes, including:
   1. Customer requirements.
   2. Cost of the service.
6. Review the resulting Service Specification to ensure that the “Service Naming and Content Rules” below are correctly followed.
7. Register this Service Specification in the Enterprise IT Services Catalog.
8. After entering the service into the IT Services Catalog and assigning a unique number to it, enter this number into the Service Specification in the Service Code field (according to the IT Services Catalog).

## Rules for naming and content of the service

The following service naming rules are recommended:

1. The name of the service should be as far as possible without specific technical terms. The service name shall be formulated in such a way that it can be understood by people who are not IT specialists.
2. The service name shall be clear and unambiguous. 3.
3. The service name should be informative, i.e. the service name should be followed by clear and unambiguously interpretable functionality.
4. The name of the service should be complete, i.e. the name of the service should not lead to a double interpretation of the content of the service.
5. The name of the service should reflect the fact that it is replicable, i.e. it can be provided to any consumer under similar conditions and with similar parameters
6. Formulate the name of the service in terms of a meaningful result, not in terms of a process. Example: not “server maintenance”, but “support of server operability”.

The rules for describing a service specification are as follows:

1. The service must be specified as a finished product that can be financially evaluated.
2. The service should have a clear and unambiguously interpretable description of the activity performed, and (or) a description of the capabilities (service functionality) provided by the service.
3. Services should not completely duplicate each other in terms of functionality.
4. The service should be replicable, i.e. it can be provided to any consumer on similar conditions and with similar parameters.
5. The service should be formed so that it is elementary, i.e. it has minimal-permissible functionality. In other words, instead of one “complex” service, it is recommended to form several elementary ones.

# Methodological Recommendations for Creating an IT Service Catalog

## Purpose of the IT Service Catalog

IT Service Catalog is a description of a complete set of IT services that can be demanded by the NW at a given enterprise, including the definition of the basic functionality of the service, the level of service and the unit cost of service.

The IT service catalog is created within an individual enterprise that has its own NW.

## Sequence of steps for creating and updating the IT Service Catalog

To create and update the IT Service Catalog, the following steps should be performed:

1. Create an IT Service Catalog using the structure of the Service Classifier.
2. Enter into the IT Services Catalog a record about the service, the source of information for which is the Service Specification.
3. Assign a unique number to the service, forming it from the Service Classifier code according to the rules specified below (Section 4.3.).
4. After the IT Service Catalog is created, review it as a whole for compliance with the “Requirements for the Content of the IT Service Catalog” specified below to identify inconsistencies.
5. Align the IT Service Catalog with the FL.

Figure 4.21. Creating an IT Service Catalog.

A sample IT Service Catalog is shown in Appendix 2 “Sample IT Service Catalog”

## Structure and design of the IT Service Catalog

It is recommended to design the IT services catalog in the following form:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Service code** | **Service type** | **Service class** | **Service subclass** | **Service group** | **Service name** | **Description of basic functionality** | **Service level** | **Unit cost of service** | **Unit of service provision** |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |

The following attributes are specified in the IT Service Catalog:

1. Service code

A unique identifier of the service within the IT Services Catalog, the rules of creating which are specified below.

1. Service type

Service type according to the Service Classifier.

1. Service Class

Class of service according to the Service Classifier.

1. Service subclass

Subclass of the service according to the Classifier of Services.

1. Service group

Service group according to the Classifier of Services.

1. Name of the service
2. Description of basic functionality

Brief informative description of the service functionality, which is taken from the Service Specification.

1. Standard Service Level

The standard service level of the service, which is taken from the Service Specification.

1. Unit cost of the service for the standard service level

The unit cost of the service, which is taken from the Service Specification.

1. Service Delivery Unit

The units used to calculate the unit cost of the service.

Requirements for the content of the IT Services Catalog:

1. The IT Services Catalog should be up-to-date, i.e. it should contain the services actually demanded by the Federal Law in a given period. To maintain the relevance of the IT Service Catalog, it is recommended to revise it at least once a year.
2. There should be no repetitive entries in the IT Service Catalog.
3. The unit costs of services should be kept up to date.

It is recommended that the following rules be followed when creating the service code:

1. The service code should be formed from the Service Classifier code by adding the service number to the right through a dot in order at the group level.
2. All codes must be unique.

Example: Y1234.1, Y1234.24.

IT Service Catalog items to be deleted may only be deleted if they are no longer used in all related documents. Related documents include the following documents: SLAs and Service Specifications.

To avoid errors, it is recommended not to delete obsolete items at all, but to move them to the archive by introducing a sign that this service is currently unavailable and moved to the archive as a separate attribute in the IT Service Catalog.

## Methodological recommendations for calculating the cost of services

The most important parameter of a service in the IT Services Catalog is its Unit Cost. The unit cost is obtained by dividing the total cost of expenses on rendering of a given service for a period by the number of units of rendering of this service for the same period.

There are two possible approaches to calculating the total cost of a service:

1. Normative method.
2. Expert method of cost allocation.

### Normative method of costing services

When using the **normative method**, it is necessary to determine for each service what operations it consists of and the duration of each operation for the billing period. When determining the duration of each operation, the following types of operations should be considered:

1. Routine (regular) operations
2. Administration
3. Troubleshooting of incidents and problems

The duration of routine work is determined by the relevant regulations, which should describe the composition of work, its duration and frequency. The duration of administration work is determined expertly or on the basis of data from the supplier of the relevant IT equipment or system. The duration of work on incident elimination shall be determined on the basis of averaged statistical data on incidents related to the provision of this service for the past billing periods. In the absence of statistical data, the duration of work is determined by expert judgment. It is recommended to provide these statistical data in each service level agreement (SLA) in accordance with the “Methodological Recommendations for Creating Service Level Agreements (SLA)”, chapter “Methodology for Determining the Cost of Services”.

For each operation the required level of personnel qualification and the standard cost per hour of work of this personnel are determined. If any operation requires personnel of higher qualification or longer duration of work, this circumstance should be taken into account by means of an increasing coefficient.

After that the cost of the service is determined by summing up the cost of all operations, of which this service consists, taking into account their standard duration and the number of objects for the calculation period:

,

where:

* CostS – cost of the service for the billing period.
* CostOrout – unit cost of the operation for routine work.
* CostOadmin – unit cost of the operation on administration.
* CostOinc – average cost of eliminating the incident and the problem that caused the incident.
* Trout –time of the routine work operation.
* Tadmin – the time of the administration operation.
* Nrout– number of operations on routine work for this service for the billing period.
* Nadmin –number of administration operations for this service for the billing period.
* Ninc – average number of incidents for the billing period.

This formula is used to calculate the cost of services provided by the SSIT.

The cost of services provided by external organizations is taken according to the Appendix “Cost Agreement” to the contract, taking into account the level of performance of services payable under the SLA.

### Expert cost allocation method for calculating the cost of services

**The expert method of cost allocation** is as follows: all costs of maintaining information systems and IT infrastructure elements are divided into direct and indirect costs. Direct costs are costs that are directly related to a specific service or information system respectively. The cost of direct costs is directly charged to the service or information system to which they are associated. Indirect costs are costs that are associated with more than one service or information system, respectively. The cost of indirect costs is allocated expertly between the services or information systems to which they are associated.

The expert method of cost allocation uses a service-resource model of service provision to describe the interaction of services, information systems and IT infrastructure elements. The service-resource model includes:

1. Service Level.

The service layer directly contains services that are provided to the end user. Services can be provided to other systems by exchanging information through a communication interface.

1. Resource level, which we will categorize into the following levels:
   1. The information systems (IS) level.
   2. The IT infrastructure level.

At the resource level there are resources that ensure the provision of services.

The interaction of services, information systems and IT infrastructure elements is explained in the following figure:

Figure 4.41. Service-resource model of interaction of services, information systems and IT infrastructure elements.

Therefore, the procedure for calculating the cost of the service is as follows:

1. Divide expertly the costs of maintaining the IT infrastructure between the information systems.
2. To allocate expertly the costs of maintaining information systems between services.

It is recommended to present this calculation in the form of tables that indicate the allocation of indirect costs in the form of utilization percentages.

Table of IT infrastructure maintenance cost allocation between information systems (IS):

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **IT infrastructure** | | | | |
| **IS** | **Network** | **Servers** | **Data storage systems** | **SOFTWARE** | **Engineering Systems** |
| IS 1 |  |  |  |  |  |
| IS 2 |  |  |  |  |  |
| ……… |  |  |  |  |  |
| IS N |  |  |  |  |  |

Each column of IT infrastructure elements can be broken down into sub-elements and so on. The decomposition method can be used to reach the level of specific IT equipment and software, if necessary.

In the cells of this table it is necessary to put the percentage of correlation of expenses on maintenance of the given element of IT infrastructure on information systems. The sum of the percentages in each column should equal 100%.

Elements of IT infrastructure can be dependent on each other, these relationships are usually tree-like. This must be taken into account when allocating costs. For example: Oracle DBMS is installed on a virtual server, which is located in an appartement cluster formed of three servers. In this case, the costs must be allocated from the bottom to the top, following the branches of the links. In our example, we get the following: the server costs are summarized and refer to the cluster; the total costs of the cluster refer to the virtual server; the total costs of the virtual server, partially taking into account the resource used, refer to the Oracle DBMS support.

Table for the allocation of information systems maintenance costs between services:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Information Systems (IS)** | | | | |
| **Services** | **IS 1** | **IS 2** | **IS 3** | **……** | **IS N** |
| Service 1 |  |  |  |  |  |
| Service 2 |  |  |  |  |  |
| ……….. |  |  |  |  |  |
| Service N |  |  |  |  |  |

In the cells of this table you should put the percentage of matching costs for maintaining information systems by service. The sum of the percentages for each column should be equal to 100%.

Example of filling in the table:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Information Systems (IS)** | | | | |
| **Services** | **IS 1** | **IS 2** | **IS 3** | **IS 4** | **IS 5** |
| Service 1 | 20% | 100% | 0% | 0% | 10% |
| Service 2 | 20% | 0% | 100% | 0% | 10% |
| Service 3 | 0% | 0% | 0% | 100% | 25% |
| Service 4 | 0% | 0% | 0% | 0% | 25% |
| Service 5 | 60% | 0% | 0% | 0% | 30% |

These tables need to be updated in the following cases:

1. Before the start of a new billing period. Updating of data should be related to the analysis of growth of resource requirements of each information system, increase of expenses for maintenance of information systems and IT infrastructure.
2. Changes in information systems or IT infrastructure resulting in more than 20% change in resource allocation between services or information systems, respectively.

# Methodological recommendations for creating the Classifier of Services

## Purpose of the Service Classifier

Service classifier is a document that defines the principles of functional classification of services, containing the main classes, subclasses and groups of services.

The Service Classifier is intended for structuring services in the IT Services Catalog. The Service Classifier is developed and approved within a particular PROPERTY.

## Sequence of steps for creating a Service Classifier

The following steps are recommended to create a Service Classifier:

1. Formalize the Service Classifier according to the table below.
2. Create three service types at the first level: “General Corporate Services”, ‘Specialized Services’ and ‘Infrastructure Services’. Assign them the codes “U1000”, “U2000” and “U3000” respectively.
3. Create service classes at the second level in accordance with the “Principles of Service Classification” below. Assign appropriate codes to them, e.g. “U1100”, “U1200”, “U1300”.
4. Create subclasses of services at the third level in accordance with the “Principles of Service Classification”. Assign appropriate codes to them, e.g. “U1110”, “U1120”, “U1130”.
5. Create groups of services at the fourth level, clearly distinguishing them by functional characteristic, in accordance with the “Principles of Service Classification”. Assign appropriate codes to them, e.g. “U1111”, “U1112”, “U1113”.

A sample of the Classifier of Services is given in Annex 1 “Example of Classifier of Services”

## Principles of service classification

At the first level of classification, it is recommended to divide services into three types:

1. Corporate services - services that are provided to the whole company or to the majority of users.

Example: Internet access, mail, IT support of document management system.

1. Specialized services - services that are provided either to one division of the company or to a group of dedicated users.

Example: IT support of accounting.

1. Infrastructure services - IT infrastructure support services, which include, among other things, support of hardware, system software, middleware.

Example: Server maintenance, in case the server is used to run several application systems.

According to the division of services into types, the services provided directly to the staff of the PE include only the first two types: general corporate services and specialized services. Infrastructure services do not belong to the services provided directly to the staff of the PE, but their presence in the IT Services Catalog is required for the following purposes:

1. If the equipment is on the balance sheet of the organization, i.e. it belongs to fixed assets, the organization should properly operate it.
2. Expenses for infrastructure services should be allocated to a separate line item in order to further allocate costs to those or other final services provided directly to the staff of the FL.

The second level of classification is classes of services. Classes of services are enlarged functional areas of service provision.

Example 1: “Unified Communications Services.”

Example 2: “Financial Support Services”.

The third level of classification is a subclass of services. Subclasses of services are distinguished from classes by decomposition and functional clarification of the concept of service class. Subclasses are necessary, on the one hand, for the convenience of operating with smaller elements than service classes, and, on the other hand, for summarizing costs at their level for application purposes, for example, for budgeting.

Example 1: “Telephony, audio and videoconferencing services”.

Example 2: “Accounting and tax accounting support services”.

The fourth level of classification is service groups. Service groups are a set of services united by one functional and applied purpose.

Example 1: “Telephone communication services”.

Example 2: “Accounting support services”.

Therefore, the classification of services is as follows:

1. Type of services:
   * general corporate services,
   * specialized services,
   * infrastructure services.
2. Class of services.
3. Subclass of services.
4. Group of services.

## Structure and design of the Classifier of Services

It is recommended to organize the service classifier in the form of the following table:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Service group code** | **Service type** | **Service class** | **Service subclass** | **Service group** | **Description** |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

Service Classifier attributes:

1. Service Group Code

A unique symbolic-numeric field that uniquely identifies the classification level.

1. Service type.

The service type is the classification level created according to the “Service Classification Principles” above.

1. Service Class.

Class of service - the level of classification created according to the “Principles of service classification” specified above.

1. Service Group.

Service Group - the level of classification created according to the “Principles of Service Classification” above.

1. Description of the service classification level - unambiguous explanation of the given level of the Service Classifier in order to identify the category of services that should belong to this level.

When classifying services, it is recommended to follow the following rules:

1. The number of classification options at each level should not be more than 9, optimally 5-7.
2. If there are no subgroups for a part of services at the lowest levels of classification, this level remains unfilled.

When creating the code of the Service Classifier, it is recommended to follow the following rules:

1. The Classifier of Services code should start with the letter “U”, which means “service”.
2. All codes must be unique.
3. After the letter “U” there should be 4 digits, each of which defines the position at the corresponding level of classification: the first digit - the number of service type, the second digit - the number of service class, the third digit - the number of service subclass, the fourth digit - the number of service group.
4. For upper level codes that aggregate lower levels, the digit “0” is placed in the lower level positions.

Example: U1200, U1230, U1234.

When modifying the Service Classifier, it is recommended to follow the following rules:

1. New positions should be added according to the above rules.
2. Service Classifier items that are to be deleted may only be deleted if they are no longer used in all linked documents. Linked documents include the following documents: IT Service Catalog and Service Specifications.

To avoid errors, it is recommended not to delete obsolete items at all, but to move them to the archive by entering a sign that the service is currently unavailable and moved to the archive as a separate attribute in the Service Classifier.

# Methodological recommendations for creating the Object Classifier

## Purpose of Object Classifier

Object Classifier is a description of functional classification of IT infrastructure objects.

The Object Classifier is intended for creation and subsequent maintenance of the Object Catalog and Operations Directory. The Object Classifier is created and maintained at the level of the COMPANY and is used by all subsidiaries and branches.

The purpose of object classification is to generalize objects into larger functional classes and groups for summarizing the attributes of objects at the class and group level, as well as for the convenience of searching for the required object. Summarizing the attributes of objects at the class and group level is necessary for further application use, for example, summarizing the cost of operation for the reporting period gives the total amount of operating costs.

In the object classifier we will refer to objects as systems of software and hardware complexes with complete functionality from the IT point of view. These systems can be decomposed into elementary objects - software and hardware modules, which are configuration units in ITIL terms. In such decomposition, it is mandatory to maintain complete functionality from an IT perspective.

## Sequence of steps to create the Object Classifier

To create an Object Classifier, the following steps must be performed:

1. Create a document “Object Classifier”, formalizing it in the form of the table below.
2. Create two types of objects at the first level: “Information systems” and ‘IT infrastructure’. Assign codes to them according to the classification rules specified below. Example: “Ob10000” and ‘Ob20000’ respectively.
3. Create classes of information systems and IT infrastructure at the second level. Assign codes to them according to the classification rules specified below. Example: “Ob11000”, ‘Ob12000’, ‘Ob13000’.
4. Create subclasses of information systems and IT infrastructure at the third level. Assign codes to them according to the classification rules specified below. Example: “Ob11100”, ‘Ob11200’, ‘Ob11300’.
5. Create groups of objects at the fourth level, clearly distinguishing them on the functional basis from the subclasses of objects. Assign codes to them according to the classification rules specified below. Example: “Ob11110”, ‘Ob11120’, ‘Ob11130’.
6. Create subgroups of objects at the fifth level, separating them from the groups depending on the accepted classification in the subject area of the group of objects. Assign codes to them according to the classification rules specified below. Example: “Ob11111”, ‘Ob11112’, ‘Ob11113’.

A sample of the Object Classifier is given in Appendix 4 “Sample Object Classifier”.

## Principles of object classification

Objects can be both IT infrastructure elements and information systems, which consist of a set of software and hardware complexes and directly provide services to the end user.

It is reasonable to classify objects at the first level by functional principle, dividing them into two types: information systems and IT infrastructure elements.

Information systems are IT objects that provide services to the end user or other information systems. Information systems are created using application software. Examples of information systems: accounting system, ERP system, document management system, mailing system, etc. IT infrastructure elements - hardware, system software, middleware on which application software is directly installed.

The purpose of this separation is to separate application software from IT infrastructure elements, because from the point of view of the modern approach to building IT systems, when consolidation and virtualization of computing resources are used, it is impossible to guarantee exactly on which hardware this or that application software will reside. Application software can migrate from one hardware to another, more productive one, or part of the hardware can be combined into clusters with subsequent virtualization. Therefore, it is more rational to consider the approach when the entire IT infrastructure is considered as a single pool and when the costs are expertly allocated from the total amount of costs, the costs associated with maintaining the performance of a particular information system, in accordance with the infrastructure resources consumed by it.

At the second level of object classification and below it is recommended to distinguish classes, subclasses and groups of objects.

Therefore, the following classification of objects is recommended:

1. Type of objects - information systems and IT infrastructure.
2. Object class - aggregated information systems and IT infrastructure elements.

Example: Class - IT infrastructure, subclasses: computers, peripherals and office devices.

1. Subclass of objects - subclasses of objects allocated for convenience.

Example: “peripheral devices”, ‘computers’.

1. Group of objects - objects united by one functional purpose. This is the level of individual devices.

Example: “printers”, ‘fax machines’, ‘multifunctional devices’.

1. Subgroup of objects - selected subgroups of objects from groups by their level of use.

Example: “personal printers”, ‘group printers’.

Example for servers: entry-level servers, mid-level servers, high-level servers.

Note 1: Not all object groups may have subgroups. In this case, the subgroup is not specified.

Note 2: Classification of facilities is used, among other things, for decomposition and summarization of operating costs. For example, when summarizing operating costs, the fourth level (object groups) aggregates all costs associated with specific devices (printers, servers, switches, etc.). At the fifth level (object subgroups) all costs associated with devices of the same level within the group are aggregated, i.e. personal and group printers, entry-level, mid-level and high-level servers.

An example of building an object classifier is shown in the following figure:

Figure 6.31: Example of object classification.

## Structure and design of the Object Classifier

It is recommended to design the object classifier in the form of the following table:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Object classification code** | **Object type** | **Object class** | **Object subclass** | **Object group** | **Object subgroup** | **Description of the classification level** |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

The following attributes are recommended when compiling the Object Classifier:

1. Object classification code - a unique symbolic-numeric field uniquely identifying the classification level.
2. Object type - classification level created according to the “Object Classification Principles” mentioned above
3. Object Class - classification level created according to the “Object Classification Principles” mentioned above 3.

Object Group - classification level created according to the “Object Classification Principles” mentioned above.

Object subgroup - classification level created according to the “Object classification principles” specified above

1. Object Classifier level description - unambiguous explanation of the given level of the classifier in order to identify the category of objects that should belong to this level.

It is recommended to follow the following rules when classifying objects:

1. The number of positions at one level should not be more than 9. Optimally 5-7.
2. If there are no subgroups for a part of objects at the lowest levels of classification, this level remains unfilled.

When creating the object classification code, it is recommended to adhere to the following rules:

1. The object classification code should begin with the letters “Ob”, which means “objects”.
2. All codes must be unique.
3. After the letters “Ob” should go 5 digits, each of which defines the position at the appropriate level of classification: the first digit - the number of the object type, the second digit - the number of the object class, the third digit - the number of the object subclass, the fourth digit - the number of the object group, the fifth digit - the number of the object subgroup.
4. If there is no object subgroup for the given object class, the digit “0” in the position of the subgroup shall be put.
5. For upper level codes that aggregate lower levels, the digit “0” is placed in the lower level positions.

Example: Ob12000, Ob12300, Ob12345.

It is recommended to follow the following rules when modifying the Object Classifier:

1. New positions should be added according to the above rules.
2. Classifier items to be deleted may be deleted only if they are no longer used in all related documents. Related documents include the following documents: Object Catalog, Operations Directory.

To avoid errors, it is recommended not to delete obsolete items at all, but to transfer them to the archive by introducing a sign that this service is currently unavailable and transferred to the archive in the form of a separate attribute in the Object Classifier.

# Methodological Recommendations for Creating a Transaction Directory

## Purpose of the operations directory

The operations directory is a classified list of operations and works performed in the production (provision) of services, in which each operation is matched with standards (metrics) that fully characterize this operation.

The operations directory is intended for:

1. Unification of all operations that can be used.
2. Aggregation of costs at the operation level or correlation of costs calculated by the expert method per operation.
3. Calculating the cost of a service using the rationing method.

The operations directory is developed within a specific enterprise. The operations directory reflects the existing operational structure for maintaining the IT infrastructure.

## Sequence of steps to create a Transaction Directory

The following steps are required to create the Operations Directory:

1. Create the Handbook of Operations as a document, formalizing it in the form of the table below.
2. Sequentially by each group of objects, create a list of standard operations, the principles of creating which are specified below.
3. Sequentially for each group of objects, create a list of additional operations, based on the functional content of this group of objects.
4. Assign codes to operations according to the rules stated above.
5. After creating the Operations Directory, it is recommended to review it as a whole to identify inconsistencies.

A sample Handbook of Operations is given in Appendix 6 “Sample Handbook of Operations”

## Principles of operations classification

The operations directory is formed on the basis of the Object Classifier by listing operations on these objects. Operations on objects are a list of actions that can be performed on objects to maintain the IT infrastructure and provide services. The following figure illustrates the creation of the Operations Directory:

Figure 7.31: Creating the Operations Directory.

Operations should not be understood as elementary IT operations, such as replacing a hard disk, cleaning a printer, etc. Operations should be formulated in generalized terms that are accepted in IT. Operations, in turn, can be divided into activities.

It is recommended to divide all operations on objects into two types:

1. Typical operations are actions that can be performed on all or most of the objects.
2. Additional operations are actions that can be performed only on a certain group of objects.

Typical operations on objects include the following operations:

1. Installation and configuration / Installation.
2. Administration.
3. Technical support / Maintenance.
4. Repair

The criteria for formulating the name of an operation are as follows:

1. It is an elementary logically complete concept in the field of IT.
2. This elementary operation can be procured from the IT services market.
3. The aggregation of costs at the operation level must have application value in terms of downstream utilization.

Each operation can be decomposed into specific activities. This decomposition is used for the following purposes:

1. To indicate a specific list of work to be performed within an operation and for which the NW pays money.
2. To explain to the FL the list of work to be performed as part of the service to be provided, if the FL has a need to understand the cost structure of the service.
3. To calculate the cost of an operation based on the normative method.

Services and operations are related in the following way: one service may consist of several operations that create and support it from an IT perspective. This point is illustrated in the following figure:

## Structure and layout of the Transaction Directory

The operations directory can be presented in the form of the following table:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Operation code** | **Type** | **Class** | **Subclass** | **Group** | **Operation name** | **Operation description** |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

The following parameters correspond to each operation:

1. Operation code

A unique character-numeric field uniquely identifying the operation, created according to the following rules.

1. Type

The type of object from the Object Classifier for which operations are specified.

1. Class

The class of the object from the Object Classifier for which operations are specified.

1. Subclass.

A subclass of an object from the Object Classifier for which operations are specified.

1. Group.

A group of an object from the Object Classifier for which operations are specified.

1. Name of the operation
2. Operation description - unambiguous explanation for a non-typical operation in order to interpret it unambiguously.

Rules for forming a transaction code:

1. The operation code shall be formed from the code of the Object Classifier at the object group level by adding the operation number to the right through a dot.
2. At the beginning of the code it is necessary to replace the letters “Ob” with the letters “Op”.
3. For typical operations it is recommended to select numbers consecutively from the range from 1 to 99. For non-typical operations - starting from 100.

Example: Op1234.3, Op1234.124.

## Methodological recommendations for costing operations

The following methods can be used to calculate the cost of operations:

1. Normative method.
2. Expert method of cost allocation.

### Normative method of calculating the cost of operations

When using the normative method, it is necessary to describe for each operation what work it consists of and to determine the duration of each work.

The duration of the work can be determined by expert judgment and should be linked to the qualification requirements of the engineers who perform the work. The second method of determining the duration of works is based on averaged statistical data for the past billing periods.

The cost of an operation is determined by summing up the cost of all works, of which it consists, taking into account their duration and quantity:

,

where:

* StO - cost of the operation.
* StR - specific cost of works for 1 hour, which is formed from the cost of work of an engineer of corresponding qualification with all overheads.
* Vr - operation time.
* N - number of works in the operation.

This cost of work only takes into account personnel costs. To account for all costs, the following costs must still be considered:

1. Purchase of spare parts.
2. Repair of equipment at service centers.
3. Logistics and insurance costs for the equipment.
4. Other costs.

### Expert cost breakdown method for calculating the cost of operations

**The expert cost breakdown method** is as follows:

1. Determine the optimum number of engineers and their qualifications required to perform operations that keep the existing equipment and software operational.
2. Based on the market value of said engineers, calculate the costs associated with the personnel.
3. Divide all costs into direct and indirect costs. Direct costs are costs that are directly related to a specific operation and facilities. The cost of direct costs is directly borne by the operation to which they are associated. Indirect costs are costs that are associated with multiple operations and facilities. The cost of indirect costs is allocated expertly between the operations and facilities to which they are associated.

It should be taken into account that the costs associated with the work of personnel should be related to the level of object classification at which the personnel perform their operation. For example, if three engineers are engaged in technical support of both servers, storage systems and local network, their labor remuneration fund including overheads should be correlated to the level of object class or subclass, i.e. to the level that unites these elements of IT infrastructure. After that they can be expertly divided into lower levels up to the level of a group of objects or directly objects.

Therefore, the procedure for calculating the cost of the operation is as follows:

1. Calculate the payroll, taking into account the overhead of engineers and other support staff.
2. Relate these total costs to the appropriate level of facilities.
3. Allocate expertly the costs between operations on facilities and groups of facilities.

It is recommended that this calculation be presented in the form of tables showing the allocation of indirect costs as a percentage of allocation.

# Methodological recommendations for creating the Object Catalog

## Purpose of the Object Catalog

Objects catalog is a complete unified structured description of IT infrastructure objects of a given enterprise in accordance with the object classifier, which allows to unambiguously identify the object.

The Object Catalog is used to describe the IT infrastructure of an enterprise and, together with the Operations Directory, to describe in detail the specification of the provided service.

## Sequence of steps for creating the Object Catalog

To create the Object Catalog, the following steps should be performed:

1. Conduct an inventory of the enterprise IT infrastructure. Using the Object Classifier assign each IT infrastructure element to a specific group and subgroup of the classifier. When deciding which subgroup to assign a particular hardware and software to, it is recommended to use the positioning of this equipment and software, which is offered by the manufacturer in their descriptions. If this is not possible, it is recommended to use the opinion of experts.
2. Create object codes, forming them from the codes of the Object Classifier, according to the rules specified below (Section 8.4).
3. After the creation of the Object Catalog, it is recommended to review it as a whole to identify inconsistencies. The Object Catalog should be checked for completeness and absence of repetitions.

Figure 8.21. Creating the Object Catalog.

A sample of the Object Catalog is given in Appendix 5 “Sample Object Catalog”

## Principles of Object Catalog creation

The Object Catalog is formed from the Object Classifier by assigning each IT object to the corresponding subgroup of the Object Classifier.

The objects of the Catalog at the lower level are specific instances of objects. Decomposition to a specific object instance is necessary for the following:

1. To calculate actual costs by objects with further summarization by groups, classes, etc.
2. For the configuration database (CMDB).

## Structure and design of the Object Catalog

It is recommended to design the object catalog in the form of the following table:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Object code** | **Object classification code** | **Producer** | **Model** | **Instance identifier** | **Object name** | **Object Description** | **Location of the object** |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |

The following object attributes are recommended when compiling the Object Catalog:

1. Object code - a unique symbolic-numeric field uniquely identifying the object in this Catalog.
2. Object classification code.
3. Producer - the producer of this object. Its short name is given. It is recommended to shorten the name of the producer to one word. One and the same producer should be named the same way in the whole Object Catalog.

Example: IBM, Cisco, HP.

1. Model - the name of the object model from the manufacturer. A brief name of the model is given. It is recommended to use underscores instead of spaces. The same model should be named the same way throughout the entire Object Catalog.

Example: ProLiant\_DL140

1. Instance ID - The serial or inventory number of the object, if any. Place the letters “SN” before the serial number and “IN” before the inventory number.
2. The name of the object.
3. Description of the object - a description of the object and the functions it performs.
4. Location of the object.

When creating the Object Number, it is recommended to follow the following rules:

1. The object number shall be formed from the Object Classifier code by adding to the right through a dot the object number in order at the subgroup level.
2. All codes must be unique.

Example: Ob12345.1, Ob12345.24.

# Appendixes

## Appendix 1. Example of a Classifier of Services

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Service classification code** | **Service type** | **Class of service** | **Service subclass** | **Service group** | **Description** |
| **U1000** | **Corporate services** |  |  |  |  |
| U1100 |  | Unified Communications Services |  |  |  |
| U1110 |  |  | Unified messaging services |  |  |
| U1111 |  |  |  | Postal services |  |
| U1112 |  |  |  | Fax services |  |
| U1113 |  |  |  | Short messaging services |  |
| U1120 |  |  | Telephony, audio and videoconferencing services |  |  |
| U1121 |  |  |  | Telephony services |  |
| U1122 |  |  |  | Audio conferencing services |  |
| U1123 |  |  |  | Videoconferencing services |  |
| U1200 |  | Services of access to information resources |  |  |  |
| U1210 |  |  | Access to the global network of the Internet, news information service and others |  |  |
| U1211 |  |  |  | Access to the global network of the Internet |  |
| U1300 |  | Services of automation of office workflow and document management |  |  |  |
| U1310 |  |  | Document automation services |  |  |
| **U2000** | **Specialized services** |  |  |  |  |
| U2100 |  | Accounting of financial activities of the company |  |  |  |
| U2110 |  |  | Accounting and tax accounting |  |  |
| U2111 |  |  |  | Accounting |  |
| **U3000** | **Infrastructure services** |  |  |  |  |
|  |  |  |  |  |  |

## Appendix 2. Example of IT Services Catalog

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Service code** | **Service type** | **Service class** | **Service subclass** | **Service group** | **Service name** | **Description of basic functionality** | **Service level** | **Unit cost of service** | **Unit of service provision** |
| U1111.1 | General corporate services | Unified communications services | Unified messaging services | Mail services | Email access | For all users.  Mailbox size is 40MB.  Standard client is MS Outlook | Service availability - 8x5.  Time of incident elimination not more than 3 hours. | 300 rub. | Per user per month |
| U1111.2 | General corporate services | Unified communications services | Unified messaging services | Mail services | Access to e-mail for VIP persons | For VIP users.  Mailbox size is 100MB | Service availability - 24x7.  Time of incident elimination is not more than 1 hour | 700 rub. | Per user per month |
| U1111.3 | General corporate services | Unified communications services | Unified messaging services | Mail services | Remote access to e-mail | Access via Internet.  Access via GPRS.  Information protection. | Service availability - 8x5.  Time of incident elimination not more than 3 hours. | 200 rub. | Per user per month |

## Appendix 3. Example of a Service Specification

|  |  |  |
| --- | --- | --- |
|  | **Attribute** | **Attribute value** |
|  | **Name of service** | Access to e-mail. |
|  | **Service code** | U1111.1 |
|  | **Service classification code** | U1111 |
|  | **Users** | All users |
|  | **List of operations for this service** | 1. Creation of a mailbox 2. Administration of the mailbox 3. Mail redirection to other mailboxes |
|  | **External services** (Service code - Service name) | 1. U1511.1 – “Support of standard workplace operability” |

**Service functionality**

|  |  |  |
| --- | --- | --- |
| **General provisions** | **Parameter** | **Value** |
| 1. Helping users to configure client software. | Power | The size of the mailbox is 40MB. |
| Availability | 24х7 |
| Continuity | Total interruption of work not more than 6 hours per quarter |
| Client software | MS Outlook |

**Service level and unit cost of service**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Level of service** | **Unit cost of service** | **Unit of service provision** |
|  | Service availability - 8x5.  Time of incident elimination not more than 3 hours. | 300 rub. | Per one user per month |
|  | Service availability - 10x6.  Time of incident elimination not more than 3 hours. | 400 rub. | Per one user per month |
|  | Service availability - 10x6.  Time of incident elimination not more than 2 hours. | 600 rub. | Per one user per month |

## Appendix 4: Example of Object Classifier

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Object classification code** | **Object type** | **Object class** | **Object subclass** | **Object Group** | **Object subgroup** | **Description of classification level** |
| Ob10000 | IT infrastructure |  |  |  |  |  |
| Ob11000 |  | Computers, peripherals and office devices |  |  |  |  |
| Ob11100 |  |  | Computers |  |  |  |
| Ob11110 |  |  |  | Laptops |  |  |
| Ob11120 |  |  |  | PCS |  |  |
| Ob11121 |  |  |  |  | Thin Clients |  |
| Ob11122 |  |  |  |  | Workstations |  |
| Ob11200 |  |  | Peripherals |  |  |  |
| Ob11210 |  |  |  | MFPS |  |  |
| Ob11220 |  |  |  | Faxes |  |  |
| Ob11221 |  |  |  |  | Personal devices |  |
| Ob 11222 |  |  |  |  | Corporate Faxes |  |
| Ob11230 |  |  |  | Printers |  |  |
| Ob11231 |  |  |  |  | Personal Printers |  |
| Ob11232 |  |  |  |  | Group Printers |  |
| Ob11240 |  |  |  | Plotters |  |  |
| Ob12000 |  | Multiservice Network |  |  |  |  |
| Ob12100 |  |  | Corporate Multiservice Network |  |  |  |
| Ob12110 |  |  |  | Active network equipment |  |  |
| Ob12111 |  |  |  |  | Switches |  |
| Ob2112 |  |  |  |  | Routers |  |
| Ob12113 |  |  |  |  | ITU/IDS/IPS |  |
| Ob12120 |  |  |  | SCS |  |  |
| Ob12200 |  |  | External communication channels |  |  |  |
| Ob12210 |  |  |  | Dedicated channels |  |  |
| Ob12220 |  |  |  | E1 PRI digital links |  |  |
| Ob12230 |  |  |  | Virtual channels of MPLS network |  |  |

## Appendix 5. Example of the Object Catalog

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Object code** | **Object classification code** | **Producer** | **Model** | **Instance identifier** | **Object name** | **Object description** | **Object Location** |
| Оb12111.1 | Ob12111 | CISCO | Catalyst\_3750 | SN123456 | CISCO Catalyst 3750 Switch | Used for switching local networks | Location - Building 1 |
| Оb12111.2 | Ob12111 | CISCO | Catalyst\_3750 | SN123457 | CISCO Catalyst 3750 Switch | Used for switching local networks | Location - Building 1 |
| Оb12111.3 | Ob12111 | CISCO | Catalyst\_3750 | SN123458 | CISCO Catalyst 3750 Switch | Used for switching local networks | Location - Building 2 |
| Оb12111.4 | Ob12111 | CISCO | Catalyst\_3750 | SN123459 | CISCO Catalyst 3750 Switch | Used for switching local networks | Location - Building 3 |
| Оb12111.5 | Ob12111 | CISCO | Catalyst\_3750 | SN123460 | CISCO Catalyst 3750 Switch | Used for switching local networks | Location - Building 4 |
| Оb11210.50 | Ob11210 | HP | LaserJet\_9040 | SN567891 | HP LaserJet 9040 MFP | Used for printing reports in Accounting. | Location - Building 4 |
| Оb11210.51 | Ob11210 | HP | LaserJet\_9040 | SN567892 | HP LaserJet 9040 MFP | Located in the IT department | Location - Building 3 |
| Оb11210.52 | Ob11210 | HP | LaserJet\_9040 | SN567893 | HP LaserJet 9040 MFP | Located in the Office | Location - Building 4 |
| Оb11210.53 | Ob11210 | HP | LaserJet\_9040 | SN567894 | HP LaserJet 9040 MFP | Located in the supply department | Location - Building 1 |

## Appendix 6. Example of an Operations Manual

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **An example of a transaction directory.** | | | | | | | | |
|  |  |  | | | | | | |
| **Code** | **Type** | **Class** | | **Subclass** | | **Group** | **Operations** | **Properties of operations** |
| **Op1000** | **IT infrastructure** | | | | | |  |  |
| Op1100 |  | **Computers, peripherals and office equipment** | | | | |  |  |
| Op1110 |  |  | **Computers** | | | |  |  |
| Op1111 |  |  |  | | **Personal Computers and Laptops** | |  |  |
| Op1111.1 |  |  |  | |  | | PC installation |  |
| Op1111.2 |  |  |  | |  | | PC or laptop modernization |  |
| Op1111.3 |  |  |  | |  | | Troubleshooting PC or laptop hardware problems |  |
| Op1111.4 |  |  |  | |  | | PC or laptop repair at an external service company |  |
| Op1111.5 |  |  |  | |  | | Moving a PC to another location |  |
| Op111112 |  |  |  | | **Specialized workstations** | |  |  |
| Op1112.1 |  |  |  | |  | | Workstation installation |  |
| Op1112.2 |  |  |  | |  | | Workstation Upgrade |  |
| Op1112.3 |  |  |  | |  | | Troubleshooting workstation hardware problems |  |
| Op1112.4 |  |  |  | |  | | Repairing a workstation with an outside service company |  |
| Op1112.5 |  |  |  | |  | | Moving the workstation to another location |  |
| Op1113 |  |  |  | | **PDA** | |  |  |
| Op1113.1 |  |  |  | |  | | Repair of PDA hardware problems |  |
| Op1113.2 |  |  |  | |  | | Repair of PDA in an external service company |  |
| Op1120 |  |  | **Peripherals and office equipment** | | | |  |  |
| Op1121 |  |  |  | | **Monitors and display systems** | |  |  |
| Op1121.1 |  |  |  | |  | | Monitor Instalation |  |
| Op1121.2 |  |  |  | |  | | Monitor setup |  |
| Op1121.3 |  |  |  | |  | | Repairing the monitor at an outside service company |  |
| Op1121.4 |  |  |  | |  | | Moving the monitor to another location |  |
| Op1122 |  |  |  | | **Printers** | |  |  |
| Op1122.1 |  |  |  | |  | | Printer Installation |  |
| Op1122.2 |  |  |  | |  | | Printer Setup |  |
| Op1122.3 |  |  |  | |  | | Troubleshooting printer hardware problems |  |
| Op1122.4 |  |  |  | |  | | Repairing the printer with an outside service company |  |
| Op1122.5 |  |  |  | |  | | Moving the printer to another location |  |
| Op1122.6 |  |  |  | |  | | Printer Cartridge Replacement |  |
| Op1122.7 |  |  |  | |  | | Printer cleaning and other preventive maintenance |  |
| Op1123 |  |  |  | | **Plotters** | | |  |
| Op1123.1 |  |  |  | |  | | Plotter installation |  |
| Op1123.2 |  |  |  | |  | | Plotter setup |  |
| Op1123.3 |  |  |  | |  | | Troubleshooting plotter hardware problems |  |
| Op1123.4 |  |  |  | |  | | Repairing the plotter with an outside service company |  |
| Op1123.5 |  |  |  | |  | | Moving the plotter to another location |  |
| Op1123.6 |  |  |  | |  | | Replacing a plotter cartridge |  |
| Оp1123.7 |  |  |  | |  | | Plotter cleaning and other preventive maintenance |  |
| Оp1124 |  |  |  | | **Faxes** | |  |  |
| Оp1124.1 |  |  |  | |  | | Fax installation |  |
| Оp1124.2 |  |  |  | |  | | Fax Setup |  |
| Оp1124.3 |  |  |  | |  | | Fixing hardware problems with your fax machine |  |
| Оp1124.4 |  |  |  | |  | | Fax repair with an outside service company |  |
| Оp1124.5 |  |  |  | |  | | Moving a fax machine to another location |  |
| Оp1124.6 |  |  |  | |  | | Replacing a fax cartridge |  |
| Оp1124.7 |  |  |  | |  | | Fax cleaning and other preventive maintenance |  |
| Оp1125 |  |  |  | | **Scanners** | |  |  |
| Оp1125.1 |  |  |  | |  | | Scanner installation |  |
| Оp1125.2 |  |  |  | |  | | Scanner Setup |  |
| Оp1125.3 |  |  |  | |  | | Troubleshooting scanner hardware problems |  |
| Оp1125.4 |  |  |  | |  | | Repairing the scanner with an outside service company |  |
| Op1125.5 |  |  |  | |  | | Moving the scanner to another location |  |
| Op1125.6 |  |  |  | |  | | Scanner cleaning and other preventive maintenance |  |
| Op1126 |  |  |  | | **MFPS** | |  |  |
| Op1126.1 |  |  |  | |  | | MFP Installation |  |
|  |  |  |  | |  | | MFP Setup |  |
| Op1126.2 |  |  |  | |  | | Troubleshooting MFP hardware problems |  |
| Op1126.3 |  |  |  | |  | | Repairing MFP at an external service company |  |
| Op1126.4 |  |  |  | |  | | Moving MFP to another location |  |
| Op1126.5 |  |  |  | |  | | MFP cartridge replacement |  |
| Op1126.6 |  |  |  | |  | | MFP cleaning and other preventive maintenance |  |
| Op1126.7 |  |  |  | | **Other office equipment** | |  |  |
| Op1127 |  |  |  | |  | | Installation of other office equipment |  |
| Op1127.1 |  |  |  | |  | | Setting up other office equipment |  |
| Op1127.2 |  |  |  | |  | | Troubleshooting hardware problems of other office equipment |  |
| Op1127.3 |  |  |  | |  | | Repair of other office equipment by an external service company |  |
| Op1127.4 |  |  |  | |  | | Moving other office equipment to another location |  |
| Op1127.5 |  |  |  | |  | | Cleaning of other office equipment and other preventive maintenance |  |
| Op1200 |  | **SOFTWARE** | | | | |  |  |
| Op1210 |  |  | **System, middleware and client software** | | | |  |  |
| Op1211 |  |  |  | | **Operating Systems** | |  |  |
| Op1211.1 |  |  |  | |  | | OS installation |  |
| Op1211.2 |  |  |  | |  | | OS setup |  |
| Op1211.3 |  |  |  | |  | | OS Administration |  |
| Op1211.4 |  |  |  | |  | | OS system error correction |  |
| Op1211.5 |  |  |  | |  | | OS Upgrade |  |
| Op1212 |  |  |  | | **Client Software** | | |  |
| Op1212.1 |  |  |  | |  | | Client software installation |  |
| Op1212.2 |  |  |  | |  | | Setup of client software |  |
| Op1212.3 |  |  |  | |  | | Client Software Administration |  |
| Op1212.4 |  |  |  | |  | | Updating client software |  |
| Op1213 |  |  |  | | **DBMS** | |  |  |
| Op1213.1 |  |  |  | |  | | DBMS installation |  |
| Op1213.2 |  |  |  | |  | | DBMS setup |  |
| Op1213.3 |  |  |  | |  | | DBMS administration |  |
| Op1213.4 |  |  |  | |  | | DBMS system error correction |  |
| Op1213.5 |  |  |  | |  | | DBMS upgrade |  |
| Op1213.6 |  |  |  | |  | | Database backup and recovery |  |
| Op1220 |  |  | **IT software** | | | |  |  |
| Op1221 |  |  |  | | **Records management and document flow** | |  |  |
| Op1221.1 |  |  |  | |  | | Installation of the office management and document management system |  |
| Op1221.2 |  |  |  | |  | | Setting up a workflow and document management system |  |
| Op1221.3 |  |  |  | |  | | Administration of the workflow and document management system |  |
| Op1221.4 |  |  |  | |  | | Eliminating system errors of the workflow and document management system |  |
| Op1221.5 |  |  |  | |  | | Updating the workflow and document management system |  |
| Op1221.6 |  |  |  | |  | | Backup and recovery of the workflow and document management system |  |
| Op1222 |  |  |  | | **Portals** | |  |  |
| Op1222.1 |  |  |  | |  | | Portal installation |  |
| Op1222.2 |  |  |  | |  | | Portal setup |  |
| Op1222.3 |  |  |  | |  | | Portal administration |  |
| Op1222.4 |  |  |  | |  | | Troubleshooting portal system errors |  |
| Op1222.5 |  |  |  | |  | | Portal update |  |
| Op1222.6 |  |  |  | |  | | Backup and restore portal |  |
| Op1223 |  |  |  | | **Website** | |  |  |
| Op1223.1 |  |  |  | |  | | Site creation |  |
| Op1223.2 |  |  |  | |  | | Site installation |  |
| Op1223.3 |  |  |  | |  | | Site Setup |  |
| Op1223.4 |  |  |  | |  | | Site administration |  |
| Op1223.5 |  |  |  | |  | | Updating the site |  |
| Op1223.6 |  |  |  | |  | | Backup and Restoration of the site |  |
| Op1224 |  |  |  | | **Project management systems** | |  |  |
| Op1224.1 |  |  |  | |  | | Installing the project management system software |  |
| Op1224.2 |  |  |  | |  | | Project management system setup |  |
| Op1224.3 |  |  |  | |  | | Project Management System Administration |  |
| Op1224.4 |  |  |  | |  | | Project Management System Upgrade |  |
| Op1224.5 |  |  |  | |  | | Backup and restoration of project management system data |  |
| Op1225 |  |  |  | | **Reference and information systems** | |  |  |
| Op1225.1 |  |  |  | |  | | Installation of help and information systems |  |
| Op1225.2 |  |  |  | |  | | Setup of help and information systems |  |
| Op1225.3 |  |  |  | |  | | Administration of help and information systems |  |
| Op1225.4 |  |  |  | |  | | Updating help and information systems |  |
| Op1225.5 |  |  |  | |  | | Backup and restoration of help and information systems |  |
| Op1226 |  |  |  | | **Service Desk** | |  |  |
| Op1226.1 |  |  |  | |  | | Service Desk software installation |  |
| Op1226.2 |  |  |  | |  | | Service Desk setup |  |
| Op1226.3 |  |  |  | |  | | Service Desk Administration |  |
| Op1226.4 |  |  |  | |  | | Updating Service Desk |  |
| Op1226.5 |  |  |  | |  | | Receive, log and categorize incidents |  |
| Op1226.6 |  |  |  | |  | | Monitor incident resolution |  |
| Op1226.7 |  |  |  | |  | | Provide consulting services |  |
| Op1226.8 |  |  |  | |  | | Provide regular reporting for quality control of work performed |  |
| Op1230 |  |  | **ERP class systems, automated process control systems and other industrial systems** | | | |  |  |
| Op1231 |  |  |  | | | **ERP** |  |  |
| Op1231.1 |  |  |  | | |  | ERP system installation |  |
| Op1231.2 |  |  |  | | |  | ERP system setup |  |
| Op1231.3 |  |  |  | | |  | ERP system administration |  |
| Op1231.4 |  |  |  | | |  | Troubleshooting ERP system errors |  |
| Op1231.5 |  |  |  | | |  | ERP System Upgrade |  |
| Op1231.6 |  |  |  | | |  | Backup and Restore ERP system |  |
| Op1232 |  |  |  | | | **Automated process control system** |  |  |
| Op1232.1 |  |  |  | | |  | Installation of the APCS |  |
| Op1232.2 |  |  |  | | |  | Setup of APCS |  |
| Op1232.3 |  |  |  | | |  | APCS administration |  |
| Op1232.4 |  |  |  | | |  | APCS system error correction |  |
| Op1232.5 |  |  |  | | |  | Updating APCS |  |
| Op1232.6 |  |  |  | | |  | Backup and Restore APCS |  |
| Op1233 |  |  |  | | | **Other industrial systems** |  |  |
| Op1233.1 |  |  |  | | |  | Industrial System Installation |  |
| Op1233.2 |  |  |  | | |  | Setup of the industrial system |  |
| Op1233.3 |  |  |  | | |  | Administration of the industrial system |  |
| Op1233.4 |  |  |  | | |  | Troubleshooting industrial system system errors |  |
| Op1233.5 |  |  |  | | |  | Upgrading the production system |  |
| Op1233.6 |  |  |  | | |  | Industrial system backup and restore |  |
| Op1300 |  | **Multiservice network** | | | | |  |  |
| Op1310 |  |  | **Local multiservice network** | | | |  |  |
| Op1311 |  |  |  | | | **Active network equipment** |  |  |
| Op1311.1 |  |  |  | | |  | Installing Switches and Routers |  |
| Op1311.2 |  |  |  | | |  | Setup Switches and Routers |  |
| Op1311.3 |  |  |  | | |  | Switch and router administration |  |
| Op1311.4 |  |  |  | | |  | Repairing switches and routers with an outside service company |  |
| Op1311.5 |  |  |  | | |  | Relocating switches and routers to another location |  |
| Op1311.6 |  |  |  | | |  | Upgrading software for switches and routers |  |
| Op1312 |  |  |  | | | **Network services** |  |  |
| Op1312.1 |  |  |  | | |  | Network access support |  |
| Op1312.2 |  |  |  | | |  | Support for network file services |  |
| Op1312.3 |  |  |  | | |  | Support for network printing services |  |
| Op1320 |  |  | **Storage and backup systems** | | | |  |  |
| Op1321 |  |  |  | | | **Servers and server systems** |  |  |
| Op1321.1 |  |  |  | | |  | Server installation |  |
| Op1321.2 |  |  |  | | |  | Setup of servers |  |
| Op1321.3 |  |  |  | | |  | Server Testing |  |
| Op1321.4 |  |  |  | | |  | Server administration |  |
| Op1321.5 |  |  |  | | |  | Repairing servers with an external service company |  |
| Op1321.6 |  |  |  | | |  | Moving servers to another location |  |
| Op1321.7 |  |  |  | | |  | Server modernization |  |
| Op1322 |  |  |  | | | **Data storage systems** |  |  |
| Op1322.1 |  |  |  | | |  | Storage system installation |  |
| Op1322.2 |  |  |  | | |  | Storage system setup |  |
| Op1322.3 |  |  |  | | |  | Storage system testing |  |
| Op1322.4 |  |  |  | | |  | Storage system administration |  |
| Op1322.5 |  |  |  | | |  | Storage system repair with an outside service company |  |
| Op1322.6 |  |  |  | | |  | Storage system relocation |  |
| Op1322.7 |  |  |  | | |  | Storage system modernization |  |
| Op1323 |  |  |  | | | **SAN** |  |  |
| Op1323.1 |  |  |  | | |  | SAN switch installation |  |
| Op1323.2 |  |  |  | | |  | Setup SAN switches |  |
| Op1323.3 |  |  |  | | |  | Testing SAN switches |  |
| Op1323.4 |  |  |  | | |  | SAN switch administration |  |
| Op1323.5 |  |  |  | | |  | Repairing SAN switches with an external service company |  |
| Op1323.6 |  |  |  | | |  | Relocating SAN switches to another location |  |
| Op1323.7 |  |  |  | | |  | SAN switch upgrades |  |
| Op1323.8 |  |  |  | | |  | FC cabling |  |
| Op1324 |  |  |  | | | **Backup systems** |  |  |
| Op1324.1 |  |  |  | | |  | Installing the tape library |  |
| Op1324.2 |  |  |  | | |  | Setup the tape library |  |
| Op1324.3 |  |  |  | | |  | Testing the tape library |  |
| Op1324.4 |  |  |  | | |  | Administration of the tape library |  |
| Op1324.5 |  |  |  | | |  | Repairing the tape library with an outside service company |  |
| Op1324.6 |  |  |  | | |  | Moving the tape library to another location |  |
| Op1324.7 |  |  |  | | |  | Modernizing a tape library |  |
| Op1324.8 |  |  |  | | |  | Replacing cartridges in the tape library |  |
| Op1330 |  |  | **Communication services** | | | |  |  |
| Op1331 |  |  |  | | | **Telephone services** |  |  |
| Op1331.1 |  |  |  | | |  | Provision of access and technical support for telephone communications |  |
| Op1331.2 |  |  |  | | |  | Installation and maintenance of billing system |  |
| Op1332 |  |  |  | | | **Audio and videoconferencing services** |  |  |
| Op1332.1 |  |  |  | | |  | Provision of access and technical support for audio and video conferencing |  |
| Op1332.2 |  |  |  | | |  | Video terminal installation |  |
| Op1332.3 |  |  |  | | |  | Video terminal testing |  |
| Op1332.4 |  |  |  | | |  | Video terminal repair by an external service company |  |
| Op1332.5 |  |  |  | | |  | Installation of multipoint videoconferencing server (MCU) |  |
| Op1332.6 |  |  |  | | |  | Setup of multipoint videoconferencing server (MCU) |  |
| Op1332.7 |  |  |  | | |  | Testing the multipoint videoconferencing server (MCU) |  |
| Op1332.8 |  |  |  | | |  | Multipoint video conferencing server (MCU) administration |  |
| Op1332.9 |  |  |  | | |  | Repair of multipoint videoconferencing server (MCU) in an external service company |  |
| Op1333 |  |  |  | | | **Wi-Fi communication services** |  |  |
| Op1334 |  |  |  | | | **Trunking services** |  |  |
| Op1335 |  |  |  | | | **Satellite communication services** |  |  |
| Op1336 |  |  |  | | | **Cellular communication services** |  |  |
| Op1337 |  |  |  | | | **E-mail services** |  |  |
| Op1338 |  |  |  | | | **WEB-hosting services** |  |  |
| Op1400 |  | **Information protection and information security** | | | | |  |  |
|  |  |  | **Multiservice network protection** | | | |  |  |
|  |  |  |  | | | **Private virtual networks** |  |  |
|  |  |  |  | | |  | Internet access |  |
|  |  |  |  | | |  | Authentication and cryptocurrency protection software |  |
|  |  |  |  | | | **Protection of confidential information** |  |  |
|  |  | **Communication systems and facilities** | | | | |  |  |
|  |  |  | **Communication systems and facilities** | | | |  |  |
|  |  |  |  | | | **Telephone stations** |  |  |
|  |  |  |  | | |  | Testing the telephone exchange |  |
|  |  |  |  | | |  | Setting up the telephone exchange |  |
|  |  |  |  | | |  | Troubleshooting of telephone exchange technical problems |  |
|  |  |  |  | | |  | Telephone exchange system administration |  |
|  |  |  |  | | |  | Repair of the telephone exchange in an external service company |  |
|  |  |  |  | | | **Subscriber devices** |  |  |
|  |  |  |  | | |  | Phone Setup |  |
|  |  |  |  | | |  | Phone replacement |  |
|  |  |  |  | | |  | Phone Setup |  |
|  |  |  |  | | |  | Phone repair at an external service company |  |
|  |  |  | **Mobile and cellular communications** | | | |  |  |
|  |  |  |  | | | **Trunking communications equipment** |  |  |
|  |  |  |  | | | **Cellular communications equipment** |  |  |
|  |  |  | **Radio relay** | | | |  |  |
|  |  |  |  | | | **Radio relay communication facilities** |  |  |
|  |  |  | **Cable management** | | | |  |  |
|  |  |  |  | | | **Cable management and sewerage** |  |  |
|  |  |  |  | | |  | Fiber Optic Installation |  |
|  |  |  |  | | |  | Fiber Testing |  |
|  |  |  |  | | |  | Fiber welding |  |
|  |  | **Specialized rooms** | | | | |  |  |
|  |  |  | **Meeting rooms** | | | |  |  |
|  |  |  |  | | | **Meeting rooms** |  |  |
|  |  |  | **Assembly and conference rooms** | | | |  |  |
|  |  |  |  | | | **Assembly and conference rooms** |  |  |
|  |  | **Engineering systems** | | | | |  |  |
|  |  |  | **SCS and Power Supply** | | | |  |  |
|  |  |  |  | | | **SCS and Power Supply** |  |  |
|  |  |  |  | | |  | Cabinet mounting |  |
|  |  |  |  | | |  | Laying of horizontal SCS elements |  |
|  |  |  |  | | |  | Laying of vertical SCS elements |  |
|  |  |  |  | | |  | Installation of additional working groups |  |
|  |  |  |  | | |  | Cross-country installation |  |
|  |  |  |  | | |  | Crossing of information cables |  |
|  |  |  |  | | |  | Installation of electrical panels |  |
|  |  |  |  | | |  | Crossing of electric cables |  |
|  |  |  | **Security and fire system** | | | |  |  |
|  |  |  |  | | | **Security and fire system** |  |  |
|  |  |  | **Access control system** | | | |  |  |
|  |  |  |  | | | **Video surveillance** |  |  |
|  |  |  |  | | |  | Installation of CCTV cameras |  |
|  |  |  |  | | |  | Cabling for video surveillance system |  |
|  |  |  |  | | |  | Installation and configuration of video surveillance system recorder |  |
|  |  |  |  | | | **Access control systems** |  |  |
|  |  |  |  | | |  | Installation of access control system scanners |  |
|  |  |  |  | | |  | Cabling for access control system |  |
|  |  |  |  | | |  | Installation and configuration of access control system servers |  |
|  |  |  | **Air conditioning and ventilation** | | | |  |  |
|  |  |  |  | | | **Air conditioning and ventilation** |  |  |
|  |  |  | **Dispatching** | | | |  |  |
|  |  |  |  | | | **Dispatching** |  |  |
|  |  | Training | | | | |  |  |
|  |  |  | **PC and software** | | | |  |  |
|  |  |  |  | | | **PC training** |  |  |
|  |  |  | **ERP** | | | |  |  |
|  |  |  |  | | | **ERP training** |  |  |