



Approved by
the Board of Directors of PJSC Rosseti
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The Policy of PJSC Rosseti in the area of information technology, automation and telecommunications (ITT Policy)

On 65 sheets

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CONTENTS

1. GENERAL PROVISIONS	4
2. DETERMINATION OF THE ITT KEY DIRECTIONS	6
2.1. Analysis of the current tasks of Rosseti Group of Companies	6
2.2. Analysis of the current situation, key tendencies and perspectives of their change	7
2.3. Determination of the directions of development of ITT in Rosseti Group of Companies	11
2.4. Consolidation of the directions in policy of development of ITT	18
3. POLICY OF DEVELOPMENT OF AUTOMATED SYSTEMS OF TECHNOLOGY MANAGEMENT	21
3.1. General information	21
3.2. ASTU (automated system of process control) target model	21
3.3. Stages of transition to the ASTU target model	22
4. POLICY OF DEVELOPMENT OF ENTERPRISE INFORMATION SYSTEMS...	24
4.1. General information	24
4.2. Development of ERP in Rosseti Group of Companies	25
4.3. Automation of processes of management of treasury transactions.....	26
4.4. Automation of asset management processes.....	27
4.5. Automation of processes of information management of Rosseti Group	28
5. POLICY OF DEVELOPMENT OF INFORMATION SECURITY	30
5.1. General information	30
5.2. Creation of the System of information security support	31
5.3. Creation of the Complex management system of information security	31
5.4. Creation of the Certification centre of PJSC Rosseti	32
6. POLICY OF DEVELOPMENT OF IT INFRASTRUCTURE	34
6.1. General information	34
6.2. General target model of IT infrastructure	34
6.3. Stages of transition to a target model of IT infrastructure	36
7. POLICY OF DEVELOPMENT OF THE COMMUNICATION NETWORK	37
7.1. General information	37
7.2. General target model of a communication network.....	37
7.3. Target program of development of communication networks.....	38
7.4. Creation of systems of digital mobile radio communication.	39
7.5. Creation of a uniform network of telephone communication	40
7.6. Work on optimization of use of communication services	41
7.7. Development of services of video conferencing.....	41
8. POLICY OF OPTIMIZATION OF ITT-ACTIVITY	42
8.1. ITT-activity in Rosseti Group	42
8.2. Unification of ITT-activity in Rosseti Group	42
8.3. Creation of a uniform service company of Rosseti Group	45
8.4. Centralization of repair and operational service of ITT	46
8.5. Creation of the operator of ETsOD.....	47
8.6. Creation of the operator of technology communication	48

8.7.	Creation of the infrastructure operator of communication networks.....	48
8.8.	Forming of the internal centre of ITT-competences of Rosseti Group.....	49
8.9.	Centralization of purchasing activity in the field of ITT	50
9.	FORMING OF BUDGETS OF IMPLEMENTATION OF THE POLICY	52
10.	TARGET REFERENCE POINTS AND RISKS OF IMPLEMENTATION OF THE POLICY	57
10.1.	Target indicators of the Policy.....	57
10.2.	Target architecture of ITT-systems	57
10.3.	Risks of implementation of the Policy	58
11.	CONTROL OF IMPLEMENTATION OF THE POLICY AND ITS UPDATE.....	60
APPENDIX 1. TERMS AND DEFINITIONS.....		61
APPENDIX 2. LITERATURE.....		64

1. GENERAL PROVISIONS

- 1.1. The policy of Public Joint Stock Company Rosseti in the field of information technologies, automation and telecommunications (hereinafter — the ITT Policy) is an internal regulating document of PJSC Rosseti and establishes the purposes, tasks and principles of implementation of actions for automation of business processes of PJSC Rosseti and SDC, development and providing systems of management automation and providing the IT infrastructure and communication systems.
- 1.2. The policy is directed to creation of tools and automation equipment which use allows to provide effective solution of the tasks defined in the Strategy of development of the power grid complex of the Russian Federation approved by Order of the Government of the Russian Federation of 03.04.2013 No. 511-r.
- 1.3. The ITT Policy is worked out in development of the provisions:
 - 1.3.1. The strategy of OJSC IDGC Holding and the affiliated and dependent companies rendering services in transmission and distribution of electric energy in the field of information technologies, automation and telecommunications for the period till 2016, approved by the decision of the Board of Directors of PJSC Rosseti of 25.06.2012 (Minutes of 02.07.2012 No. 86, hereinafter — the Strategy of ITT).
 - 1.3.2. The IT Strategy of PJSC FGC UES, approved by the decision of the Management Board of PJSC FGC UES (Minutes of 16.05.2014 No. 1235/19).
 - 1.3.3. The Uniform technical policy of PJSC Rosseti [1].
- 1.4. The ITT Policy represents the key fundamental document in the field of development of information technologies, automation and telecommunications of Rosseti Group. The ITT Policy is obligatory for execution by all structural divisions of PJSC Rosseti. Concerning the following SDCs entering into the group of companies, and also other SDCs of PJSC Rosseti and SDCs of the specified Companies, the ITT Policy has advisory nature and defines the general principles, purposes, problems of implementation in the field of ITT:
 - 1.4.1. PJSC FGC UES,
 - 1.4.2. PJSC MOESK,
 - 1.4.3. PJSC IDGC of Centre,

- 1.4.4. PJSC IDGC of Volga,
 - 1.4.5. PJSC IDGC of Centre and Volga Region,
 - 1.4.6. JSC Tyumenenergo,
 - 1.4.7. PJSC IDGC of Siberia,
 - 1.4.8. JSC IDGC of Urals,
 - 1.4.9. PJSC Lenenergo,
 - 1.4.10. PJSC IDGC of North-West,
 - 1.4.11. PJSC IDGC of South,
 - 1.4.12. PJSC Kubanenergo,
 - 1.4.13. PJSC IDGC of North Caucasus,
 - 1.4.14. PJSC TRK,
 - 1.4.15. JSC Yantarenergo,
 - 1.4.16. PJSC EESK,
 - 1.4.17. JSC Management of VOLS-VL,
 - 1.4.18. LLC IT Energy Service,
 - 1.4.19. JSC MUS of Power Industry.
- 1.5. On the basis of the Policy in the specified SDC of PJSC Rosseti the target programs directed to achievement of target reference points and the solution of key problems of the Policy should be developed.

2. DETERMINATION OF THE ITT KEY DIRECTIONS

2.1. Analysis of the current tasks of Rosseti Group of Companies

- 2.1.1 According to the Strategy of development of the power grid complex of the Russian Federation (approved by Order of the Government of the Russian Federation of April 03, 2013 No. 511-r) [1] PJSC Rosseti is urged to become a uniform managing company of the power grid complex of the country and to provide coordination of actions of all grid organizations of the Russian Federation (the main and distribution energy companies, including TGOs, not being a part of the united company). The key tasks facing Rosseti Group are defined by legal and regulating documents, the Strategy of development of the power grid complex of the Russian Federation [1], the Long-term program of development of PJSC Rosseti[2].
- 2.1.2 It is possible to distinguish a part which solution can be reached with use (and in some cases demands without fail) of the automation equipment from the tasks facing the power grid complex of the Russian Federation. A subject of this policy is allocation of such tasks and determination of the list of the automation equipment which are necessary for successful implementation of such tasks.
- 2.1.3 The tasks connected with ensuring reliability of power supply, ensuring energy security can be coordinated to the task of asset management meaning uniform approach to management of all processes connected with different aspects of assets (including without limitation of repair and maintenance). As a part of this task the following subtasks which successful implementation requires development of the automation equipment can be allocated (Figure 1):
- 2.1.3.1 increase in level of observability and controllability of network;
 - 2.1.3.2 decrease in failure rate and acceleration of emergency recovery operations;
 - 2.1.3.3 ensuring collection of data on reliability and quality of electric power;
 - 2.1.3.4 safety of power grid facilities and infrastructure in general, including due to increase in level of information security;
 - 2.1.3.5 transition to asset management on their actual state, including regarding repair and maintenance due to transition to repairs of power grid facilities "on a state";
- 2.1.4 Information technologies, including systems of automation of business processes, also promote implementation of the following tasks:

2.1.4.1 improvement of quality of service and providing consumer satisfaction, reduction of terms of grid connection, including due to development of automated systems of remote and internal consumer service

2.1.4.2 ensuring completeness and reliability of operational management information; process and systems optimization, work performance improvement.

2.1.5 The important task facing Rosseti Group of Companies is expense reduction. A subject of this policy is determination of approaches to expense optimization on the ITT activity.

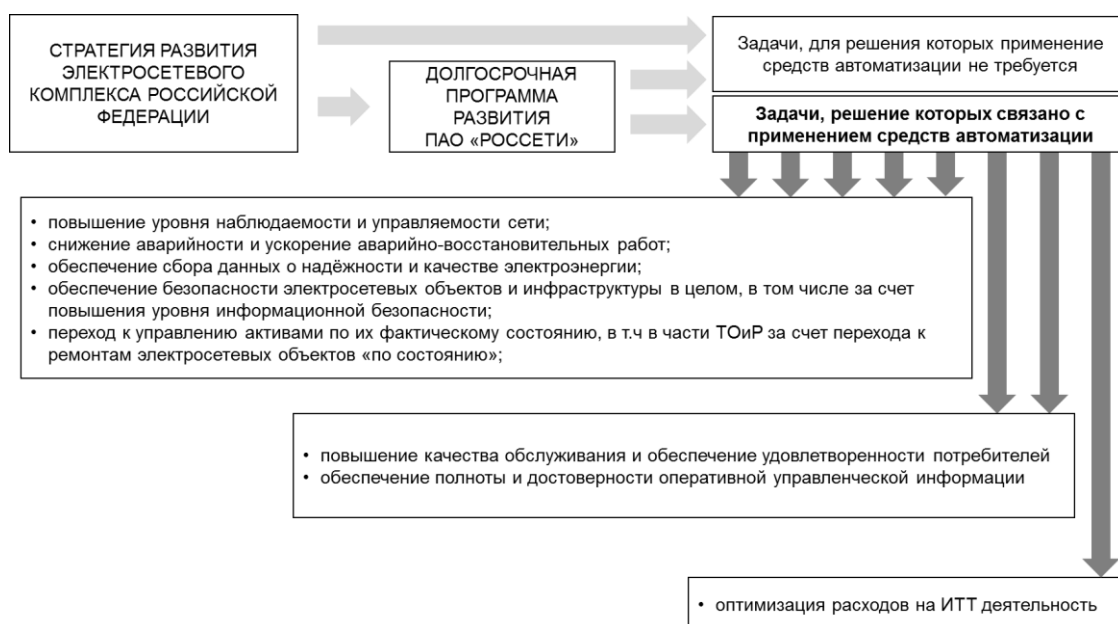


Figure 1. Tasks of Rosseti Group which solution is possible by means of IT

2.1.6 This policy is directed to creation of effective automated control systems by both technology and not - technology processes, economically reasonable infrastructure for ensuring operability of such systems that finally allows to achieve the goals and the tasks set for the main and distribution power grid companies, including TGOs, not being a part of Rosseti Group of Companies¹.

2.2. Analysis of the current situation, key tendencies and perspectives of their change

2.2.1 Now PJSC Rosseti — the largest power holding in Russia, providing transmission and distribution of electric power. The power grid complex of Rosseti Group includes, among others, 14 interregional, regional and the transmission grid

¹ For TGOs which do not enter Rosseti Group, this policy can be applied in case of conclusion of the relevant agreement between that company and PJSC Rosseti

company (PJSC FGC UES), power lines of more than 2 million kilometers long performing operation and power grid substations of about 500 thousand pieces.

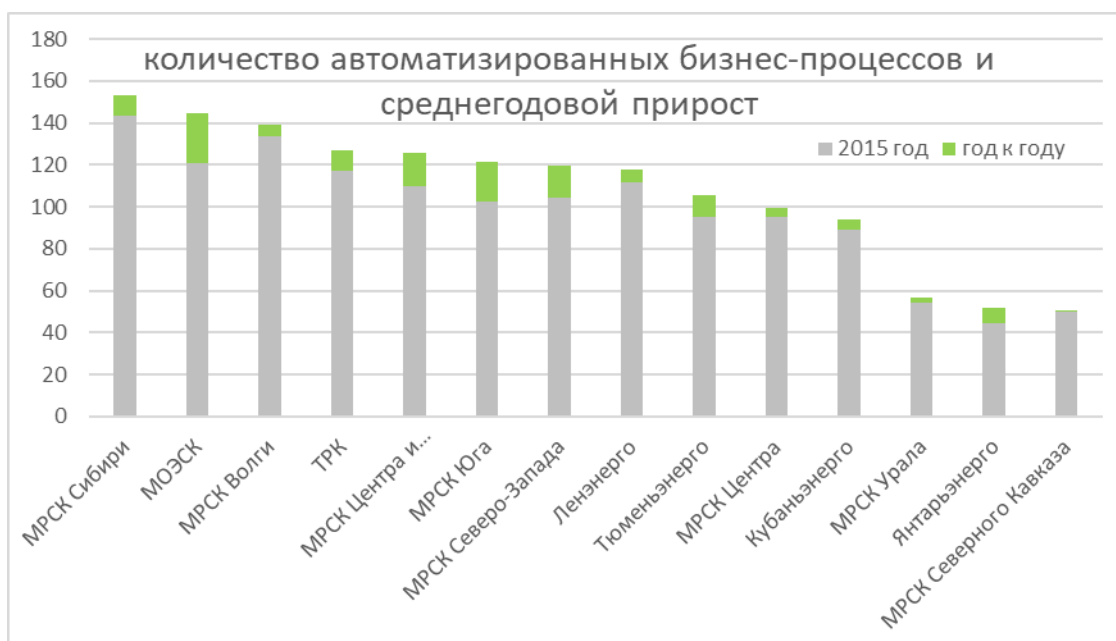
2.2.2 At the same time, the number of substations equipped with systems of telemechanics (automated collecting of telemetric information on a condition of the power grid equipment and/or remote control of this equipment) makes about 14 thousand pieces or less than 3%. Gain of this



indicator on Rosseti Group of Companies is about 0,1% a year², which is insufficient. It should be noted that in most SDCs of PJSC Rosseti the infrastructure facilities which are in management or maintained by JSC SO UES are not in full equipped with systems of collecting and information transfer (systems of telemechanics).

2.2.3 One of activities of Rosseti Group of Companies is increase in speed of implementation of business processes and increase in their transparency for what automated control systems are implemented in PJSC Rosseti and SDCs of PJSC Rosseti. At the same time, it is preferred as automation of processes connected with the core business – electric energy transmission and grid connection, ensuring processes of interaction with consumers. Despite rather high rates of growth of this indicator, in separate SDCs the majority of business processes are carried out manually or with the minimum use of the automation equipment.

² Indicators are given according to annual production reports of SDCs of PJSC Rosseti for 2015.



- 2.2.4 Rosseti Group of Companies has more than 210 thousand employees, more than 80 thousand from them are provided with automated jobs and means of communication. Despite the fact that annual average values of these indicators do not change, the need for mobility and level of providing IT services constantly grows that involves complication and rise in price of necessary IT infrastructure.
- 2.2.5 Along with it, Rosseti Group of Companies face a task of cost optimization on IT when ensuring necessary level of reliability. Expense reduction leads to reduction of total expenses on IT that in total with growth of operating expenses of IT leads to a collapse of development of IT (see. Figure 2. Dynamics of ITT-budgets of separate SDCs of PJSC Rosseti) and impossibility to implement projects of automation under the tasks facing Rosseti Group of Companies.

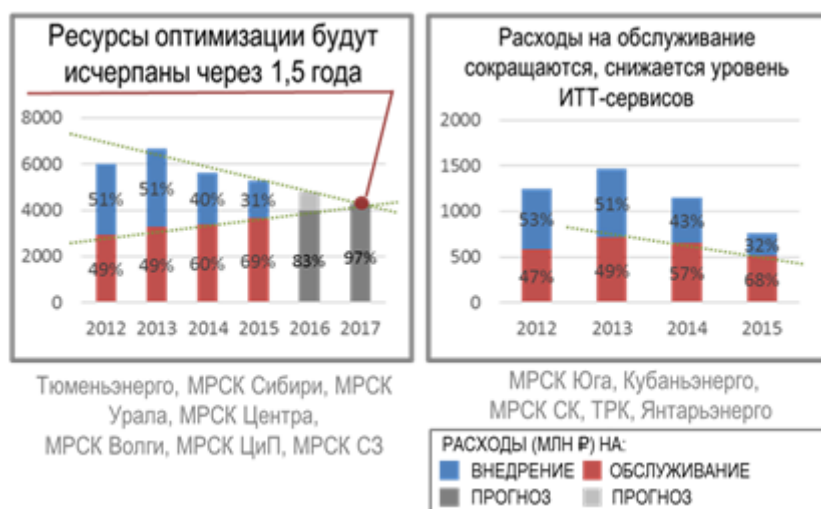


Figure 2. Dynamics of ITT-budgets of separate SDCs of PJSC Rosseti

2.2.6 Summing up the short result, it should be noted that development of automated control systems and IT infrastructure, necessary for their functioning, in Rosseti Group of Companies is in a critical point: requirements of business demand implementation of new systems and automation equipment, however expense reduction does not allow to implement these actions. Moreover, in case of preserving of the current paradigm of development of IT in Rosseti Group of Companies, a part of SDCs of PJSC Rosseti will have to begin to increase IT budgets in the nearest future or to pass to practice of refusal of the created IT solutions.

2.2.7 The variety of solutions, models and architecture of implementation of IT which are developed now says that developments of IT are in a phase of rapid growth, and the implemented solutions are aimed at increase in transparency, speed of course and availability of the business processes realized by the companies. Along with it, IT in Rosseti Group of Companies plays an important role, providing implementation of the tasks set for the group of companies: management efficiency, both at the level of a managing company, and at the level of separate operating companies depends on completeness and speed of obtaining information on the managed facility. The key role in collecting and information transfer is played by ITT: without development of ITT it is impossible to provide effective, meeting the modern requirements technology management of the power grid complex, and also implementation of the tasks facing Rosseti Group of Companies, including:

2.2.7.1 ITT allows to transfer implementation of business processes to a qualitatively new level, having considerably simplified their accomplishment for all participants.

Application in automated control systems of principles of single data entry or automatic filling of fields will allow to avoid emergence of mistakes and to reduce labor costs.

2.2.7.2 The organization of the modern customer-oriented information services (oriented to remote access to services of the Companies) allows to perform effectively interaction with consumers, having simplified process of submission of requests for provision of services and having reduced terms of processing of requests.

2.2.7.3 ITT allows to create an effective mechanism of adoption of management decisions, providing transparency of reporting for management and providing analytics tools.

2.2.7.4 ITT provides quick access to up-to-date information and necessary infrastructure from any point at any moment.

2.3. Determination of the directions of development of ITT in Rosseti Group of Companies

2.3.1 Considering the existing tendencies and methods of creation of ITT-infrastructure for business, due to development of automation equipment and ITT in general the solution of a part of the tasks facing Rosseti Group of Companies (listed in section 2.1) can be provided. At development planning of such means, it is also necessary to provide development of the corresponding ITT-infrastructure.

2.3.2 For the purpose of providing the solution of the tasks connected with increase in level of grid observability and controllability of power supply reliability (section 2.1.3) implementation of a large number of the actions connected among themselves in the field of ITT is necessary (Figure 3). It is possible to refer to such actions as follows:

2.3.2.1 increase in level of equipment of substations means of telemechanics or an industrial control system;

2.3.2.2 development of technology communication between power facilities;

2.3.2.3 development of the GCC/DP/RDP software and hardware;

2.3.2.4 creation and maintenance of the computing infrastructure providing functioning of components of automated systems of operational and technology management.

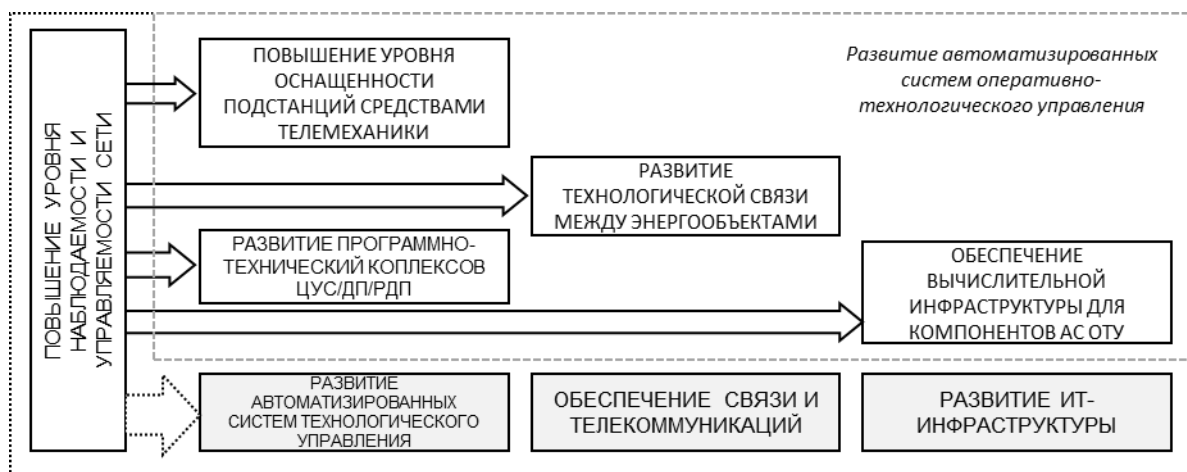


Figure 3. The directions of development of ITT providing increase in observability

2.3.3 Decrease in failure rate and acceleration of emergency recovery operations can be provided through the complex actions connected with increase in grid observability, and also way (see. Figure 4):

2.3.3.1 organization of guaranteed and stable relation with personnel of line, operational and first responding mobile and emergency and recovery crews due to development of own network of radio communication;

2.3.3.2 development of automated systems of monitoring and diagnostics of equipment.

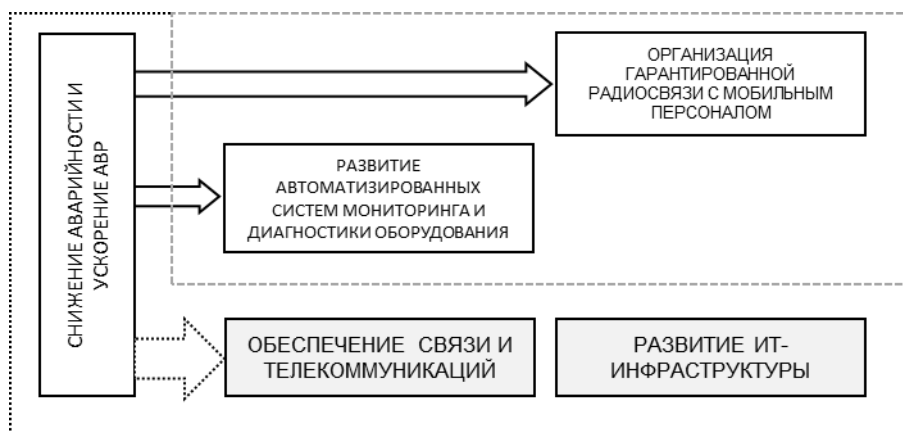


Figure 4. The directions of development of ITT connected with decrease in failure rate

2.3.4 Ensuring collection of data on reliability and quality of electric power demands implementation of automated systems of commercial and technology metering and automated systems of quality control of electric power, and providing necessary telecommunication infrastructure for their functioning (see Figure 5).

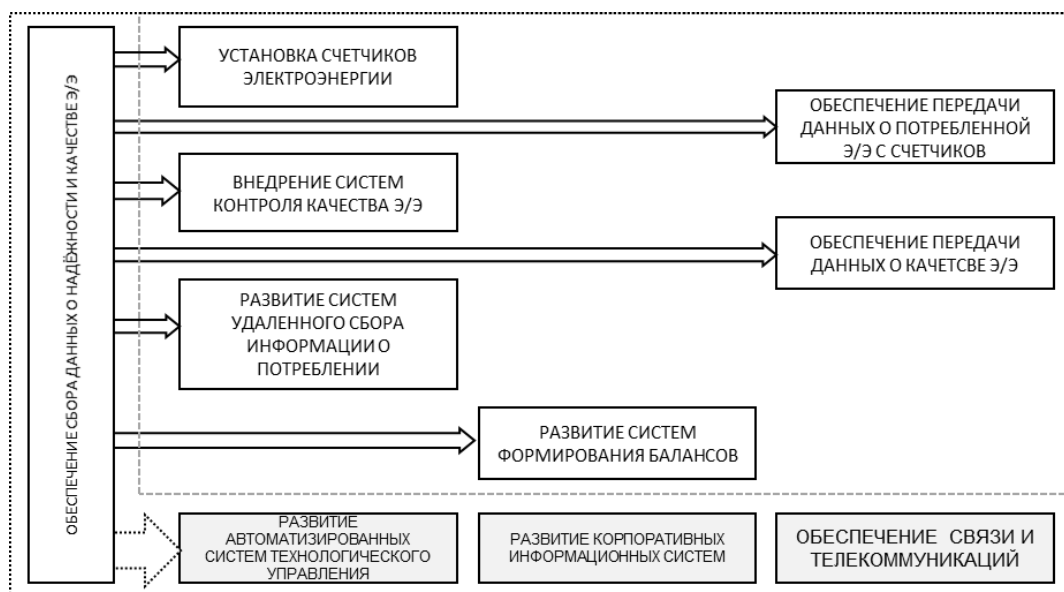


Figure 5. The directions of development of ITT connected with collection of data on power supply

2.3.5 Safety of power grid facilities and infrastructure in general, including due to increase in level of information security of level of security demands development of appropriate means of the IS at both infrastructure facilities (generally the ASTU components), and enterprise systems and services. For what it is necessary to implement a number of the interconnected actions (Figure 6):

2.3.5.1 to create (to modernize) systems of information security support, including a subsystem of forecasting, identification and assessment of threats of information security and their sources;

2.3.5.2 to create a vertically integrated complex management system of information security.

2.3.6 Transition to asset management on their actual state, including regarding repair and maintenance due to transition to repairs of power grid facilities "on a state" demands further development of automated control systems for production assets in the companies of Rosseti Group of Companies.

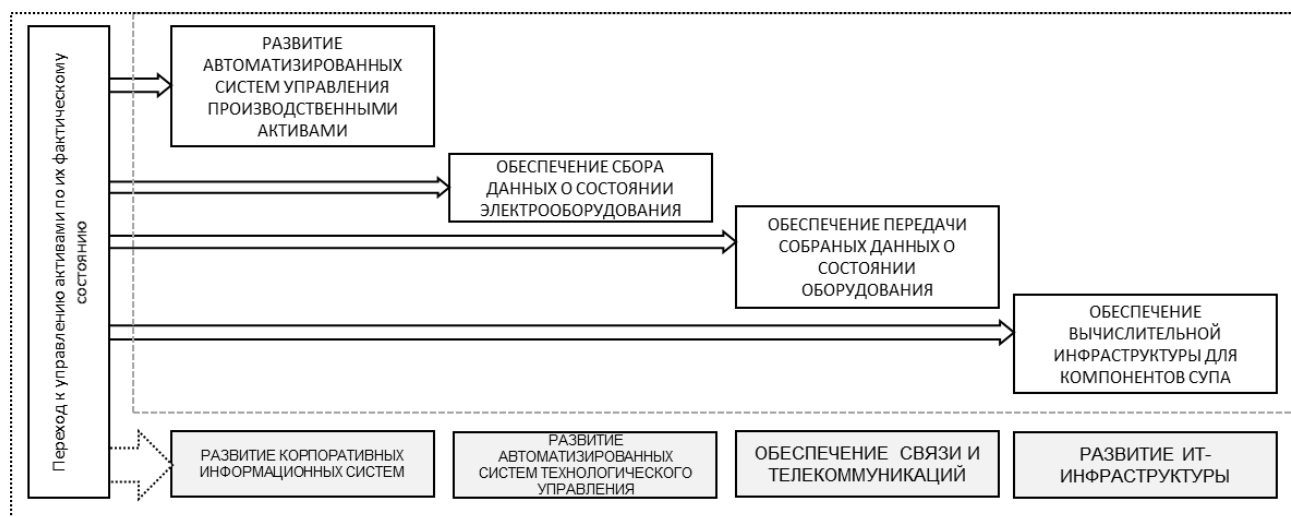


Figure 6. The directions of development of ITT connected with development of the SUPA

2.3.7 For the purpose of ensuring improvement of quality of consumer service due to development of services of remote service implementation the following events in the field of ITT are necessary (Figure 7):

2.3.7.1 development of services of Internet receptions, including a uniform window of receiving requests for grid connection "Портал-ТП.рф";

2.3.7.2 development of automated control systems for interaction with the consumer.

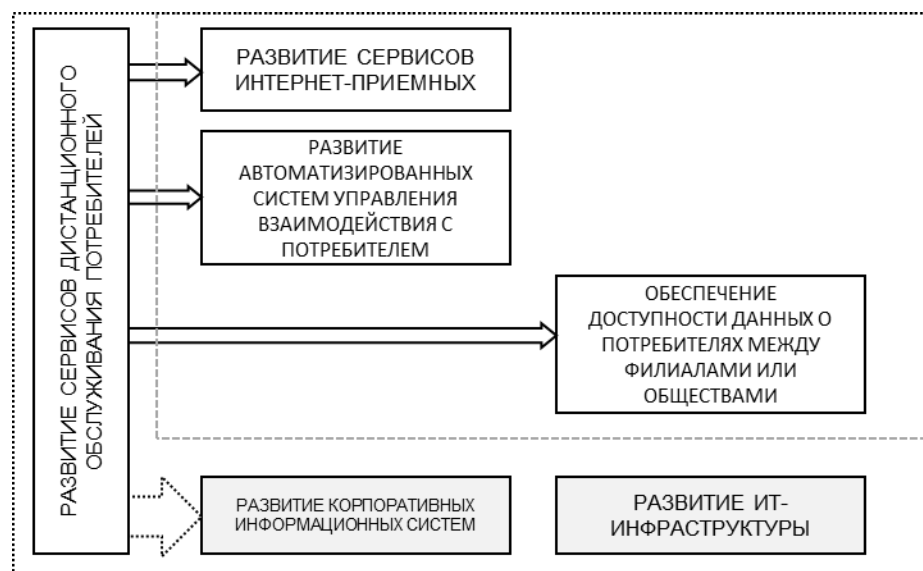


Figure 7. The directions of development of ITT connected with development of remote services

2.3.8 For the purpose of improvement of quality and development of services of internal consumer service implementation the following events in the field of ITT are necessary (Figure 8):

2.3.8.1 creation of IT infrastructure, convenient for consumers, for the equipment of customer service centres;

2.3.8.2 development of automated control systems of interaction with the consumer.

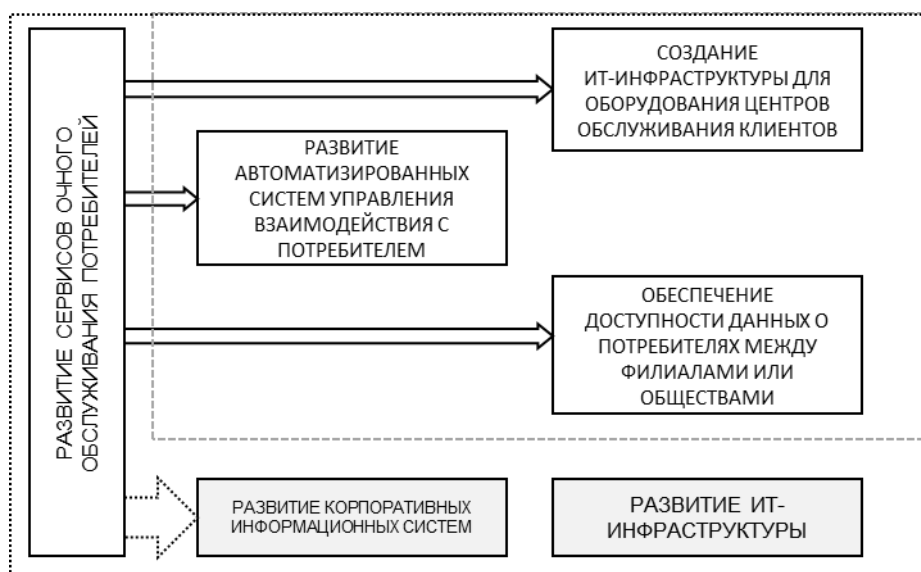


Figure 8. The directions of development of ITT connected with development of internal services

2.3.9 It is not possible provide completeness and reliability of operational management information without creation of automated control systems constructed within a uniform data model and covering processes of each Company in Rosseti Group. Below a part of business processes and processes of technology management is allocated which automation is an important component of activity of power grid companies of the Russian Federation and which automation is a necessary stage in development of Rosseti Group (see Figure 9):

2.3.9.1 Process management of rendering services to consumers, including:

- 2.3.9.1.1 management of grid connection of consumers to electric networks;
- 2.3.9.1.2 service provision management on transmission and distribution of electric power;
- 2.3.9.1.3 operational and technology management and other processes.

2.3.9.2 Management of development and maintenance of infrastructure of power grid companies, including:

- 2.3.9.2.1 management of development of electric networks;
- 2.3.9.2.2 management of capital construction of power grid facilities;

2.3.9.2.3 investment management;

2.3.9.2.4 management of maintenance and repairs of power grid facilities and other processes.

2.3.9.3 Management of ensuring functioning of power grid companies

2.3.9.3.1 management of tariff setting;

2.3.9.3.2 management of economic planning, budgeting;

2.3.9.3.3 management of treasurer transactions and finance;

2.3.9.3.4 purchasing management and logistics;

2.3.9.3.5 property management and other processes.

2.3.10 An important component of increase in efficiency of business processes is ensuring ease of communications between divisions, branches, Companies of Rosseti Group of Companies, and also ensuring communication with external subscribers. At the same time, it is required to provide:

2.3.10.1 development of management systems by electronic document management to provide a possibility of completely paperless document flow both in Rosseti Group of Companies, and between Companies of the Group of Companies and external consumers (where it is possible);

2.3.10.2 providing services of corporate telephone communication with a possibility of organization of direct calls both between divisions of one Company, and between Companies of Rosseti Group of Companies.

2.3.11 Actions for automation of the specified business processes should be provided with reliable and scalable IT infrastructure, actions for which development include (see Figure 9):

2.3.11.1 creation of the IT infrastructure providing access, convenient for staff of Companies of Rosseti Group of Companies, to automated systems including by means of mobile devices and remote access;

2.3.11.2 creation of the reliable IT infrastructure providing smooth functioning of automated control systems;

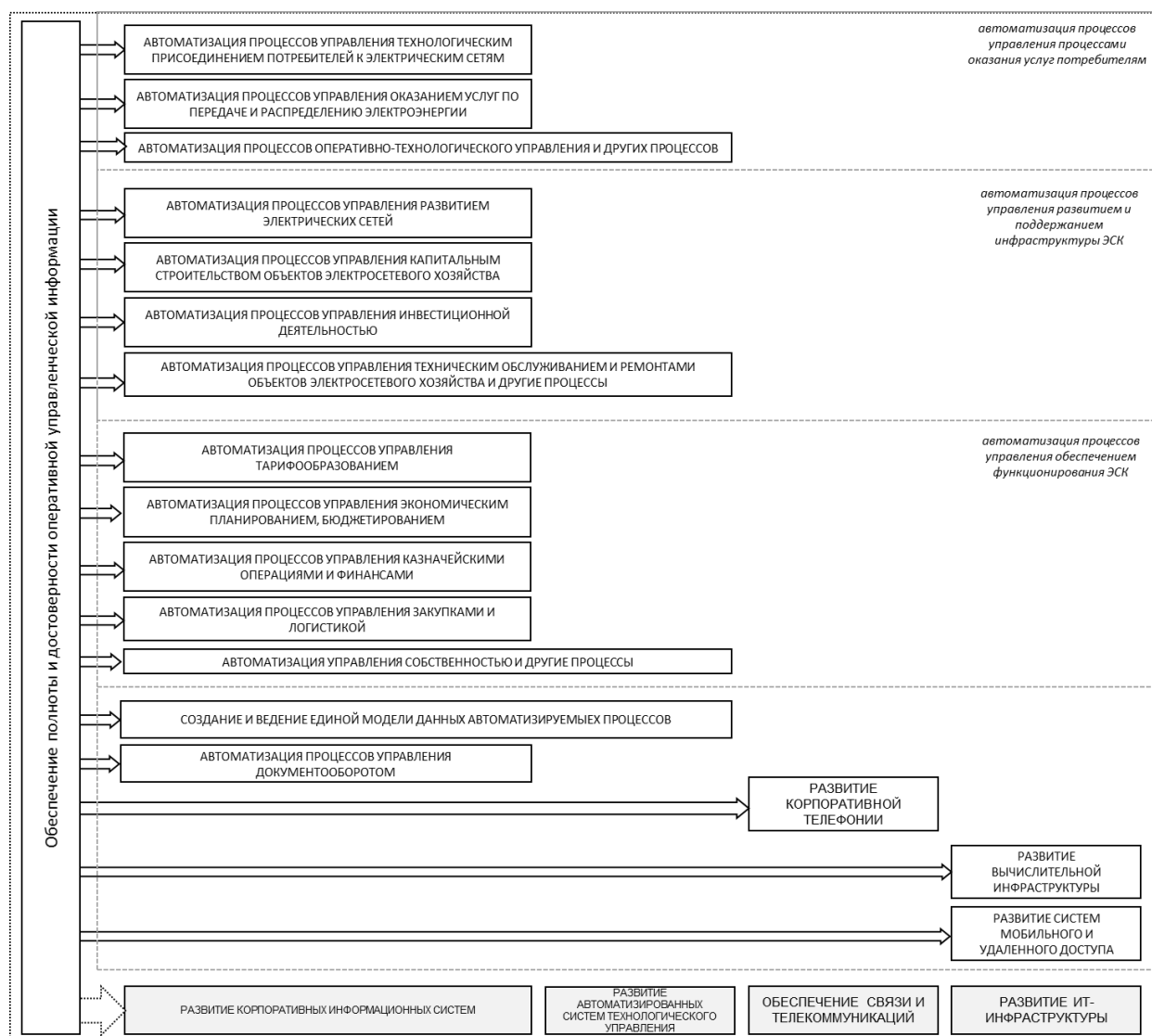


Figure 9. The directions of development of ITT connected with information provision

2.3.12 Cost optimization for the purpose of expense optimization on ITT-activity is supposed to be done with performance of the following events:

- 2.3.12.1 partial centralization of purchasing activity in the field of ITT (in those directions of ITT-activity, where it is economically and technology reasonable);
- 2.3.12.2 the maximum standardization of the applied ITT-solutions (both regarding delivered equipment, and created information systems);
- 2.3.12.3 mutual providing uninvolved ITT-resources by Rosseti Group of Companies to each other;

2.3.12.4 consolidation of organizational divisions of the Companies implementing ITT-functions³;

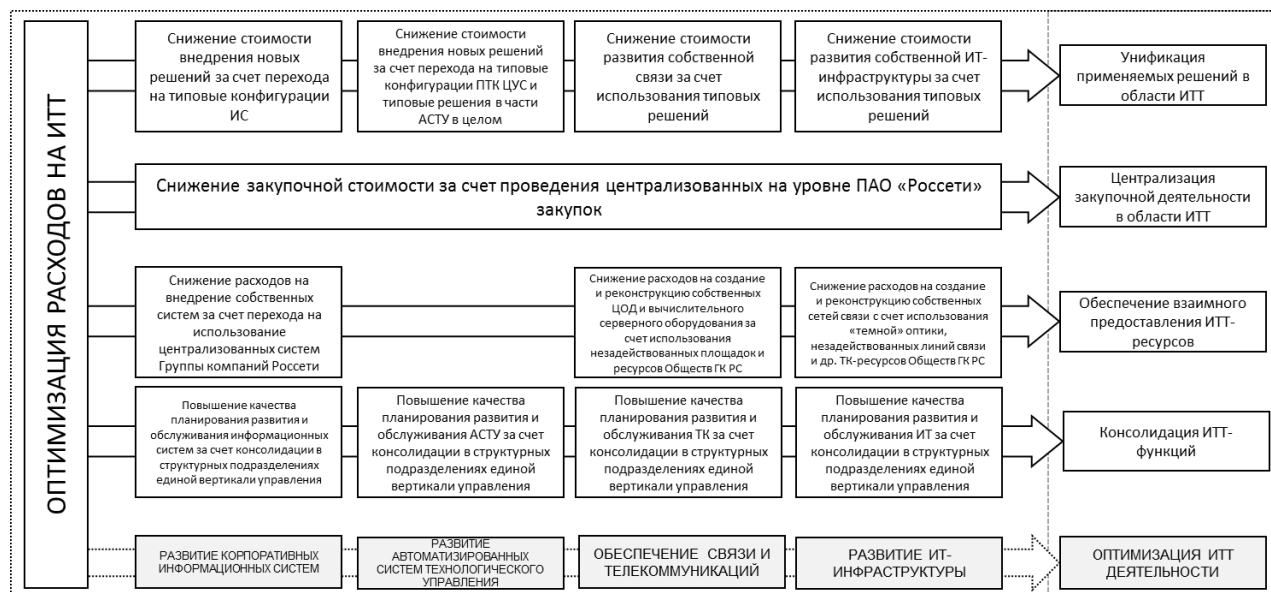


Figure 10. Directions of optimization of ITT-activity

2.4. Consolidation of the directions in policy of development of ITT

2.4.1 The actions for development of ITT specified earlier in Rosseti Group, can be united in six strategic directions (Figure 11) with simultaneous optimization of the repeating ITT-actions and, as a result, increase in efficiency of ITT-activity.

2.4.2 The main strategic directions are connected with development of automated control systems and exert direct impact on implementation of the tasks facing Rosseti Group of Companies:

2.4.2.1 development of automated systems of technology management (the structure and scope of this direction is stated in section 3 of this policy);

2.4.2.2 development of enterprise information systems (see section 4);

³ The list of ITT functions is described in section 8.1 of this policy

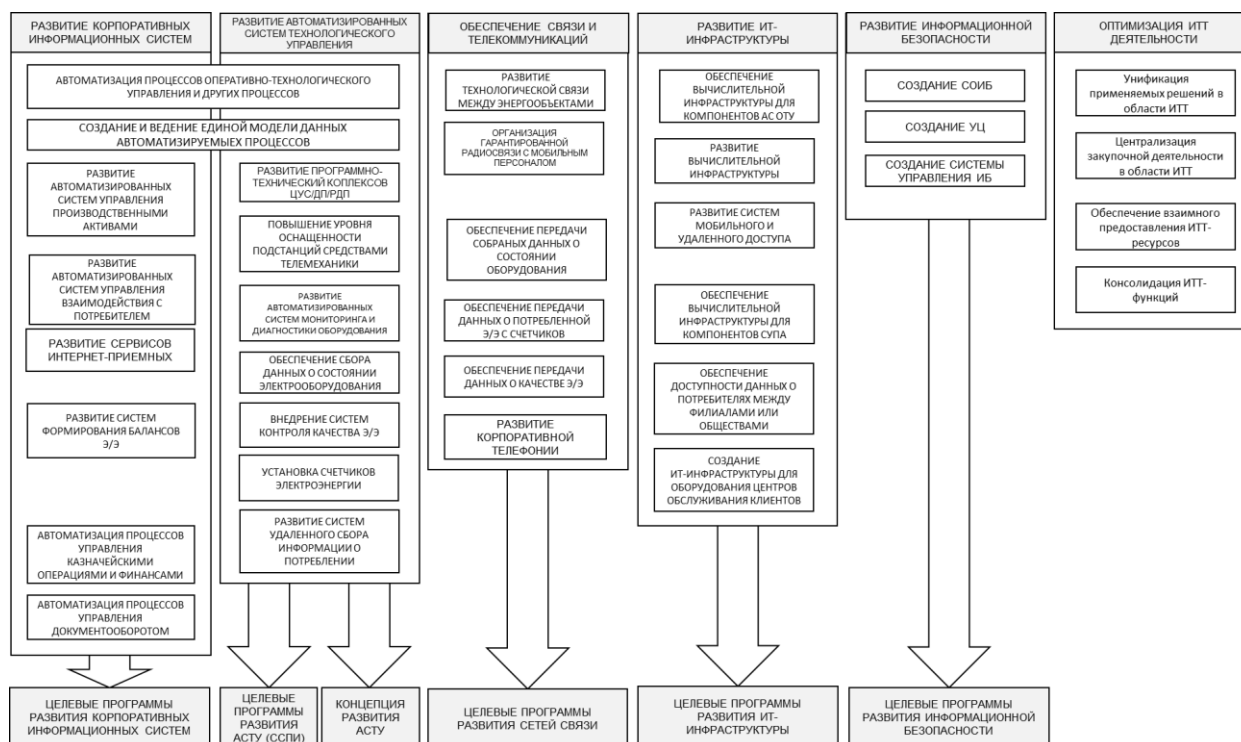


Figure 11. Directions of development of ITT

2.4.3 Auxiliary strategic directions which accomplishment is necessary for implementation of the main strategic directions:

2.4.3.1 development of information security (see section 5);

2.4.3.2 development of IT infrastructure (see section 6);

2.4.3.3 development of communication systems (see section 7);

2.4.3.4 ITT-activity optimization (see section 8).

2.4.4 The development of target programs of development is necessary for implementation of each of the specified directions, including:

2.4.4.1 development of scenario conditions of forming of target programs for each direction;

2.4.4.2 development of a data model of implementable projects for target programs for each direction taking into account integration of data models between target programs;

2.4.4.3 development of forms of target programs, uniform for SDCs of PJSC Rosseti, and reporting under them (within the developed data model).

2.4.5 Target programs for each Company should contain:

- 2.4.5.1 a list of implementable projects or physical objects at which actions of a target program are implemented;
- 2.4.5.2 physical indicators reached with performance of each of such projects (or actions);
- 2.4.5.3 assessment of needed financing for project implementation (or actions) and expected deadlines for projects (or actions) realized in case of allocation of necessary financing.

3. POLICY OF DEVELOPMENT OF AUTOMATED SYSTEMS OF TECHNOLOGY MANAGEMENT

3.1. General information

- 3.1.1 The tasks of ensuring reliability of power supply, ensuring energy security, decrease in losses facing the power grid complex demand increase in efficiency of the technology management in Rosseti Group including (partially) supervisory control of SO UES and operational and technology control exercised by the Companies of Rosseti Group independently.
- 3.1.2 In this moment, substations of Rosseti Group of Companies are equipped with automated systems of technology management providing remote observation and/or control of power grid equipment at 80% (regarding substations of the voltage class of 35 kV and above) while for distribution networks this indicator does not exceed 1%. At the same time, PCSs are created for less than 2% of facilities, therefore the system of organization of operational management is oriented first of all to use of mobile crews for operations at substations without operating personnel, or permanent stay of operating personnel that leads to growth of expenses on maintenance.
- 3.1.3 At the same time, according to requirements of the Long-term program of development of PJSC Rosseti [3], Rosseti Group of Companies has a task of ensuring increase in observability of grids by 10%.

3.2. ASTU (automated system of process control) target model

- 3.2.1 The ASTU target model is characterized by the following key provisions:
 - 3.2.1.1 ASTU is under construction as the distributed hierarchical system. For achievement of maximum efficiency of use of each applied system, a possibility of uniform storage and access to arrays of different information processed by them, their comprehensive complex analysis, all applied systems should be connected to the uniform integration bus of ASTU.
 - 3.2.1.2 The integration bus, the general (uniform) information model and model of interfaces will allow applied systems to exchange uniformly data as among themselves, and with external systems, their change if needed.
- 3.2.2 The following subsystems are a part of ASTU:

- 3.2.2.1 a subsystem of operational and technology management, including OIC/IVP (in foreign classification – SCADA, OMS, DMS), SSPI (regarding PU/TSPPS, UTM KP);
- 3.2.2.2 a subsystem of monitoring and diagnostics of a condition of equipment (within process of management of technical operation of equipment);
- 3.2.2.3 a subsystem of management of electricity supply (including metering of electric energy and power, management of power consumption, quality management of electric power;
- 3.2.2.4 other subsystems providing implementation of processes which implementation ASTU should provide (according to the uniform technical policy [1]).
- 3.2.3 Technical operation of subsystems of ASTU should be organized or implemented (according to the chosen scheme of service: outsourcing or insourcing):
 - 3.2.3.1 by forces of ITT-divisions of Rosseti Group of Companies (at the insourcing scheme);
 - 3.2.3.2 by forces of third parties under control of ITT-divisions of the Companies (at the outsourcing scheme).
- 3.2.4 In more detail the target model of creation of ASTU should be developed and provided in the Concept of development of ASTU of PJSC Rosseti.

3.3. Stages of transition to the ASTU target model

- 3.3.1 Development and improvement of ASTU of Rosseti Group should be performed continuously. In this regard, transition to the ASTU target model can be divided into 2 stages:
 - Stage 1. Development of ASTU with simultaneous development of optimal solutions:
 - 1. Development of the concept of development of ASTU, including a target model of creation of ASTU. Development of unified technical solutions providing implementation of the ASTU target model. Accomplishment of pilot projects on application of unified solutions.
 - 2. Development of target programs of development of ASTU including projects of telemechanization of substations (including within programs of

development of SSPI (information acquisition & transmission system)),
development of systems of operational and technology management.

Until the completion of the first stage, development of ASTU is performed according to requirements of the Uniform technical policy [1] and other regulating documents, and also the approved Target programs of development of ASTU (until the approval of Target programs - according to the Investment Program approved by each SDC as part of Rosseti Group).

- Stage 2. Updating of target programs with the developed concept of development of ASTU, the uniform technical policy [1] and other existing regulating documents and further step-by-step implementation of actions of development of ASTU of Rosseti Group of Companies.

3.3.2 It is also necessary to allocate an order of development of information complexes (hereinafter – the IVK (information computation system)) of the top level (hereinafter – IVK VU), automated systems of metering of electric power (hereinafter – AIIS KUE), which also occur in 2 stages, according to the ASTU target model:

- Stage of 1 of development of IVK VU: consolidation of IVK VU and AIIS KUI at the level of branches of the Companies / at the level of management offices of the Companies;
- Stage 2 of development of IVK VU: creation of uniform IVK VU and AIIS KUI of Rosseti Group at the level of PJSC Rosseti.

4. POLICY OF DEVELOPMENT OF ENTERPRISE INFORMATION SYSTEMS

4.1. General information

- 4.1.1 Ensuring completeness and reliability of operational management information according to the Long-term development program [2] can be reached in the presence of the information exchange between PJSC Rosseti and SDCs occurring in the automatic mode. In turn, it can be reached by placing this information exchange in the uniform (centralized) automated control systems of Rosseti Group or by way of integration of local information systems among themselves:
- 4.1.2 The unified information system is a set of identical information systems placed on territorially distributed server platforms, which provide for identical automation of certain business processes for each of installations.
- 4.1.3 The centralized information system is the unified information system located on the uniform server platform.
- 4.1.4 A local information system is an information system which does not belong to the listed above categories.
- 4.1.5 Creation of the single centralized information systems also allows to:
 - 4.1.5.1 reduce costs for automation of business processes by exclusion of repeated implementation in SDC of information systems automating the same business processes;
 - 4.1.5.2 provide automation of business processes on the uniform (optimum) principles;
 - 4.1.5.3 increase quality of collected information, exclude distortion of information at the expense of a human factor.
- 4.1.6 Necessary condition of ensuring reliability of operational management information is application of a uniform data model of implementable technology and business processes, unambiguously defining essence of these processes, interrelation between them and being identical for all SDCs as part of Rosseti Group. The uniform data model allows the description of one essence only in the single and unambiguous way. A component of a uniform data model is the NSI (reference data) uniform ontologic model obligatory to accounting at implementation of any information system.

4.1.7 Creation of enterprise information systems, including within a uniform data model, can be implemented by one of 3 methods:

4.1.7.1 The centralized or uniform automated information systems created at the level of Rosseti Group of Companies and providing identical implementation in each of SDC of Rosseti Group.

4.1.7.2 Local information systems automating the business processes included in the structure of a uniform data model. At the same time, the local information system regarding the processes included in the uniform data model implements the logic of work fixed by the model. Implementation of other processes should be as close as possible to logic of creation of the data model.

4.1.7.3 Local information systems automating other business processes (it is applied to small systems of automation connected with a local or specific business process)

4.1.8 Development of complex systems (platforms) of automation minimizing quantity of the used systems for automation of processes is priority (leaving from "scrappy" automation).

4.1.9 For providing the aforesaid requirements, creation of all information systems is offered to be carried out in two steps:

4.1.9.1 Stage 1. Inspection and optimization of a business process of a subject of automation, process description within a uniform data model (for the projects realized within subitem. 4.1.7.1 and 4.1.7.2). Value assessment of a project implementation and description of necessary works within the project, risks assessment.

4.1.9.2 Stage 2. A business process automation project implementation (creation of an enterprise information system)

4.2. Development of ERP in Rosseti Group of Companies

4.2.1 Development of all enterprise information systems should be implemented according to requirements of the Uniform technical policy [1] and other regulating documents of Rosseti Group, and also the key principles of creation of ERP stated above.

4.2.2 Projects of development of enterprise information systems should be developed taking into account the aggregate value of ownership on the horizon determined by the Uniform technical policy [1], prior to implementation of an information system

resources and financing sources should be defined on creation and service of the created systems.

4.2.3 For the purpose of unification of an IT landscape and decrease in further expenses on integration and operation of enterprise information systems, preserving of the capital investment in development of information systems, the platforms defined in the Strategy of ITT 2012 are used as target platforms. Regarding the choice of other platforms the principle of minimization of quantity of the used program platforms should be used.

4.2.4 Transition to use of the uniform and centralized information systems is a smooth process and consists of several stages:

4.2.4.1 Use and partial development of local information systems within a uniform data model with simultaneous implementation of separate projects of creation of centralized and unified information systems. Simultaneous forming of the centre of competence and architecture.

4.2.4.2 Transition to preferential creation of centralized and unified information systems, reduction or refusal of development of local systems.

4.2.5 More detailed information on projects of automation realized in SDCs of PJSC Rosseti should be reflected in target programs of development of enterprise information systems and should cover all range of activity of PJSC Rosseti and SDCs in the specified direction; consider the current level of automation, implementable projects on automation both in PJSC Rosseti (for example, automation of purchasing activity) and in each SDC. The subject of policy is the description of the principles of development of automated systems of automation of business processes, and also the description of a part from these processes, but not their complete list.

4.3. Automation of processes of management of treasury transactions

4.3.1 Development of an automated system of centralization and automation of treasury and financial functions of PJSC Rosseti (hereinafter – the Uniform treasury) is planned to implementation through development of a system at the level of PJSC Rosseti with ensuring identical implementation in each SDC of Rosseti Group. At the same time, development of the system of the Uniform treasury is designed to

provide reduction of the local information systems duplicating business processes in SDCs of Rosseti Group.

4.3.2 Development of an automated system of centralization and automation of treasury and financial functions of PJSC Rosseti is performed through development of a system at the level of PJSC Rosseti with ensuring identical implementation in each SDC of Rosseti Group. At the same time, development of a system of the Uniform treasury is designed to provide reduction of the local information systems duplicating business processes in SDCs of Rosseti Group.

4.3.3 Development of the Uniform treasury through a common information space is planned through development of business processes of Rosseti Group in the following directions:

4.3.3.1 liquidity management and short-term intra group financing;

4.3.3.2 integration solutions with recommended banks by governing bodies of PJSC Rosseti;

4.3.3.3 management of payments;

4.3.3.4 management of bank and not bank accounts;

4.3.3.5 management of insurance;

4.3.3.6 management of financial transactions and risks;

4.3.3.7 management of financial statements;

4.3.3.8 providing the processes: maintaining reference data and consolidation of reporting.

4.3.4 The automated control system for treasury transactions is the centralized information system realized in PJSC Rosseti for the benefit of Rosseti Group of Companies.

4.4. Automation of asset management processes

4.4.1 Now in SDCs of PJSC Rosseti management systems for production assets of different extent of automation and on the basis of different technical means are used. The information-analytical system of management of production assets of PJSC Rosseti is designed to automate processes of management of production assets in the group of companies in general (hereinafter — the SUPA).

4.4.2 The purposes of implementation of the SUPA of PJSC Rosseti are:

- 4.4.2.1 increase in the level of reliability of power supply to consumers;
- 4.4.2.2 reduction of a share of unplanned and emergency recovery operations due to improvement of quality of planned data;
- 4.4.2.3 increase in controllability of the investment program of PJSC Rosseti.
- 4.4.3 Data sources for implementation of the SUPA of PJSC Rosseti are:
 - 4.4.3.1 software systems of the SUPA of SDCs;
 - 4.4.3.2 software systems of the ASTU of SDCs;
 - 4.4.3.3 reporting forms published by means of the portal as a part of the SUPA, for data collection, not stored in the automated type.
- 4.4.4 The SUPA should provide automation of business processes of the functional divisions of the Company providing:
 - 4.4.4.1 collection and aggregation of data from SUPA, ASTU of SDCs;
 - 4.4.4.2 analysis of a condition of equipment, failure rate, schedules of service and repair;
 - 4.4.4.3 planning of repair and maintenance programs and approval of versions of programs;
 - 4.4.4.4 control of actual data on accomplishment of programs and expenses;
 - 4.4.4.5 the plan-fact analysis of accomplishment of the repair program and the made expenses;
 - 4.4.4.6 preparation of the corporate and industry reporting.
- 4.4.5 The SUPA is a set of local information systems realized within a uniform data model and integrated with a single system of reporting formation.

4.5. Automation of processes of information management of Rosseti Group

- 4.5.1 Now in the Group of Companies the most complete storage of information is the automated system of the network reporting providing input, storage, information analysis on a large number of business processes, which however is almost not applied to the automated import of data from information systems of PJSC Rosseti and SDCs of PJSC Rosseti.
- 4.5.2 The purposes of creation of a single system of information management of Rosseti Group of Companies is further development of the provisions built in the existing

system of the network reporting, and also transition to forming of the uniform interconnected database about all aspects of activity of Rosseti Group of Companies constructed on the basis of a single ontologic system of normative reference information.

4.5.3 The created single system of information management of Rosseti Group of Companies comprises:

4.5.3.1 information base of indicators (by analytical dimensions);

4.5.3.2 analytical tools (report generator);

4.5.3.3 integration platform for communication with external systems.

5. POLICY OF DEVELOPMENT OF INFORMATION SECURITY

5.1. General information

- 5.1.1 Need of information security support (hereinafter – the IS) of activity of Rosseti Group is connected with growth of quantity and types of information threats against the background of adverse foreign policy and an economic situation, the defiant growth of interest of foreign agents to decrease in reliability of power grid infrastructure of the state.
- 5.1.2 Important aspect of risks of the IS is the permanent growth of automation as business and technology management processes in the Rosseti Group of Companies implemented at the expense of automated systems in different degree subject to cyber attacks.
- 5.1.3 The target condition of the IS system of Rosseti Group of Companies is aimed at providing safety and stability of functioning of its assets and the main business processes according to the state standard specification GOST R ISO/IEC 27001. The structure of actions for achievement of a target condition of the IS of Rosseti Group includes:
- creation of a system of information security support which purpose will be an increase in security of Rosseti Group from information attacks;
 - creation of a complex management system of information security which purpose is expense reduction of Rosseti Group on providing the IS in the company, by certification of means of the IS at all levels of management, automation of processes of monitoring and management of means of the IS at all levels of management, and also risk management of the IS;
 - Accreditation of the Certification centre of PJSC Rosseti which purpose is the release of certificates of the qualified digital signature according to the Federal law "About the Digital Signature" of 06.04.2011 No. 63-FZ [13] that will allow to provide trust to the key and forming mechanisms of providing the IS in all companies of the group;
 - creation of the Information Security Centre which purpose is situational and analytical and operational and technology management of a condition of the IS in Rosseti Group, ensuring forecasting, identification and assessment of threats of

information security and their sources, rapid response to information attacks, holding actions for mitigation of consequences of incidents of the IS, increase in readiness of Rosseti Group for threats of the IS.

5.2. Creation of the System of information security support

5.2.1 Creation of the system of information security support (hereinafter – the ISSS) means ensuring completeness and integrity of approach to protection of assets of Rosseti Group against threats of the IS at all levels. The purpose of implementation of structure of actions for creation of the ISSS is decrease in risks of implementation of incidents of the IS to an acceptable level. Breaking or overcoming by the malefactor (both internal, and external) one of echelons of protection against threats of the IS should not mean a compromise of all the ISSS system.

5.2.2 The ISSS should provide:

- ensuring layered preventive protection against modern network threats, including the attacks of "zero day";
- ensuring protection against the target (targeted) attacks of the IS;
- ensuring personal data protection and trade secret in accordance with requirements of regulating documents ([11], [12]).

5.2.3 Creation of the ISSS is supposed to be implemented in 2 stages:

Stage 1. Carrying out audit and analysis of information security of infrastructure facilities. Development of prototype technical solutions of the ISSS regarding ASTU and IT infrastructure.

Stage 2. Creation of the ISSS regarding corporate ACS, ASTU, IT infrastructure elements.

5.3. Creation of the Complex management system of information security

5.3.1 The purpose of creation of a complex management system of information security (hereinafter – the KSUIB) is implementation of the unified management processes of the IS in Rosseti Group, forming of an industry system of standardization and certification in the field of the IS meeting the requirements of regulatory legal acts, and international standards accepted in the territory of the Russian Federation in the field of information protection.

5.3.2 The KSUIB is designed to provide:

- regulation and automation of processes of monitoring and management of the IS in Rosseti Group, including processes of prevention and mitigation of consequences of information attacks, and also processes of increase in readiness of ITT of the group of companies for information attacks;
- classification and certification of data assets;
- formalization and ensuring control of actions for reduction of systems and means of ensuring of the IS in Rosseti Group in compliance with normative requirements;
- sale of mechanisms of automated management of risks and ensuring business continuity in the field of the IS.

5.3.3 Actions for creation of the KSUIB are divided into 5 stages:

- Stage 1. Development of normative and methodical and organizational and administrative documents.
- Stage 2. Creation of a single industry system of certification in the field of the IS.
- Stage 3. Creation of a classification system of data assets, certification of data assets.
- Stage 4. Creation of a risk management system of the IS.
- Stage 5. Development of a system of performance indicators and reporting regarding providing the IS.

5.4. Creation of the Certification centre of PJSC Rosseti

5.4.1 Creation of the Certification centre of PJSC Rosseti on release of certificates of the qualified digital signature according to requirements of Federal law of 06.04.2011 No. 63-FZ "About the digital signature" [13] will allow to provide trust to the key and forming mechanisms of providing the IS in all enterprises of Rosseti Group.

5.4.2 The Certification centre of PJSC Rosseti (hereinafter — the CT) should provide:

- ability to integrate with the existing and planned systems of document flow of PJSC Rosseti for organization of protected communications with the principle of non-repudiation of the signer;
- ability to integrate with the channel-forming equipment (including cryptolocks) for organization of protected remote interaction and protected remote management;

- reduction in compliance with requirements of the Federal law "About the digital signature" [13] and to use of the qualified signature.

5.4.3 Creation of the CT is supposed to be implemented in 3 stages:

- Stage 1. Creation of infrastructure of open keys;
- Stage 2. Creation of infrastructure of centres of registration;
- Stage 2.5. Accreditation of the Certification Centre;
- Stage 3. Creation of a system of automation of the process of issue of keys.

6. POLICY OF DEVELOPMENT OF IT INFRASTRUCTURE

6.1. General information

- 6.1.1 Implementation of the directions of development of ITT stated above, especially for ensuring functioning of corporate and technology automated control systems, requires creation of the reliable IT infrastructure capable to provide smooth functioning of the available automated systems.
- 6.1.2 IT infrastructure can be conditionally divided into 4 components:
- 6.1.2.1 automated workplaces of users (including computer equipment, equipment of telephone communication, mobile user devices and installed application software);
 - 6.1.2.2 printing systems (including office equipment — printers, Multifunction Printers, scanners and so forth, printing management systems);
 - 6.1.2.3 local area networks consisting of structured cable networks and corresponding network equipment);
 - 6.1.2.4 data-processing centres and server rooms, including engineering infrastructure of these facilities, and also installed equipment (servers and data storage systems).
- 6.1.3 IT infrastructure in Rosseti Group is presented by a big set of different software, hardware, hardware-software solutions. Components of IT infrastructure are presented by a set of products of different producers, in the majority of import production.
- 6.1.4 It is important to note that at the moment the level of equipment of the Data-processing centres (hereinafter - the DPC) in most SDCs of Rosseti Group does not provide the sufficient level of reliability/fault tolerance of functioning of computing basis for deployed automated control systems, more than a half of the equipment has life more than 5 years, at the same time in a number of the Companies engineering support of the DPC is at a rather high level. In this connection, there are significant risks of violation of working capacity of corporate (and in some cases and technology) automated control systems. The volume of investment, necessary for single-step updating of the fleet of the equipment and creation sufficient (in respect of reliability) infrastructures of server rooms is comparable to all investment program of Rosseti Group.

6.2. General target model of IT infrastructure

- 6.2.1 The basic concept of creation of IT infrastructure is based on the idea of providing IT infrastructure as service (IaaS) — providing at the request of computing resources on which Rosseti Group of Companies will have an opportunity to develop and start up the necessary software including operating systems and applications.
- 6.2.2 Providing a physical platform for expansion of infrastructure of IaaS is use of the geographically distributed Uniform DPC of Rosseti Group (hereinafter – the ETsOD) constructed, preferentially, on the basis of the existing DPCs of SDC Rosseti Group. At the same time, the DPCs of SDC of Rosseti Group being distributed territorially are integrated into a single whole from the point of view of resource management, and for users the distributed resources look as "one big server". Thus, the problem of merge of a set of the data-centres for the purpose of increase in efficiency of IT systems on a global scale is solved. The solution of this task is constructed on the basis of:
 - 6.2.2.1 mutual use of engineering resources of DPC of SDC Rosseti Group, which do not have sufficient DPCs for placement of own computing equipment;
 - 6.2.2.2 mutual use of the computing capacities and data storage systems of SDCs of Rosseti Group which are available in the DPC⁴.
- 6.2.3 Consolidation of the DPC of SDC in the uniform DPC of Rosseti Group should be made with preferential use of own communication network of Rosseti Group, including with joint use of information and communication resources (see section 7)
- 6.2.4 Transition to the IaaS in the long term allows to optimize equipment of workplaces of users, passing to use thin clients. For the purpose of a possibility of such transition, development of corporate and technology automated control systems (where it is economically and technologically reasonable) should be implemented also in the concept of the thin client (web-access).
- 6.2.5 Actions for expense reduction on IT infrastructure:
 - 6.2.5.1 step-by-step replacement of printers by equipment having the smallest cost of a print, in the long term — transition to a model of provision of outsourced printing services with availability of cost efficiency;

⁴ The scheme of interaction of the Companies of Rosseti Group when using the ETsOD is described in section 8.5

6.2.5.2 step-by-step replacement of computer and office equipment only within standard configurations (except for technically reasonable cases of need of delivery of non-standard configurations).

6.3. Stages of transition to a target model of IT infrastructure

6.3.1 Transition to a target model regarding the automated workplaces of users:

6.3.1.1 Development of the standard configuration of equipment entering the automated workplace (about 10 positions on each type of the equipment).

6.3.1.2 Step-by-step and smooth replacement of the existing fleet by standard configurations (exception for non-standard deliveries is made only where technically justified).

6.3.2 Transition to a target model regarding printing services:

6.3.2.1 Development of standard equipment configurations (about 10 positions on each type of the equipment).

6.3.2.2 Step-by-step and smooth replacement of the existing fleet by standard configurations (new deliveries, with reasonable exception of non-standard solutions — only standard).

6.3.2.3 Transition to acquisition of outsourced printing services (in economically reasonable cases).

6.3.3 Transition to a target model regarding creation of the ETsOD:

6.3.3.1 Carrying out inspection and selection of platforms of the DPC on the basis of which the ETsOD is created

6.3.3.2 Holding the necessary technical and organizational actions necessary for expansion of the ETsOD

6.3.3.3 Acquisition of services of placement of equipment in the ETsOD / acquisition of hosting services in the ETsOD of Rosseti Group of Companies.

7. POLICY OF DEVELOPMENT OF THE COMMUNICATION NETWORK

7.1. General information

- 7.1.1 For implementation of the directions of development of ITT stated above, especially regarding development of corporate and technology automated control systems, it is necessary to provide synchronous development of a communication network of Rosseti Group providing uninterrupted delivery of all types of information (voice, data, video) for the purpose of ensuring management of technology processes for transmission and distribution of electric power, financial and economic activity of the Company.
- 7.1.2 The communication network of the power grid complex is telecommunication infrastructure (software and hardware and communication channels) which provides modern information and communication services.
- 7.1.3 Now the quantity of points of connection to the communication network of the Companies of RS Group exceeded 14 thousand (including 13 thousand substations of different level of voltage and about 1 thousand administrative and administrative and production buildings) for what both own communication channels (including optical communication lines) and leased channels and are used. At the same time, it is important to note that in most cases communication channels are leased and not always provide the sufficient level of reliability, and in some cases the channel capacity is insufficient.

7.2. General target model of a communication network

- 7.2.1 The communication network of Rosseti Group of Companies is a set of communication networks of the Rosseti Group of Companies having the general technical, technology and organizational principles of creation.
- 7.2.2 The communication network of Rosseti Group of Companies should provide needs of users of technology and enterprise systems of management with a modern set of communication services with the set service quality indicators at optimum costs for development and operation of a communication network for achievement of required level of reliability and rates of development of a uniform power grid complex.
- 7.2.3 The key principle of planning of communication networks of the enterprises of the power grid complex is providing mutual agreement and synchronization of

development plans, and also mutual use of network resources for ensuring uniform technology process and increase in reliability of communication networks. Creation of communication networks should be based on the principle of minimization of cost of ownership on a 5-year perspective, taking into account ensuring the set reliability level.

7.2.4 For creation of the communication network the following types of networks, lines and communication channels can be used:

7.2.4.1 wire:

7.2.4.2 fiber-optic communication links (FOCL);

7.2.4.3 high-frequency communication channels on conductors (HF-communication);

7.2.4.4 cable communication lines (CCL);

7.2.4.5 wireless:

7.2.4.6 radio relay communication lines (RRL);

7.2.4.7 networks of wireless broadband access (broadband);

7.2.4.8 network of mobile VHF radio communication;

7.2.4.9 network of satellite communication;

7.2.4.10 network of mobile cellular communication.

7.2.4.11 Also, for creation of a communication network leased telecommunication resources of third parties can be used (services in lease of communication channels, telematic communication services, etc.).

7.2.5 At creation of a communication network fulfillment of requirements of the existing regulating documents of Rosseti Group of Companies on typification of technical solutions is necessary.

7.2.6 The maximum use of uninvolved telecommunication resources of some Companies by others (entering into Rosseti Group of Companies) and interested in their use should be an important aspect of development of communication networks of separate Companies. This approach allows to get advantages of own communication networks at the costs corresponding to a lease term.

7.3. Target program of development of communication networks

- 7.3.1 Development of a communication network of RS Group should be performed according to requirements of the Uniform technical policy and other regulating documents, and also the approved Target programs of development of communication networks (until the approval of Target programs — according to the approved investment programs of each Company).
- 7.3.2 Target programs of development of communication networks should provide synchronization of development of communication networks with development of ASTU, development of corporate IT infrastructure, and also communication networks of the Companies having common or adjoining territory.
- 7.3.3 Target programs of development of communication networks should provide also:
 - 7.3.3.1 priority creation of systems of digital mobile radio communication.
 - 7.3.3.2 creation of a uniform network of telephone communication;
 - 7.3.3.3 work on optimization of use of communication services;
 - 7.3.3.4 expansion of services of video conferencing.

7.4. Creation of systems of digital mobile radio communication.

- 7.4.1 The system of digital mobile radio communication is intended for ensuring communication with personnel of line, operational and first responding mobile and emergency and recovery crews, and also for set-up of alternative channels of communication with facilities of power grid infrastructure in daily conditions and at failure and emergency situations.
- 7.4.2 The current level of coverage of networks of digital mobile radio communication is minimum. Today the mobile radio communication represents generally analog systems of different producers which do not allow to provide data transmission with low quality of communication and some other critical shortcomings. It is important to note that inconveniences in operation of this equipment leads to actual rejection from its use.
- 7.4.3 The digital network of a mobile radio communication in addition to higher quality possesses much broader and necessary set of functions, including a possibility of commission of calls to subscribers of corporate and technology network of telephone communication, possibility of data transmission at a speed up to 9,6 kbps,

georoaming function, functions of monitoring of location and condition of mobile personnel by means of a set of emergency messages, etc.

7.4.4 The created system of digital mobile radio communication should provide coverage of territories of infrastructure facilities and routes of movement of personnel of line, operational and first responding mobile and emergency and recovery crews. The following functions should be provided:

7.4.4.1 Voice communication of mobile personnel

7.4.4.2 Data transmission from mobile personnel

7.4.4.3 Transfer of technology information from stationary facilities (including substations equipped with means of telemechanics)

7.4.5 Creation of a system of digital mobile radio communication should be made in 2 stages:

7.4.5.1 Stage 1. The centralized design of a network of digital mobile radio communication of branches of SDCs of the Company.

7.4.5.2 Stage 2. Step-by-step implementation of the developed projects

7.5. Creation of a uniform network of telephone communication

7.5.1 Creation of a uniform network of telephone communication means transition to a single system and a directory number plan of power grid facilities and enterprises of the power grid complex for organization of corporate, operational and dispatching and production and technology telephone communication. It is necessary to provide a possibility of calls between branches of different Companies of Rosseti Group of Companies.

7.5.2 At development and modernization of networks of telephone communication transition to an open numbering system should be implemented.

7.5.3 Convenience of search of number of a necessary subscriber requires implementation of the uniform phonebook of Rosseti Group.

7.5.4 Creation of a uniform network of telephone communication should be carried out by the step-by-step modernization of the existing PBX which is performed within a target model by a method of creation of the distributed IP-PBX consisting of the

central module of system (TsATS) and media gateways which in case of temporary unavailability of TsATS should work as independent IP-PBX.

7.6. Work on optimization of use of communication services

7.6.1 The communication services used in the Companies of Rosseti Group of Companies in some cases can be optimized. Optimization is expressed in reduction of quantity of points of receiving (from the telecom operator) services when preserving the number of consumers of the service due to redistribution of traffic in own DTN.

7.6.2 First of all, the following communication services are subject to such optimization:

7.6.2.1 telematic communication services;

7.6.2.2 services of mobile radiotelephone communication;

7.6.2.3 services of local telephone communication;

7.6.2.4 services of long distance and international telephone communication.

7.7. Development of services of video conferencing

7.7.1 Within all Rosseti Group the centralized system of video conferencing (hereinafter – the VKS) within which free organization of video conferences between PJSC Rosseti, all SDCs of PJSC Rosseti, their branches will be possible, and in some cases - production departments and Distribution Zones should be created.

7.7.2 The created VKS system should be under construction on the basis of uniform regulations of the VKS organization in all companies of Rosseti Group; provide carrying out internal VKS without participation of third-party administrators, and also provide:

7.7.2.1 centralization of calls within a uniform pool of addresses on all VKS terminals of Rosseti Group of Companies;

7.7.2.2 implementation of external calls (calls of VKS terminals which do not belong to Rosseti Group of Companies) from a uniform secure channel of communication;

7.7.2.3 possibility of connection to VKS from any mobile device.

8. POLICY OF OPTIMIZATION OF ITT-ACTIVITY

8.1. ITT-activity in Rosseti Group

- 8.1.1 ITT-activity is a set of actions aimed at ensuring functioning of existing and implementation of new automation equipment technology and business processes, systems of telecommunications and providing the IT infrastructure; process optimization at their automation.
- 8.1.2 In Rosseti Group, ITT-activity is implemented with both forces of own personnel, and involvement of contract organizations. In the latter case, own personnel will organize and control activity of external contractors.
- 8.1.3 ITT-activity includes ensuring development and maintenance of functioning regarding:
 - 8.1.3.1 automated systems of technology management;
 - 8.1.3.2 corporate automated control systems;
 - 8.1.3.3 communication systems and networks;
 - 8.1.3.4 computing infrastructure and engineering infrastructure providing functioning of the computing part;
- 8.1.4 The actions providing functioning of ITT-divisions in SDCs of PJSC Rosseti also are a part of ITT-activity.

8.2. Unification of ITT-activity in Rosseti Group

- 8.2.1 Priority of optimization of activity of Rosseti Group in the field of ITT is consolidation of implementable ITT-functions and competences based on a set of structural divisions of a uniform chain of command (or based on uniform structural division) for each SDC of PJSC Rosseti that will allow to:
 - 8.2.1.1 increase quality and reliability of ITT-services for business customers due to their consolidation in the uniform centre of responsibility;
 - 8.2.1.2 optimize developments and operation of different ITT-solutions which are adjacent in respect of workmanship (including taking into account their geographical location), exclude duplication of carried-out technical and organizational tasks; optimize expenses on development of ITT due to optimization of technical and organizational solutions.

8.2.2 Actions for improvement of quality of ITT-services include transition to a service-oriented model of ITT-activity with simultaneous forming of a catalog of ITT-services (description of services, a service and resource map, cards, parameters of providing a service, assessment of cost value of a service) and forming of agreements on the quality level of services between ITT and business divisions in companies of Rosseti Group.



Figure 12. The current and target distribution of ITT-functions between structural divisions in Rosseti Group under the directions of ITT-activity

8.2.3 Development of optimum balance between quality of rendered ITT-services and a model of their rendering, and also costs for ITT-activity of SDCs demands permanent monitoring of a large number of indicators both in the field of ITT-activity, and regarding degree of satisfaction of Rosseti Group with providing ITT. At the same time, the quantity of indicators and procedures of their collecting, calculation and analysis demands essential resources which are absent now in Rosseti Group. The structure of actions for organization of monitoring of indicators of activity of the group of companies in the field of IT includes:

8.2.3.1 forming within the current operating activity of each of SDC as a part of the group procedures of a provisional estimate of activity in the field of ITT (local optimization of ITT-processes);

8.2.3.2 forming within the current operating activity of PJSC Rosseti procedures of monitoring quality of activity in the field of ITT of all SDCs of the group consisting of two stages:

8.2.3.3 monitoring and analysis of comparable indicators on all SDCs within uniform metrics and analysis algorithms;

8.2.3.4 accumulation and replication of successful experiment on optimization of ITT-solutions, ITT-services both regarding internal organizational decisions, and regarding interaction with contract organizations (global optimization of ITT-processes);

8.2.3.5 modification of the purchasing activity of Rosseti Group regarding ITT, by centralization of purchases, open forms of holding procurement procedures, and transition on this basis to conclusion of long agreements on ITT-services (3 or 5-year validity period) without condition of their autoprolongation.

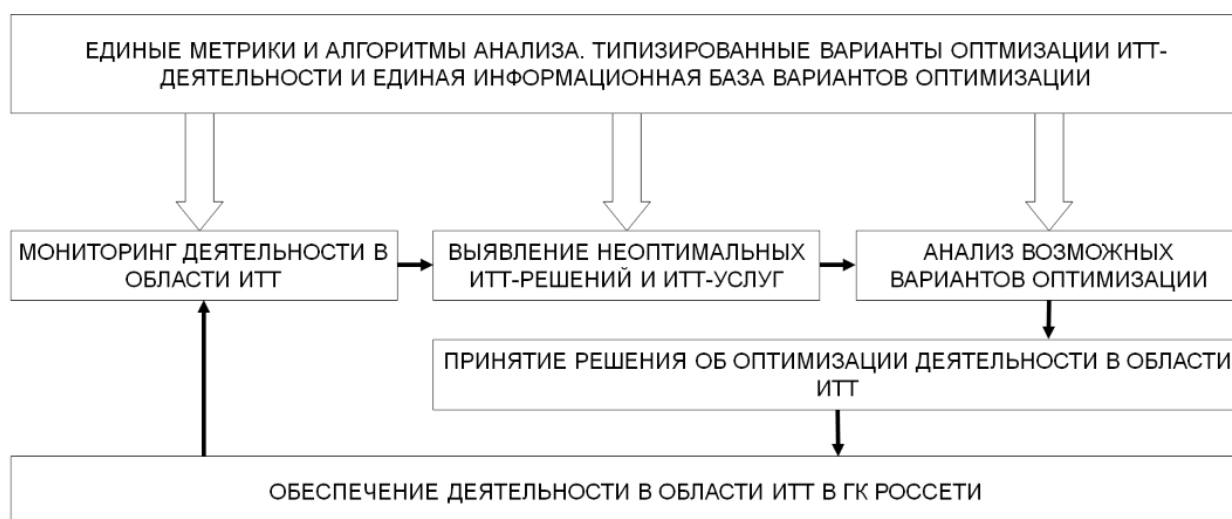


Figure 13. Algorithm of optimization of ITT-activity in Rosseti Group

8.2.4 The final stage as part of actions for optimization of activity of Rosseti Group in the field of ITT is reasonable transfer for outsourcing (to an organization, external in relation to a SDC or PJSC Rosseti) all types of the ITT-services having a market basis and competitive offers in the region with preserving of a model of insourcing (internal service) for all types of ITT services, non-competitive or critical from the point of view of technology processes (security requirements). Regardless of a model of rendering ITT-services the uniform quality standards and descriptions of a level of services should be applied to them.

8.2.5 Implementation of this set of actions provides transparent planning process of ITT-costs, expenditures of funds for rendering ITT-service when preserving the high level of the rendered ITT-services for Rosseti Group.

8.3. Creation of a uniform service company of Rosseti Group

8.3.1 Now, the hybrid scheme of rendering services in the field of operation and service of ITT is applied in Rosseti Group (Figure 14):

8.3.1.1 rendering services, key and crucial for activity of the group, by means of own personnel,

8.3.1.2 rendering by means of third parties of other services, namely:

8.3.1.3 technical operation of ASTU of Rosseti Group and communication systems (annual costs more than 500 million rubles);

8.3.1.4 service and ensuring operation of IT infrastructure (annual costs more than 800 million rubles);

8.3.1.5 service and ensuring operability of enterprise information systems (annual costs more than 600 million rubles).

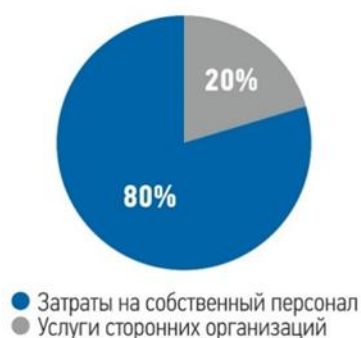


Figure 14. Ratio of costs of Rosseti Group for ITT-services

8.3.2 Transfer of ITT-services to a service company, uniform for Rosseti Group, will allow to optimize these services as follows (Figure 15):

8.3.2.1 to provide decrease in prices on the rendered services at the expense of "volume discounts" and long-term planning of volumes of consumed services;

8.3.2.2 to increase quality of the rendered services and, as a result, reliability of work of ITT-infrastructure;

8.3.2.3 to provide the flexible mechanism of mutual provision of ITT resources by the principle of "one contact" service for all Rosseti Group.

8.3.3 Transfer of ITT-services to a uniform service company should be based on the principles of economic feasibility and technical efficiency. At the same time, ITT-

services which transfer to the uniform service company is inexpedient, do not undergo changes.

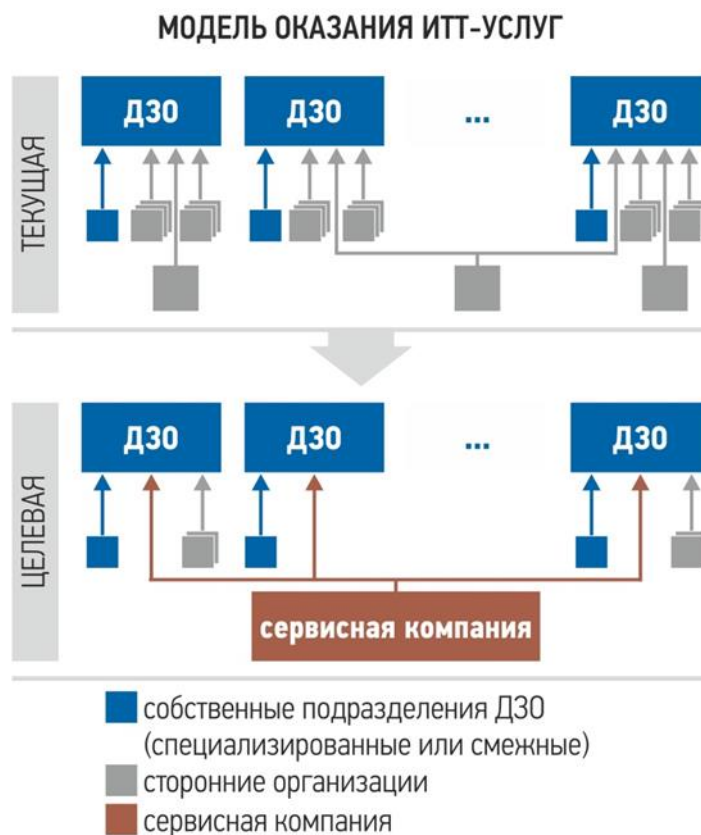


Figure 15. Current and target model of rendering ITT-services by third parties / a service company

8.4. Centralization of repair and operational service of ITT

8.4.1 At the moment, in Rosseti Group the service of ITT is performed by third parties on the basis of work agreements or own specialized services. At this approach there is a repeated territorial crossing of zones of service by third parties and internal services.

8.4.2 Optimization of work of contract organizations territorially distributed is also very difficult. In such conditions providing the sufficient quality level of operation of ITT-infrastructure demands creation of "a uniform point" (the first stage of centralization) of control and management of technical operation at all three levels of technical support and operation (Figure 16):

8.4.2.1 at the first level — expansion of the uniform support service 24/7 at the federal and regional levels providing acceptance and registration of arriving requests, monitoring of their execution;

8.4.2.2 at the second level — transfer of agreements of contract organizations to a service company with simultaneous cost reduction;

8.4.2.3 at the third level — expansion of the uniform service of interaction with producers of equipment and certified service centres.

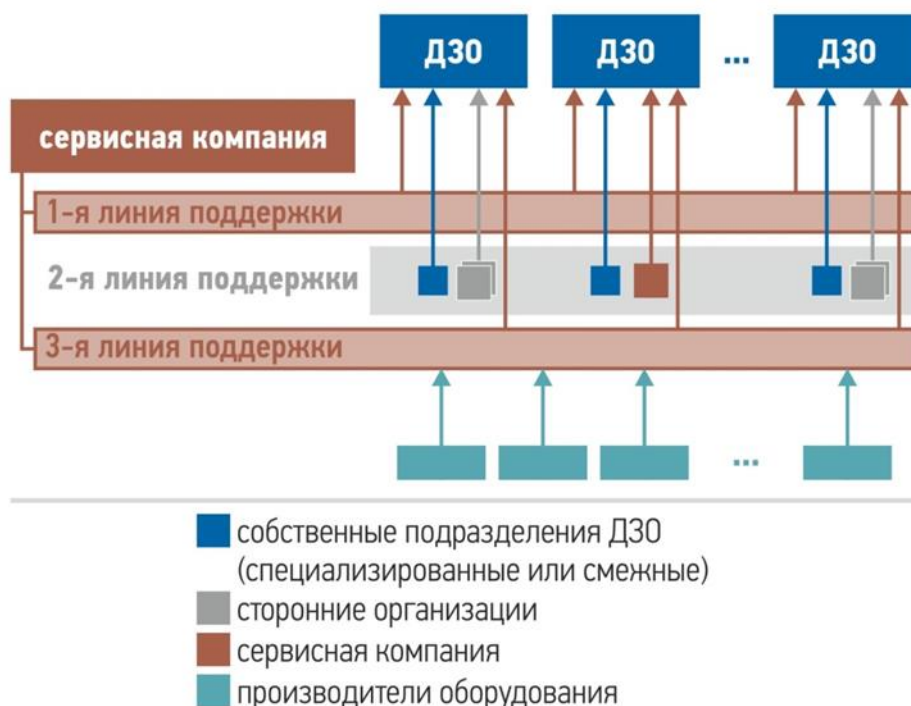


Figure 16. Model of rendering services REO and TO ITT

8.4.3 The second stage of centralization of repair and operational service (hereinafter — REO) of ITT is regulation of costs for repair and operational service of ITT-systems.

8.5. Creation of the operator of ETsOD

8.5.1 Due to availability of difficulties of corporate and legal character arising at the conclusion of agreements on mutual providing resources, including IT infrastructures, functions of the organization of interaction between SDCs are assigned to a separate legal entity, which is the operator of the uniform Data-processing centre of Rosseti Group.

8.5.2 The following tasks are assigned to the operator of the uniform DPC:

8.5.3 Permanent analysis of a condition of engineering systems of server premises of SDCs of PJSC Rosseti. The choice of platforms having sufficient free resources and sufficient level of equipment for installation of ETsOD on them.

8.5.4 Conclusion with owners of the chosen platforms of agreements allowing the operator of ETsOD to use platforms for installation of ETsOD.

8.5.5 Transition to rendering for Rosseti Group of Companies of services of ETsOD, including services of hosting and services of collocation.

8.6. Creation of the operator of technology communication

8.6.1 Owing to availability of legislative and organizational restrictions, sale of mechanisms of mutual representation of telecommunication resources in Rosseti Group it is possible only on condition of the centralized maintenance of all activity of the group regarding development of communication systems and telecommunications, namely:

8.6.1.1 Joint use of telecommunication resources between SDCs demands from SDCs the status of the telecom operator (with simultaneous obtaining the license from the Ministry of Telecom and Mass Communications of the Russian Federation and some other actions). Obtaining the status of the telecom operator for each of SDC will demand attraction of staff, having the corresponding experience that contradicts the requirement of cost optimization.

8.6.1.2 Development of communication systems of a separate SDC is limited to a zone of its responsibility that makes impossible within this SDC creation of optimum topology of communication systems, including due to use of communication systems of an adjacent SDC (or external companies) on border sites between zones of responsibility of SDCs. Lack of sufficient number of salaried employees providing interaction of SDCs with telecom operators negatively affects volumes of implementable joint projects.

8.6.2 For the solution of the specified questions it is necessary to assign an obligation for implementation of mechanisms of mutual provision of telecommunication resources and services of technology communication to a separate legal entity, being an operator of technology communication.

8.7. Creation of the infrastructure operator of communication networks

8.7.1 According to Order of the Government of the Russian Federation of November 29, 2014 No. 1284 "About the approval of Rules of non-discriminatory access to infrastructure for installation of telecommunication networks" the Companies of Rosseti Group are obliged to disclose the relevant information to organizations

interested in placement of elements of networks of [electro connection] communication on infrastructure of SDCs. Interaction with such organizations is also conducted according to, within the agreement on strategic cooperation between PJSC Rosseti and PJSC Rostelecom within the project implementation "Bridging the digital divide", and allows not only to attract third-party investments into the power grid complex, but also to render additional services.

8.7.2 For placement of elements of a communication network of third-party operators both the existing power grid infrastructure can be used, and the telecommunication infrastructure developed at power grid facilities. Within this direction power grid facilities are equipped with the corresponding processing and telecommunication equipment and acquire an additional appointment as communication structures. Placement of elements of networks of [electro connection] communication by operators on infrastructure of SDCs and, as a result, emergence of basic networks between these elements, will lead to emergence of communication services, available to SDCs, at power grid facilities, including in remote and hardly accessible areas. Operators of "Big Four" who, in the conditions of the continuous growth of traffic, need of improvement of quality of communication and simultaneous expense reduction on the maintenance of "passive" infrastructure, are interested in outsourcing of additional infrastructure capacities act as key customers.

8.7.3 For the purpose of optimization of this work it is necessary to create the infrastructure operator given with functions of "single contact point" for interaction with telecom operators on uniform and clear principles, and also functions of creation and centralized management of telecom infrastructure at power grid facilities and providing commercial services on its basis.

8.8. Forming of the internal centre of ITT-competences of Rosseti Group

8.8.1 Achievement of benefits from forming of the uniform service company, the operator of ETsOD, the operator of technology communication and the infrastructure operator of communication networks in full is possible on the condition of consolidation of these functions within the uniform company and on the condition of the complete accountability of such company to Rosseti Group. Creation of the uniform company also allows to develop the centre of competences and architecture necessary for project implementation of creation of centralized enterprise information systems on its basis

8.8.2 When forming the service company, transfer of service contracts should be carried out taking into account:

8.8.2.1 decrease in specific costs of SDCs for the services rendered by the service company;

8.8.2.2 implementation of market mechanisms of price regulation on such services (including due to use of the mechanism of procurement procedures centralized at the level of PJSC Rosseti);

8.8.2.3 implementations of a service model of rendering ITT-services.

8.8.3 Transfer of service contracts should be made within open competitive procedures with participation of the service company capable to offer economically more advantageous conditions of accomplishment of service contracts.

8.8.4 It is reasonable to use a company under control to PJSC Rosseti and possessing necessary competences on the part of creation and operation of communication networks, ASTU and IT infrastructure, having experience in maintenance of information systems and delivery of software (i.e. rendering services in a wide range of the directions of ITT-activity) as an uniform service company.

8.9. Centralization of purchasing activity in the field of ITT

8.9.1 Now in Rosseti Group purchases in the field of ITT are made at the following levels:

8.9.1.1 centralized purchases at the level of PJSC Rosseti which are carried out for the benefit of PJSC Rosseti and SDCs;

8.9.1.2 purchases at the level of SDCs of PJSC Rosseti;

8.9.1.3 purchases which are carried out locally for the benefit of separate branches or executive offices.

8.9.2 Centralization of procurement procedures allows to provide reduction in cost of unit of the purchased products at the expense of "volume discounts" (in some cases, the size of discounts can reach 40% and more). Volatility in the cost of the purchased products decreases (in separate purchases of SDCs of PJSC Rosseti the cost of identical ITT-solutions differed by 2-4 times).

8.9.3 Centralization of purchases of ITT is an important mechanism providing reduction in cost of the purchased ITT-solutions and should be carried out in cases of acquisition

by companies as part of Rosseti Group similar (or identical) ITT-services or solutions. The following directions, which centralization should be implemented first of all, are allocated as the priority ones:

- 8.9.3.1 communication services (including providing services of the Internet, telephone communication, lease of communication channels, cellular communication and so forth);
 - 8.9.3.2 services of operation of ITT-assets;
 - 8.9.3.3 buying of the right to use the software;
 - 8.9.3.4 services of implementation of ITT-projects according to this policy.
- 8.9.4 Centralization of purchases should be implemented at the same time at two levels. At the same time, it is reasonable to minimize, but it is not obligatory to exclude, purchases at the levels of branches:
- 8.9.4.1 Level 1: centralization of purchases at the level of executive offices of Companies (purchases are carried out by Companies of RS Group).
 - 8.9.4.2 Level 2: centralization of purchases at the level of Rosseti Group (purchases are carried out by PJSC Rosseti).
- 8.9.5 Centralization of purchasing activity in the field of ITT should be carried out taking into account economic and technical feasibility. Centralization of purchases in separate directions of ITT-activity at the level of PJSC Rosseti or the level of SDCs of PJSC Rosseti in most cases is not complete (i.e. non-standard or urgent purchases within the chosen direction can be carried out at a "lower" level); complete centralization should be applied in exceptional cases.

9. FORMING OF BUDGETS OF IMPLEMENTATION OF THE POLICY

9.1.1 The total amount of expenses on ITT-activity⁵ is about 2%⁶ of own Required Gross Revenue (RGR) of Rosseti Group of Companies (at the same time, this indicator is 2-3 times lower than similar world indicators⁷) and is divided in the directions of ITT-activity as follows:

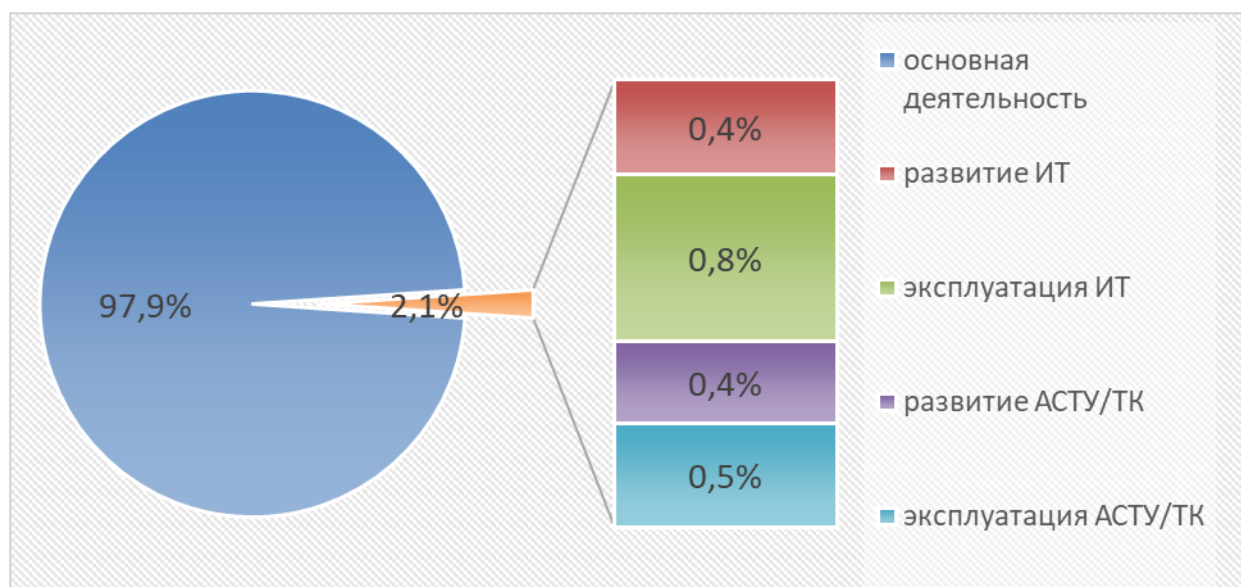


Figure 17 Financing distribution

9.1.2 At the same time, as a result of ITT-activity of SDCs of PJSC Rosseti, SDCs and business companies (generally, telecom operators) sign agreements which are profitable for SDCs. Agreements are connected with providing for lease to telecom operators of power grid infrastructure (generally, overhead power lines) for placement of fiber-optical communication lines (VOLS VL) on them. Such agreements partially compensate costs of SDCs for operation of ITT⁸.

9.1.3 Growth of needs of business for the automation equipment in 2012-2014 led to significant increase in physical volumes of the used ITT-solutions. At the same time,

⁵ ITT-activity includes development and ensuring working capacity (operation) of IT solutions (enterprise and technology information systems, the fleet of computers, office equipment, server and network infrastructure), and also automated systems of technology management (ASTU: telemechanics, systems of dispatching management, etc.) and communication systems and telecommunications (ICT)

⁶ Assessment is made on the basis of the Business plans of SDCs of PJSC Rosseti, including investment programs of SDCs, for 2015.

⁷ See the report on the research of GlobalCIO (reference)

⁸ Compensation is connected with providing services by the telecom operator to SDCs for the amount, in accuracy equal to the cost of the lease agreement of power grid infrastructure. At the same time, "counter agreements" are signed: one – for lease of power grid infrastructure (profitable for SDCs), the second – for acquisition of communication services (expense) with identical cost indicators. It should be noted that expense agreements are reflected in full in the ITT-budget of SDCs, at the same time, profitable agreements often get to "the common pot", but do not become attached to the cost centre – to ITT-divisions.

the growth rate of volume of ITT-activity exceeded a similar indicator on the core business⁹ of the Group of Companies by 3 times that led to the corresponding increase in required financial and human resources for ensuring smooth operation of the created ITT-complex.

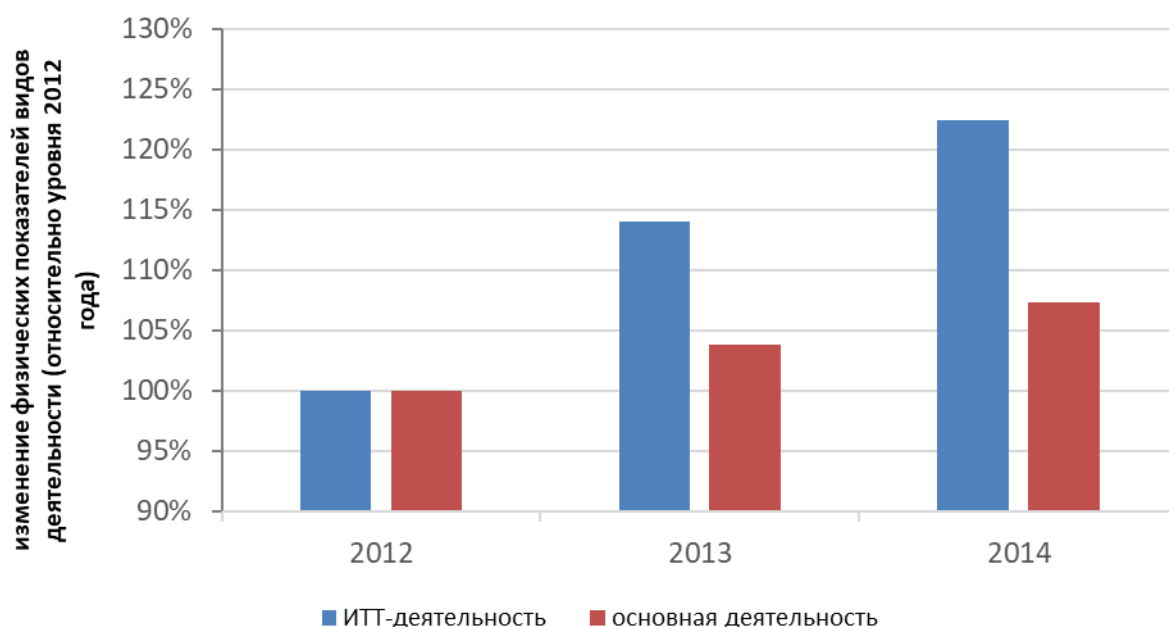


Figure 18 Growth of physical volumes of ITT-and core business

9.1.4 For the purpose of prevention of significant growth in costs for ITT-activity, in 2014-2016 Rosseti Group of Companies undertook system efforts for decrease in specific operating costs of ITT-solutions. These actions allowed to hold operating costs of ITT-solutions at the acceptable level. However, now reserves of decrease in operating costs on ITT by forces of SDCs are practically absent:

9.1.4.1 The existing reserves of local optimization were used.

9.1.4.2 Growth of the currency rate considerably affected the price of consumable materials and component parts for computer and office equipment, and also other equipment that led to increase in quotations at repair and operational service in the field of ITT.

⁹ The metric of conventional units of the main power grid equipment is chosen as a metric for assessment of physical volumes of the core business

- 9.1.5 In these conditions, further cost reduction on operation of ITT-systems, with high probability will lead to step-by-step failure of the ITT-equipment¹⁰ and decline in quality of the provided ITT-services¹¹.
- 9.1.6 For the purpose of ensuring execution of the requirement of the Long-term program of development of PJSC Rosseti in ensuring decrease in operating expenses at 15% by 2017 taking into account inflation against the level of 2012, development of the ITT Strategy was conducted taking into account need of decrease in specific operating costs¹² of ITT at a size not less than 15% from the level of 2012 (by 2017, taking into account the inflation). Therefore, the structure of the ITT Policy included the actions allowing to implement mechanisms of reduction of specific costs by centralization, including, at the expense of:
- 9.1.6.1 Centralization of procurement procedures on communication services and other ITT-services (a discount due to scale effect).
- 9.1.6.2 Centralization of repair and operational service of ITT-systems (optimization of schemes of service, exclusion of repeated visits of servicing crews to remote facilities for service of different systems).
- 9.1.6.3 Centralization of new information systems (cost reduction on implementation of identical functionality for all SDCs at the expense of exclusion of repeated implementation).
- 9.1.7 The financial resources saved this way are spent on implementation of actions of development of ITT included in the ITT Strategy that allows to provide further cost reduction for the ITT-activity (the mechanism of use of financial resources is defined by the enclosed algorithm of forming of ITT-budgets). Thus, **implementation of the ITT Policy in SDCs of PJSC Rosseti provides decrease in specific operating costs of ITT.**

¹⁰ In particular, it is about transition to use of non-licensed cartridges for office equipment – refillable cartridges. Their use is connected with the increased wear of printing office equipment parts.

¹¹ Including due to transition to longer intervals of rendering services, to decrease in the SLA level

¹² Specific ITT-costs are calculated as the costs for ensuring ITT-activity carried to physical indicators of ITT-activity.

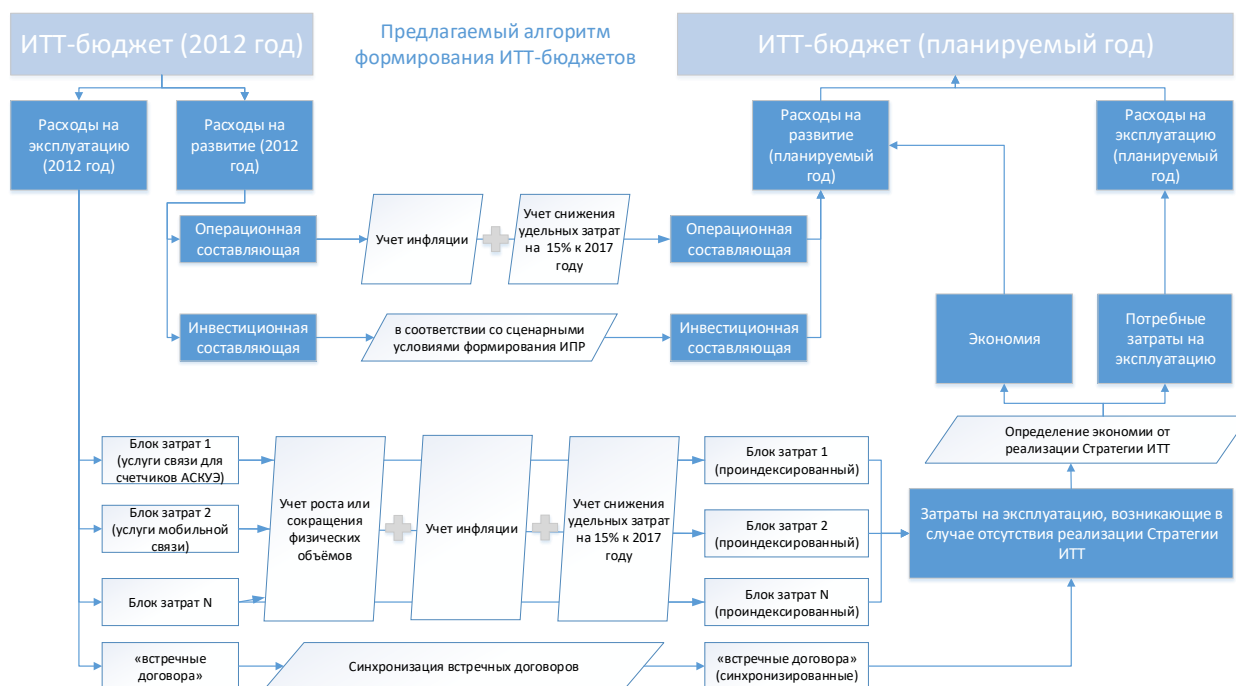


Figure 19 The offered algorithm of forming ITT-budgets

Stage 0. (one-time) Determination of a basic point (2012)

Substage 1. Allocation and fixing of operating costs

Substage 2. Including determination of "counter agreements"

Substage 3. Allocation and fixing of costs for development of ITT-solutions (operational component)

Stage 1. Indexation of operating costs

Substage 1. Specification of "counter agreements": synchronization of expense and profitable agreements

Substage 2. Separation of other operating costs in separate units of costs characterized by separate physical indicators

Substage 3. Indexation of costs on the allocated units of costs taking into account change of physical volumes of ITT-activity, inflation, need of decrease in specific operating expenses by 15%¹³

Substage 4. Merge of costs under "counter agreements" and the indexed units of costs

Stage 2. Determination of economic effect regarding operation of ITT through the implemented actions within the ITT Policy:

Substage 1. Determination of the achieved saving through the actions implemented in the last period, if necessary repeated indexation of costs on the allocated units of costs taking into account the planned saving

Substage 2. Reduction of planned operating costs of ITT-solutions taking into account a certain saving

Stage 3. Calculation of planned costs for development of ITT-solutions made taking into account the direction of the received saving

Stage 4. Accounting of the capital investments on creation and modernization of ASTU, telecommunications, IT infrastructure at the expense of means of investment programs of SDCs according to scenario conditions of forming the Investment Program, a technique of planning of decrease in investment costs at 30 percent against the level of 2012, and also a financial condition of SDCs.

Implementation of this algorithm demands correct accounting of "counter agreements": counter agreements have the equivalent cost (are mutually settled) that needs to be considered at reflection of costs in ITT-budgets on these communication services.

9.1.8 It should be noted that financing of expenses on implementation of actions of the Strategy of ITT in Rosseti Group of Companies should be carried out taking into account a financial and economic condition of the Companies, without deterioration in the planned financial result. At implementation of the ITT Policy in Rosseti Group of Companies the observance of the following requirements needs to be provided:

9.1.8.1 taking into account annual providing the unconditional accomplishment of a target indicator of decrease in operating expenses (costs);

9.1.8.2 orders of the President of the Russian Federation of 21.02.2015 No. Pr-294 on decrease in specific operating and investment expenses of the electric grid companies

10. TARGET REFERENCE POINTS AND RISKS OF IMPLEMENTATION OF THE POLICY

10.1. Target indicators of the Policy

10.1.1 Implementation of the actions determined by this Policy, and also included in the structure of target programs are directed to implementation of the ITT Policy, should provide achievements of a number of key indicators:

10.1.1.1 Increase in level of observability of power facilities by 10% (according to requirements of the Long-term program of development).

10.1.1.2 Automation of all key business processes at the same time decreasing in specific realization value of projects of automation of business processes (taking into account inflation, concerning the cost of similar projects implemented earlier).

10.1.1.3 Creation of own ITT-infrastructure including a corporate data transmission network, uniform DPC of Rosseti Group of Companies.

10.1.1.4 Transition to a target architecture of ITT-systems (according to section 10.2).

10.2. Target architecture of ITT-systems

10.2.1 The target architecture of ITT-systems of Rosseti Group (Figure 20) is to be reached following the results of implementation of this policy and it is characterized by the following parameters:

10.2.1.1 the uniform IT infrastructure of all SDCs of Rosseti Group and uniform operator of this infrastructure;

10.2.1.2 the single centralized information systems, and gradual migration of local information systems of SDCs to them;

10.2.1.3 the uniform information model of data;

10.2.1.4 transition to a situational model of management and implementation of a single system of technology management of the power grid complex;

10.2.1.5 the single transparent system of managerial accounting and reporting within all Rosseti Group;

- 10.2.1.6 the single system of ensuring information exchange based on service-oriented architecture and solutions of "middleware";
- 10.2.1.7 the single system of information security support and compliance to requirements of the security policy [5];
- 10.2.1.8 low aggregate value of ownership of ITT.

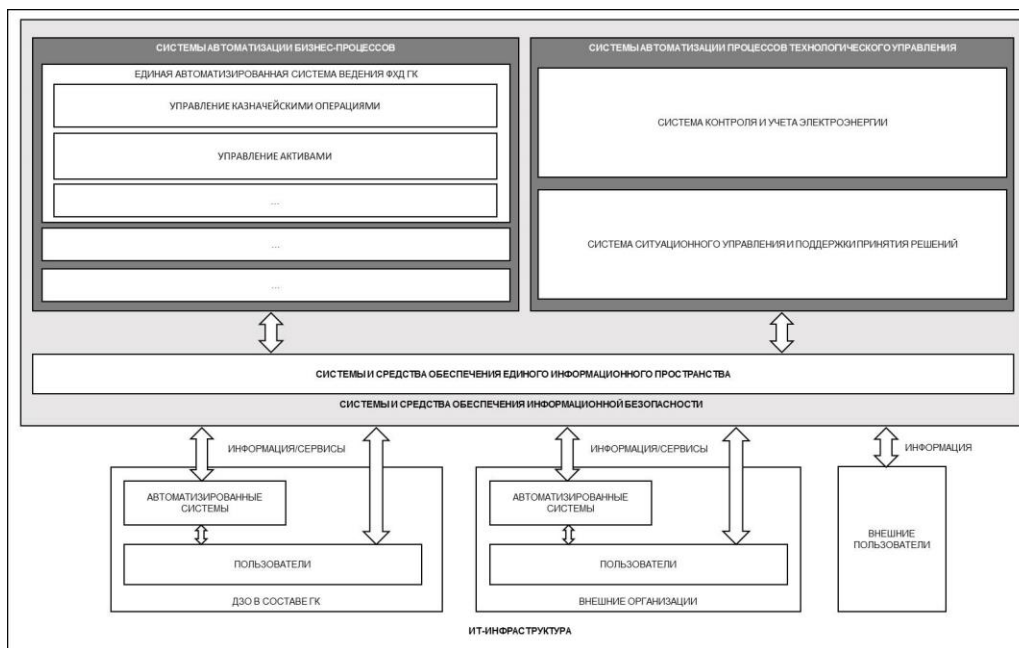


Figure 20. Target architecture of ITT-systems

10.3. Risks of implementation of the Policy

10.3.1 The key risk of implementation of the ITT Policy is change of the business objectives facing SDCs of PJSC Rosseti, Rosseti Group of Companies or the power grid complex of the Russian Federation in general. At the same time, the most substantial risks are:

- 10.3.1.1 change of the tasks solved by functional divisions of PJSC Rosseti or impossibility of full participation of representatives of the functional customer in implementation of automation projects;
- 10.3.1.2 change of normative requirements to the structure and contents of collected and transmitted data in Rosseti Group of Companies, both corporate, and technology character (including change of requirements of JSC System Operator of the Unified Energy System);

10.3.1.3 making decision on change of a management structure of SDCs, their privatization or other actions connected with reduction of the Companies entering the group implementing this policy

11. CONTROL OF IMPLEMENTATION OF THE POLICY AND ITS UPDATE

11.1.1 Control of implementation of the ITT Policy is exercised by staff of ITT-divisions of Rosseti Group of Companies at all levels of its implementation:

11.1.1.1 At the level of subdivisions of branches of SDCs of PJSC Rosseti - at implementation of separate projects

11.1.1.2 At the level of the Executive office of SDCs of PJSC Rosseti - when planning ITT-activity and project implementation of the SDC level

11.1.1.3 At the level of PJSC Rosseti - when planning ITT-activity, project implementation of the level of Rosseti Group of Companies and at implementation of key projects of the SDC level.

11.1.2 Update of the ITT Policy should be made in case of approach of the risks stated in section 10.3, including in cases:

11.1.2.1 changes of strategic tasks of Rosseti Group;

11.1.2.2 identifications of contradictions of provisions of the ITT Policy with the legislation;

11.1.2.3 considerable changes of the amount of financing on providing the ITT-activity, which do not allow to provide implementation of the ITT-Policy without its change.

APPENDIX 1. TERMS AND DEFINITIONS

The automated information and measuring system of commercial metering of electric power (AIIS KUE) – the hierarchical system representing the technical device which is functionally combining set of metrological certified measuring and information complexes of points of measurements, information complexes of power installations at the level of substations, an information complex and system of providing uniform time, and performing functions of carrying out measurements, collecting, processing and storage of results of measurements, information on a condition of objects and measuring instruments and also transfers of the acquired information to the integrated automated control system for commercial accounting in the automated mode, to data acquisition from adjacent partners, and also allowing to make verification of data of metering devices formations of balances of electric power in a power grid complex of different extent of detailing, carrying out settlements with adjacent participants of OREM, RREM and JSC ATS [4].

The Automated System of Technology Management (ASTM) – a set of interconnected hardware and software providing the solution of tasks of operational and technology, situational and analytical and technological management of transmission and distribution of electric power [1].

The unified energy system of Russia (UES of Russia) – a set of facilities, located within the territory of the Russian Federation, for generation of electric energy, power grid facilities and power installations of consumers of electric energy connected by the unified operating mode in continuous process of generation, transmission, distribution and consumption of electric energy in the conditions of the centralized supervisory control in the electric power industry exercised by the system operator [4].

Information security – all aspects connected with determination, achievement and maintenance of confidentiality, integrity, availability, failure safe, accountability, authenticity and accuracy of information or means of its processing [5].

Information and telecommunication network – the system intended for transfer of information via communication lines, access to which is provided with use of computer means [4].

Information system – a set of information which is contained in databases and information technologies and technical means [4] providing its processing.

The Corporate Information Management System (CIMS, ERP) – a set of information systems of electric grids, methodologically and technically combined with each other by special program technologies of integration, intended for increase in efficiency of activity of the company [4].

Power grid facilities, also production **facilities** – power lines, transformer and other substations, distribution points and other equipment [14] intended for ensuring electric connections and transmission of electric energy.

Operational and technological management – a package of measures for management of technological operating modes of power generation facilities and power installations of consumers of electric energy if these facilities and devices are not included by the subject of supervisory control in the electric power industry in the list of facilities concerning which operational dispatching instructions and orders are issued [4].

A feeding centre – a distributing device of secondary voltage of a step-down substation of the power supply system having the device for regulation of voltage to which electric networks of a specific Distribution Zone are connected [4].

Power grid complex (power grid companies) – a set of power grid facilities, including facilities of ENES and territorial distribution networks [4].

In the document the following abbreviations and definitions corresponding to them are accepted:

Abbreviation	Definition
AW	– Automated workplace
ASUD	– Automated system of management document flow on the EMC Documentum platform operated at the moment in PJSC Rosseti and its SDCs
PCS	– Automated process control system
ASDU	– Automated system of dispatching management
ASTU	– Automated system of technology management
AIIS KUE	– Automated information and measuring control system and metering of electric energy
Rosseti Group	– Public Joint Stock Company Rosseti and its affiliated and dependent

	companies
SDC	– Affiliated and dependent company of PJSC Rosseti
IS	– Information security
IT	– Information technologies
ITT	– Information technologies, automation and telecommunications
ERP	– Enterprise information systems
KSUIB	– Complex management system of information security
KSED	– Enterprise system of electronic document management of PJSC Rosseti
KTPR	– Catalog of prototype project solutions
SW	– Software
ISSS	– System of information security support
Strategy of ITT	– The strategy of Public Joint Stock Company Rosseti and the affiliated and dependent companies rendering services in transmission and distribution of electric energy in the field of information technologies, automation and telecommunications for the period till 2016
EDMS	– Electronic document management system
UTS	– Certifying Centre of PJSC Rosseti
DPC	– Data-processing centre

APPENDIX 2. LITERATURE

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