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**Establishing Modern Master-level Studies in Information Systems
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**IT Infrastructure**

**Guidelines for writing short analytical works, preparation of the report and presentation**

by V.Dubovoi (VNTU)

**V 1.0**

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**Introduction. Brief analytical work in the educational process**

In recent years, approaches to university education are changing rapidly. In the first position, instead of providing students with a certain amount of knowledge is learning their analytical, design, research and other practical activities in the chosen field. This is not surprising. If more than 50 years ago the lecturer was the main source of professional knowledge, today almost any information can be obtained from the Internet.

However, for the use of information from a huge number of available sources, it needs to be evaluated and analyzed. The skills of such analytical work are a prerequisite for successful work. Taking this into account, the main emphasis in university studies in the world has been transferred from lectures to perform short analytical tasks on topics of the training course, writing and protection of analytical works.

**1. Topics of analytical work on the course "IT Infrastructure"**

***Content module 1. General characteristics of IT infrastructure.***

**1.1.** Information infrastructure of the state.

1.2. Information infrastructure of the Internet store

1.3. Hospital Information Infrastructure

1.4. Information Infrastructure

1.5. Information infrastructure of the plant

1.6. Information infrastructure of the IT company

1.7. Information infrastructure of the bank

1.8. Information infrastructure of the transport company

1.9. Information infrastructure of the warehouse

1.10. Information Infrastructure of Mail

1.11. Information infrastructure of corporation

1.12. Information infrastructure of the mobile operator

***Content module 2. Infrastructure solutions***

2.1. Life Cycle of IT Infrastructure: Formation of Information Infrastructure.

2.2. Life Cycle of IT Infrastructure: Organization of information storage.

2.3. Data storage networks.

2.4. Data storage systems with direct connection to the data transmission network.

2.5. Data storage reliability.

2.6. Major server data center platforms: IBM, Oracle, Dell, Fujitsu, HP.

2.7. Computing infrastructure of the data center.

2.8. Network Data Center Infrastructure.

2.1. Engineering Infrastructure of the Data Center

2.2. Composition and destination of IP software.

2.3. Data analysis software. Intellectualization of IP.

2.4. Requirements for IC monitoring systems.

2.5. Structure of management and monitoring of IC.

***Content module 3. Standards, policies, basic laws and regulations for relevant infrastructure solutions***

3.1. Models of IT business management. Corporate policies.

3.2. Features of implementation and protection of intellectual property in electronic form.

3.3. Providing property rights to computer programs and databases.

3.4. Distribution of rights to intellectual property objects and custom-made objects.

3.5. Taxation of IT companies.

3.6. Activities in the field of informatization. List of services.

3.7. Types of rewards for the use of intellectual property.

3.8. Standards in the IT field. IS Audit and Assurance Standards.

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

3.10. Standards in the IT field. Security Standards.

3.11. Standards in the IT field. Ethical Standards for Information Systems.

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

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

***Content module 4. Infrastructure providers***

4.1. Infrastructure contracts. Types of infrastructure contracts.

4.2. Types of agreements in the field of creation and disposal of rights to intellectual property.

4.3. Types of infrastructure contracts. Contract on Spint. Fixed Price / Fixed Scope.

4.4. Types of infrastructure contracts. Time and Materials. Time and Materials with fixed requirements and cost constraints. Time and Materials with variable requirements and cost constraints.

4.5. Types of infrastructure contracts. Staged development.

4.6. Types of infrastructure contracts. Bonuses and fines. Fixed interest

4.7. Types of infrastructure contracts. "Money for nothing, changes for free".

4.8. Types of infrastructure contracts. Joint ventures.

4.9. Infrastructure Outsourcing. Advantages and disadvantages of outsourcing infrastructure. IT outsourcing management.

4.10. Data Outsourcing. Outsourcing of networks.

4.11. Infrastructure Outsourcing. Security Management.

4.12. Infrastructure Outsourcing. Cost management.

4.13. Infrastructure Outsourcing. Software Management.

***Content module 5. Virtualization solutions development.***

5.1. Basic concepts and definitions of virtualization. The advantages and disadvantages of virtualization.

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

5.3. Virtualization of networks. Virtualization of servers.

5.4. Virtualization of workplaces.

5.5 Virtualization tools (VMWare, Oracle Virual Box)

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

5.7. Basic concepts and definitions of cloud services.

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

5.9. Cloud cloud deployment models (hybrid cloud).

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

5.11. Cloud Services Microsoft Azure.

5.12. Cloud Services Amazon Web Services (AWS).

5.13. Cloud Platform Services.

**Content module 6. Infrastructure risks**

6.1. Technological risks.

6.2. Financial risks.

6.3. Technical Risks.

6.4. Integration risks.

6.5. Methods of information risk assessment

6.6. Criminal risks

6.7. The concept and objectives of information security.

6.8. Structures providing information security.

6.9. Stages of information security development.

6.10. Unified Communications. Data access and synchronization.

6.11. Unified Communications. Closed Protocols.

6.12. Unified Communications. smart networks

**Semantic module 7. Monitoring of new technologies - Individual analytical work.**

7.1. Digital transformation

7.2. Industry 4.0

7.3. Microservice and container architecture

7.4. Privacy Policy tendencies

7.5. Mobile technologies

7.6. Data opening

7.7. Hiperconvergency of infrastructure

**2. Preparation of an analytical report**

**2.1 Structure and plan of the report**

Planning a report depends on its subject, goals and objectives facing the speakers, its individual characteristics, the composition of the audience, which should speak.

Preparation for the report is to develop a proper attitude to the subject of the report, to formulate your thoughts on one or another issue.

The structure of the analytical work on the course "IT infrastructure" and the report of its results should be consistent with the general recommendations on the structure of scientific articles, abstracts, dissertations, etc. Basic structural elements of the paper (report):

1. Introduction

- General formulation of the problem in the field of IT infrastructure;

- Characteristics of existing analytical work on this problem;

- The disadvantages of these works (obsolete, incomplete, the emergence of new IT solutions, etc.), which determine the need for additional analysis;

- The purpose of its own analytical work;

2. The main part

- Sources of information for analysis and search results;

- Results of generalization of information;

3. Conclusions.

Typical distribution of volume and time:

- Introduction - 10-15%;

- the main part - 60-65%;

- the conclusion is 20-30%.

**Introduction** is required in each report. This is dictated by the need to start something, attract the attention of the audience, establish contact with the audience.

Good introduction should:

1. Demonstrate your intentions to answer the question;

2. Show that you understand the topic;

3. Outline the structure of your response and the main aspects that you will consider (your plan);

4. Confirm that you have done some research and refer to one of your sources;

5. Fully correspond to the topic;

6. To be concise and to occupy about 8-9% of the total volume of the text (for example, 120 words in a work with 1500 words).

Start a report with a key phrase that indicates the direction of your report, for example:

1. This report deals with ...

2. This assignment will examine ...

3. This report will analyze ...

Use the same or similar wording as in the topic of the report. If the question sounds like "Discuss recent developments in communication technology", then in the introduction you can write: "This report will consider recent developments in the field of communication technology ...". Better certainty and clarity regarding the topic and purpose of work.

You can also use words and expressions that will underline the plan for your work, for example:

1. The report is divided into four sections ...

2. It will first consider ...

3. It will then continue to describe ...

4. The third part compares ...

5. Finally, some conclusions will be drawn as to ...

**The purpose** of the report is to present new information that needs to be comprehended and to encourage listeners to discuss their views. The consistent pursuit of such a goal enhances attention, improves the understanding of the report.

The purpose of the report lies in the core idea - this is the main thesis, which should be clearly formulated from the very beginning. To formulate the core idea of ​​the report means answering the question, what to say (purpose) and what to speak (means of achieving the goal). The aim can not be research (analysis, review, etc.) for his own sake. The purpose should be formulated, based on the useful effect on which the work is aimed at.

Requirements to the core idea of ​​the report:

• the phrase should approve the main idea and correspond to the purpose of the report;

• The judgment should be brief, clear.

The subject of the report should be concretized, interesting, understandable for the audience. The speaker must have a theme. This means that all facts must be collected, systematized, studied, and they should cover the phenomenon from all sides. This is the application of system analysis in practice.

In order to succeed in listeners, it is necessary to clearly define concepts (terms), to offer explanatory examples, to present evidence, to present concepts, to illustrate thoughts with additional material.

It must be taken into account that the topic should be laid out in a short time, satisfying the demands of the listeners. You can attract attention by one of the following ways:

• tell something from personal experience;

• give an illustration in the form of a verbal narrative or visual image;

• turn to anything known from the life of the entire audience;

• start with a rhetorical question;

• start a statement with some stunning quote from a well-known person.

**The main part** of the report unfolds the core idea, reveals its aspects. It describes the results of the conducted analytical work, proves their correctness, the students are brought to the necessary conclusions.

The plan of the main part should be clear. The subject of the report should be disclosed in a concrete and clear manner. Must be selected as many factual materials as possible and necessary examples.

**An analytical report on the course "IT Infrastructure" must contain concrete data for comparing variants of the implementation of the infrastructure elements and aspects that are the subject of the work. Such results should be presented in the form of tables and diagrams.**

Thinking about the structure of your report, one should not forget about the support of attention, which then dimmed, and the person ceases to listen. When planning your report, one should think of which of the existing techniques to use:

• treatment of unexpected questions to listeners;

• speech interruptions, pauses;

• examples from life;

• unexpected parallels.

The elements of humor are animated.

**The conclusion** is an important composite part of any report.

The conclusion should summarize the ideas expressed. Here it is necessary to answer the question formulated in the topic of the report. Or, depending on the topic, indicate the prospects or consequences of the problem.

Also, in this section, you can formulate related topics worthy of further reflection, and express your personal views - if they are backed up by the arguments you provided earlier.

At the same time, there are moments that should be avoided in the conclusion:

Do not list the done. It is better to dwell on the prospects for further work.

1. To put forward absolutely new ideas. If they are really important, include them in the main part;2. Використовувати виправдувальний тон. Будьте впевнені в своїх висловлюваннях. Уникайте фраз на зразок "I may not be an expert" або "At least this is my opinion";

3. Pay attention to too little detail;

4. To quash the significance of previous arguments;

Conclusion - the most important part. In it you demonstrate that you have a good knowledge of the material and thoughtfully approach the problem. Do not worry if the conclusion forces you to rewrite other parts of the text. In fact, this is a good sign!

**2.2. Search and selection of materials**

For the report to be meaningful, it is better to use not only one source, but a few.

It is necessary to select examples from the practice (public and individual) for illustrating and explaining comprehensively the complex theoretical issues. It is also necessary to use so-called local material.

Searching for information should begin with the definition of keywords for the search engine.

As a search engine most often used by Google. The first acquaintance with an array of information can be started with Google-Pictures. Pay attention to analytical work, the characteristic feature of which are tables and diagrams, rather than beautiful photos and graphics.

After the first acquaintance, it's time to go to the search for scientific and technical information in Google-Scholar. Pay attention to the year of publication. Given the rapid development of the theory and practice of IT infrastructure, it is worth using sources for the past 3-5 years.

**2.3. Style guidelines**

You can highlight some general features (features) of the genre:

1. A small amount. Of course, there are no hardcore limits. But there may be restrictions on the time of its presentation. The usual volume of the report - from 2 to 4 pages of computer text (without illustrations).

2. Specific topic and its subjective interpretation. The subject of the report is always specific.

3. Feelings of the story. It is important for the author of the report to establish a trusting style of communication with the reader; to be clear. A good report can only be written by one who is fluent in the topic, sees it from different sides and is ready to present to the reader not an exhaustive, but a multidimensional view of the phenomenon, which became the starting point of his reflection.

5. Internal semantic unity.

6. It is necessary to avoid the use of slang, template phrases, word cuts, too lightweight tone. The language used when writing a report should be taken seriously.

Avoid spoken language elements:

1. Do not use abbreviations (do not, they're, it's), always use the full form;

2. Do not use slang and colloquial expressions (kid, a lot of / lots of, cool);

3. Write in essence and not deviate from the topic;

4. Try to avoid phrasal verbs (get off, get away with, put in), use synonyms;

5. Avoid too general words (all, any, every), express yourself specifically and accurately;

6. Do not abuse the brackets, exclamation points.

Stick to the academic style:

1. If possible, avoid personal pronouns of the first person (I, my, we, our);

2. Avoid too categorical judgments and generalizations;

3. Support the quotations and data quoted with the indication of the sources;

4. In English, the importance of gender mainstreaming: If you are talking about an abstract person, use a person instead of me. If possible, it's best to use the pronoun they instead of he or she;

5. If possible, use an active voice that does not complicate the sentence. For example, instead of "Crime was growing rapidly and the police were getting concerned," write: "The rapid increase in crime was causing concern among the police."

Try to give the text objectivity:

1. Use impersonal constructions: It is believed that ..., It can not be argued that ...;

2. Use the passive state if you do not want to specify the executor of action: Tests have been carried;

3. Use non-categorical verbs, for example: suggest, claim, suppose;

4. To show your attitude to the question, but to avoid personal judgments, you can use adverbs: apparently, arguably, ideally, strangely, unexpectedly;

5. Use modal verbs would, could, may, may to mitigate categorical;

6. To avoid generalizations, use refinement adverbs: some, several, a minority of, a few, many.

***Hierarchical model of thinking.*** Thinking hierarchical. Speech is a transfer of "hierarchy of ideas" from person to person. Trying to understand the topic, a person highlights some ideas as the most important (more than 5-7 simultaneously in the head not to hold, really - 3-4). To understand each of them deeper, he divides them into more simple parts; those in turn for even more simple ideas. The entire hierarchy of ideas is not entirely in the head to hold, so somewhere it inevitably is cut off. At the same time, small technical details remain incomprehensible, but without much damage to the holistic perception of the whole picture. All this work is carried out by each listener individually and semi-consciously in the process of perception of speech.

Abstracts: Each paragraph usually touches one of the aspects of the main idea. The two paragraphs may relate to different aspects, but be interrelated - for example, the cause and effect, the positive and negative sides, the state of affairs before or after.

Logical transition from one paragraph to another sometimes causes the author serious difficulties. To keep the connectivity of the text, it is necessary to direct the reader (listener), to give him signals. This can help introductory and connecting words, perform various functions. example:

1. Contradiction: but, however, on the other hand, yet;

2. Example: for example, that is;

3. Addition: Similarly, moreover, furthermore, in addition;

4. Conclusion: therefore, consequently, as a result, thus;

5. Transfer: then, after that, ultimately.

Even the most experienced specialist at the beginning of work sometimes visit a feeling of indecision. But, as they say, the main thing - just start writing. It does not matter what you start with: the main thing - do not stop writing and do not worry about style and spelling for the time being. Make the preliminary sketches of the main thoughts of the story and after that you will go to the design of the structure of your future creation.

To begin with, it is best to make outlines of what you know about the topic of the report: perhaps you know even more than you thought. This will give you an idea of ​​which direction to move further. To act purposefully, make a plan and formulate a preliminary set of questions. When you begin to study the material, you will have new, more specific questions, and you will be able to search for answers already on them.

Try to compile the future report in order to develop the main idea. If, as a result, you will get the "gold three": the beginning (introduction), the middle (the main part of the report) and the limb (conclusion), then you did everything right.

**2.4. Recommendations for registration**

**The grammatical and spelling mistakes** in the report should be absent - put all efforts into that. In addition, you must remember that you write for another person, so punctuation, the division into sentences and paragraphs, the general structure - all this should help the reader.

**Quotes and references**

Do not forget to make correct references to sources. Otherwise you can be blamed for plagiarism, and this is one of the worst violations of academic integrity - theft of other people's thoughts!

**Verification and editing**

It is important to read the work several times even if you do not have to correct a lot. If you feel that "the eye is blurred" (and finding the mistakes in your own text is harder by definition), read the text to an outsider. "Calling a Friend," especially if that linguist, can detect a significant percentage of unsuccessfully constructed sentences, as well as a lot of grammatical and logical errors.

"Lifehak": You can independently dictate a report to a voice recorder and listen to it. Often, this is how it is possible to detect inconsistencies in grammatical constructions or inaccuracies in the logical course of things.

Be sure to use spell checking in a text editor, but do not forget to read the text yourself. For example, Word occasionally misses somewhat curious mistakes that can greatly spoil the impression of your written work. If you are unsure about something, look into the dictionary.

And another good trick: before finishing work: put it off for a couple of hours (even better - for a day), then come back to her with a fresh look. This is another reason why you should start writing a report in advance, having enough time in stock.

When checking the report, first of all pay attention to the important points:

1. No matter which question you answer, you need to achieve certain goals. You expect that when you write a report, you will have in mind the following:

- Did I answer this question?

- How understandably and precisely I put my thoughts?

- Is it natural what I wrote, is there no error?

2. Communication skills / writing.

3. The report should be as personalized as possible. It's boring to read reports that are full of common phrases - it's a waste of time.

4. Everything you write in the report should be confirmed by examples, referring to your experience. The details will make your reports interesting, unique, specific.

5. You do not necessarily have to joke in your reports to make them interesting. However, try to use all the means at your disposal to keep your notes up to date.

**2.5. Mistakes in writing reports**

Writing a report is not limited in time, you can rewrite it many times, ask friends to read your report. Take advantage of every opportunity and try to avoid common mistakes.

1. Bad check.

Do not think that you can restrict yourself to spell checking. Re-read your reports and make sure that there are no ambiguous expressions, unsuccessful revolutions, etc.

2. Tired prepositions. Insufficient detail.

Too often, an interesting report loses in that it is a listing of statements without illustrating their examples.

3. Linguistically.

Reports are limited in size, so you need to be wise to manage this volume. Sometimes it means giving up some details, especially if they have been mentioned somewhere else or have no direct relation to the case.

4. Long sentences.

Long sentences do not prove the author's right, and short sentences often produce a bigger effect. It is best if the long phrases in the report alternate with short ones. Try reading the report aloud. If you feel that your breath is interrupted, break the paragraph into smaller paragraphs.

**3. Use of multimedia presentations**

Using multimedia presentations can increase the informational saturation and the effectiveness of the reports. It has been proved that the efficiency of material feed will increase with the simultaneous use of the visual and auditory channels of perception. The effectiveness of auditory perception of information is 15%, visual - 25%, and their simultaneous activation enhances perception perception to 65%.

The purpose of a multimedia presentation is a visual representation of the author's idea, as comfortable as possible for the perception of the audience.

The benefits of a multimedia presentation are:

* + • visibility of the material outlined, ensuring availability for visual perception of the whole audience;
	+ • Attracting the attention of listeners to the content of the material provided by using animation elements, audio and video clips;
	+ • accentuating the most important moments of the report;
	+ • preservation of the logical sequence of presentation of the report;
	+ • Ease of preparation of slides, compactness and transportability of information.

**3.1. Stages of creating a multimedia presentation**

In the process of creating a multimedia presentation, there are three stages: the stage of design, the stage of design, the stage of modeling.

1. The design stage involves the following steps:

**•** Define the purpose of using the presentation;

• collecting the necessary material (texts, drawings, diagrams, etc.);

• formation of the structure and logic of presentation of the material;

• Create a folder in which the collected material is placed.

2. The design stage is the development of a presentation, taking into account the content and correlation of textual and graphical information. This stage includes:

• definition of slide design;

• filling the slides with collected text and visual information*.* ***It is not necessary to place on the slide all the text of the report, only key definitions and core ideas;***

**•** Illustrative slideshows of the presentation should be up-to-date and relevant, address the task of the report.

• Including animation effects, audio and video files, audio (if necessary). On individual slides can be used animation effects, in the form of various ways of displaying text, drawings, tables, photos and dynamics of their motion on the screen when viewed. However, it should be remembered that during the report should not be abused by the animation possibilities of the presentation: flickering in the eyes slows down the report and annoying listeners;

• setting the slide show mode;

• It should also be taken into account that in any presentation there are standard slides (title, content and final) that should not be neglected when it is designed. In addition, each slide presentation should have a heading;

• Title slide includes: full name of the presentation (subject of the report), author, if necessary - institution, city and year.

• Content slide is a list of slides of the presentation, grouped according to the subject of the message (for example, slides 1-5 - Introduction, slides 6-9 - "The conceptual device of the theme," etc.). Using the content slider will quickly find the necessary section of the presentation and play it.

• The final slide contains conclusions, wishes, list of results, etc.

**3.2. Criteria for evaluating a multimedia presentation**

The quality of the presentation can be evaluated on the basis of a number of criteria.

1. Contents of the presentation:

• Disclosure of the topic of the report;

• the validity of the number and division of slides;

• Literacy of the statement;

• availability, sufficiency and validity of graphic design (schemes, drawings, diagrams, photographs);

• Balance of forms of presentation of information (text, drawings, formulas, animation);

• use additional developmental information on the topic of the report.

2. Presentation presentation:

• conformity of design of the whole presentation to the goal;

• unity of style of drawings included in the presentation;

• application of own (author) elements of design;

• justified use of animation effects, audio, video files;

• Matching the duration of the presentation to the time allocated to the report.

**3.3. Requirements for the content part of the multimedia presentation**

The content of the presentation should correspond to the topic of the report. The effectiveness of the presentation depends on the clarity and thoughtfulness of its structure. To construct a structure, the principle of hierarchical decomposition of the solution of the problem should be used, that is, to represent each complex idea as a system of simpler ideas. This will help to realize the basic rule for the presentation: 1 slide - 1 idea. However, you can split one key moment and a few slides.

- The most difficult areas of the performance is better to break into steps or stages, ahead of them with a very simple slide with a list of steps. For example: "The proposed method consists of three steps: ..." or "There are three reasons why the standard approach is not optimal. Consider each of them separately." If these auxiliary phrases are not spoken, the content of the report will not change; however, it will be much harder to perceive it.

- Important ideas of the upper levels must necessarily be reflected on the slides and words spoken. If the idea of ​​"jumps" only on a slide - it's a sure sign of its secondary.

The most important words, ideas, fragments can be highlighted by the color on the slide, so they are immediately thrown into the eye. This too can not be abused.

Language and slides should not coincide. The language should be more popular and shaped. Slides should contain more technical details: formulas, charts, tables, graphs. In a short speech do not need to dwell on the explanation of all the details.

**3.4. Decoration a multimedia presentation**

For the most productive use of presentations, it is necessary to follow the following recommendations for its design.

Number the slides. This will allow you to quickly refer to a specific slide if necessary.

The presentation of slides should attract the attention of the audience, taking into account the psychological peculiarities of the perception of the listeners.

Slides can not be overwritten with text or pictures. It must be remembered that a person can instantly remember no more than three facts, conclusions, definitions. Remember: The presentation accompanies the report, but does not replace it.

The text content of the presentation should be accompanied by certain provisions voiced by the speaker, but not repeat their word by word. Words and related images must necessarily be matched in time.

The listener should not spend his mental efforts on "restoring" the hierarchy of ideas from the unstructured flow of phrases. This is achieved by various technical techniques:

- The name of the report on the first slide should reflect the most important idea, that is, to match the top of the hierarchy.

- In the beginning of the presentation it is desirable to bring the contents of the report. Ideally, there are three points, each of them three sub-items. This is the structure of work, the two upper levels of the hierarchy. If the presentation is short, only the upper level is pronounced.

 Footnote: Title of the report

Part name

The name of a specific slide

Slide number

- All the slides should be divided into groups that correspond to the main ideas and structural parts (relevance, conclusions). Then each slide will have the title of the form (pay attention to the font size ratio):

Color.

The combination of two colors - the color of the image and the background color - greatly affects the visual comfort, with some pairs of colors not only tired of vision, but also can lead to stress (for example, green letters on a red background).

The color scheme of the presentation should be the same on all slides. This creates a sense of connectivity, consistency, and comfort among listeners.

Background.

The background should highlight, shade, emphasize the information on the slide, but do not hide it. Any background image increases the fatigue of the eyes and reduces the effectiveness of the perception of the material. Use a homogeneous background for slides (for example, white or gray), it does not distract attention from the main content and is not an annoying factor. The color of the font, the design of the template must be chosen so that all the inscriptions are readily readable.

Type.

It is worthwhile to use so-called chopped fonts (for example, different versions of Arial or Tahoma), and the size of the font should be large enough. It is not often necessary to use italics, as sometimes the perception of the text worsens. It is not recommended to mix different fonts and abuse them with color schemes. However, if the presentation shows the texts of programs, then they should use a different font than for the rest of the text. Obviously, the headings are typed in a larger font.

Unity of style.

The unity in choosing the color of presentation slides, fonts, text layout, titles, drawings, use of tables, etc. provides the aesthetic component of the presentation, as well as the psychological comfort of perception and assimilation of information. However, the presentation should not be the same type and monotonous, which is achieved by a reasonable variety of methods of design and content.

Location of the information on the page.

The most important information should be in the center of the screen.

Text.

The amount of text on a slide depends on the purpose of the presentation. There should be no more than 7-10 lines per slide. Words and sentences are short. Hour form of verbs is the same. The most important words, ideas, fragments can be highlighted by the colors on the slide to immediately glare. But this can not be misused.

Animations and effects.

One of the features of the presentation is its dynamism, which is provided by various animation effects. However, MEMORY:

• In the title and final slides, the use of animation of objects is not allowed.

• Movement, change of form and color, involving involuntary attention, act as a factor in distraction from the content, so animation effects should not be admired - an important external aspect, not content, is important.

• With animation you can create a model of any process, phenomenon, object.

• *The visual perception of a presentation slide takes from 2 to 5 seconds, while the duration of some types of animation can be longer than 20 seconds. Therefore, the appearance and parameters of the animation in which the slow appearance of the image occurs is undesirable.*

**3.5. Additional recommendations**

• It makes sense to be clean. Sloppyly made slides (versatility in fonts and indentations, errors, typographical errors in the formulas) cause suspicion that even to meaningful issues the speaker approached somehow.

• The title page is necessary to present the audience to you and the subject of your report. The defenders must also indicate the name and initials of the supervisor and the organization. At conferences - the name and date of the conference. This is done including in order to exchange messages with colleagues and when presenting the Internet the purpose of the presentation was clear without additional comments.

• The optimal number of lines on the slide is 6 - 11. The overload and small font are difficult to perceive. Underarming leaves the impression that the presentation is superficially and poorly prepared.

• Common mistake - read the slide verbatim. It is best if the slide will have drawings, formulas, tables, and words will tell their meaning.

• Lists should be short phrases; maximum - two lines per phrase, optimally - one line. Reading a long phrase distracts attention. The short phrase is easier to remember visually.

• Do not speak formulas in words - it's a long and boring one. This is done only during lectures or seminars, when the students simultaneously write the summary. It is inappropriate for a defense or conference.

• Optimum switching speed - one slide for 1-2 minutes, lectures - up to 5 minutes. For short performances we allow two slides per minute, but not faster. Listeners must have time to perceive information from both the slide and the hearing.

• On slides with key labels, you can stay longer. If they are not understood, then nothing will be understood.

• Slideshows with graphs of results can be displayed at an accelerated pace. Explanation of the graph in the typical case: "On the horizontal axis is postponed ..., on the vertical axis - ..., it is seen that ...".

• When explaining the tables, it is necessary to speak, why the lines correspond, and why - the columns.

• Enter only those notations and concepts without which understanding of the main ideas of the report is impossible. Any designation should be explained before its first use (as in the articles). It is not necessary to invent own terms and definitions, if similar already exist.

• Cumbersome designations should be simplified in every possible way, getting rid of unnecessary indexes, strokes, hoods, etc.

• The last slide with conclusions in brief presentations is not necessary. Another thing is a lecture or speech at the seminar when it was said so much that the listener may get lost. In this case, you need a resume.

**3.6. Tool for preparation of presentations**

**MS PowerPoint**

The most frequent choice. If there are many formulas on the slide, it is recommended to type it completely in MS Word (otherwise the formulas have to be placed and aligned manually on the slide). For this purpose it is convenient to make a blank - an empty slide with one large Word object "Insert / Object / Document Microsoft Word", pick up once its size and multiply it to the desired number of slides. The main font in the text and formulas is recommended to be changed to Arial or similar; The Times font looks bad from afar. Be sure to set the font size in MathType equal to the main font size in the text. Never align the size of the formula manually, pulling it around the corner. In serious scientific presentations, you should not use animation effects.

**MS Word**

MS Word will also go. Set landscape orientation, make fields smaller, set the size of the main font to about 24-22. Very well, when on each slide below is the number of the current slide and how many slides it all. Word allows you to do this with the help of footers. It is recommended that you first create a sample of a clean page with the font size, fields, headers and header, and then copy it for each new slide. It is better to show the finished presentation not in Word itself, but to write the document in a PDF file and use the full-screen **Acrobat Reader** during the presentation.

With bitmap images such as screenshots or charts, it's better to work in PNG format, and with photos - in JPEG format

**4. Recommendations for oral presentation**

Oral presentations are one of the main ways to present your results and conduct a discussion. They have significant advantages over written presentations, since they provide an opportunity for operational discussion, give more freedom of expression. Emotionality, gestures, and accentuations often provide a better understanding of the thoughts of participants in the discussion than dry written communication.

During the speech, several times can say "the main idea is to ...". But you should not abuse this phrase.

The first phrases should intrigue. For example, we can say about how complex or important this task is, or about how unexpected the decision will be - this will keep the attention of listeners to the end. But then the limb really should be non-trivial - otherwise the listener will be disappointed.

Be emotional. Do not speak in an even voice, without accentuation. Lack of emotion makes you think that the speaker is indifferent to his own work. Then you should not expect the interest of the listeners.

After you achieve perfection on all of the points listed above, learn to watch people in the eye and understand in the course of the case, which needs additional attention and explanations.

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