**Establishing Modern Master-level Studies in Information Systems   
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**ІT – infrastructure**

**Guidelines to perform laboratory works**

Laboratory work # 2

Topic: Development of a structural scheme and basic documents of infrastructure relations

**draft version**



**Theoretical information**

The concept of the creation / development of IT infrastructure should take into account not only processes and technology, but also personnel who will take part in the work.

The plan for improving services will help you evaluate costs and decide on an IT service development strategy.

The ITIL library (IT Infrastructure Library), a library that describes the best practices in practice of organizing the work of units or companies that provide information technology services, can help with this task.

The seven volumes of the library describe the whole set of processes needed to ensure the constant high quality of IT services and to increase the degree of user satisfaction.

The process approach used by the library fully complies with the standards of the ISO 9000 series. The process approach emphasizes the company's focus on achieving its goals, analyzing key performance indicators (KPIs), and resources spent on achieving these goals.

The scope of the process can be divided into areas, each with its own requirements and approach to design. Examples of such areas can be desktop workplaces, data transfer system, file services, print and application services, central processing systems, databases, telephone services. A separate project can be initiated in the respective management environment for the development of each oblast.

The third edition of ITIL (ITIL v.3) contains five books and consists of:

• Service Strategy (English Service Strategy)

• Service Design (English Service Design)

• Service Transition

• Service Operation (English Service Operation)

• Continuous Service Improvement (Continuous Service Improvement)

In addition, this edition includes two more books: ITIL Overview and Pocket Reference.

The ITIL Library is a set of documents that are used to implement IT Service Management (ITSM) practices.

The ten most basic processes that provide support and provision of IT services described in IT Service Management (ITSM) are best known:

An important role in the ITIL and ITSM processes is played by the Customer Service Desk - Service Desk.

The ITIL library stores a set of documents that are used for the practical implementation of the ITSM principles.

According to ISO / IEC 20000 "Information Technology. Service Management ", all processes are collected in five key groups:

• Provision of services (service level management, availability and continuity management, power management, as well as information security management, budget and cost accounting);

• Management of interaction (interaction with business, with suppliers, etc.);

• Permission processes (problem and incident management);

• Control (change management and configurations);

• Managing releases.

The development of proposals for the creation of IT infrastructure includes the development of contracts for the creation of IT infrastructure by external contractors (suppliers, vendors). Main types of contracts:

1. Fixed Price Contract (Fixed Price)

Terms of use. Applies to standard projects with clear solutions and requirements, subject to detail. Requirements for the result are given in a separate technical task. The deadlines for the work and their cost are fixed.

Advantages for the customer. Clear budget for certain requirements to the result.

Customer risks. The complexity of changing product requirements in the process of developing it. As a result, such conditions are poorly suited to the development of non-standard software and complex systems.

Ways to reduce risk.

Include the following terms in the software creation agreement:

1) phased acceptance of works;

2) payment for the accepted stage;

3) refusal to continue work without financial sanctions.

In this case, the customer will be able at any stage to put the performer before the choice to continue working on terms that have changed or quit the project, reducing costs.

Benefits for the artist. Possible in the case of a ready-made solution that does not require substantial refinement.

Risks of the artist. Risk of waiving payment upon completion of work or exceeding actual costs over the project price.

1. The customer may refuse to accept the results of work in connection with their actual or "imaginary" non-compliance with the requirements of the specification. This option can be used by the customer to reduce the cost of the work done or to cancel the cost of the project, which has lost value to him by the time of completion.

Ways to reduce risk.

Include a combination of terms in a software development contract:

1) the maximum possible prepayment;

2) phased acceptance of works;

3) impossibility of the customer's refusal from the contract without financial sanctions.

At the conclusion of each stage, compile the reporting documentation and record the acceptance of the results by the customer. It is desirable to make a phased acceptance by signing a bilateral act. This option offers maximum guarantees.

**Task**

Object of development - IT infrastructure of the enterprise (company) for which IT infrastructure audit in the laboratory work No. 1 was performed.

Develop proposals to create enterprise IT infrastructure based on virtual workplaces, data warehouses, and micro-service approach. Choose a type of contract with a vendor and develop a draft agreement.

Prepare report.

**Testing questions:**

1. Basic concepts and definition of virtualization. The advantages and disadvantages of virtualization.

2. Types of virtualization: virtualization of platforms and virtualization of resources.

3. Virtualization of networks. Virtualization of servers.

4. Virtualization of workplaces.

5. Virtualization Tools (VMWare, Oracle Virtual Box)

6. Virtualization Tools (Microsoft Hyper-V, HP Virtualization Solutions).

7. Basic concepts and definitions of cloud services.

8. Cloud deployment models (private cloud, public cloud)

9. Cloud clouds (cloud clouds).

10. Service models: SaaS (Software-as-a-Service), PaaS (Platform-as-a-Service), IaaS (Infrastructure-as-a-Service).

11. Microsoft Azure Cloud Services.

12. Cloud Services Amazon Web Services (AWS).

13. Cloud Platform Services.

14. Standards in the IT field. ISO management system standards.

15. Standards in the IT field. Security Standards.

16. Standards in the field of IT. Ethical Standards for Information Systems.

17. Standards in the IT field. International Standard ISO / IEC 12207: 1995-08-01 for the organization of the life cycle of software products (software).

18. Standards in the IT field. Standards of the complex GOST 34 on the creation and development of the AU.

**LIST OF RECOMMENDED LITERATURE**

1. Олейник А. И., Сизов А. В. (2012) ИТ-инфраструктура [Текст]: учеб.-метод. пособие / А. И. Олейник, А. В. Сизов; Нац .исслед. ун-т «Высшая школа экономики». — М.: Изд. дом Высшей школы экономики. — 134 с.
2. ITIL - IT Infrastructure Library - Available at <https://www.axelos.com/store>
3. Bernard S. A. (2005) Introduction to Enterprise Architecture; Publisher: authorHOUSE™
4. Alter S., "Work System Theory: Overview of Core Concepts, Extensions, and Challenges for the Future" (2013). Business Analytics and Information Systems. Paper 35.
5. Adner R., Kapoor, R. (2016). Right Tech, Wrong Time. Harvard business review, 94(11), 60-67.