MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

NATIONAL UNIVERSITY OF LIFE AND ENVIRONMENTAL SCIENCES OF UKRAINE

Faculty of Agrarian Management

METHODICAL INSTRUCTIONS

For preparing Course Works and fulfillment Individual Work

in the course “Project Management” (mandatory component of Educational Program 073 “Management”)

for students of specialty 073 "Management"

educational degree "Bachelor"

Kyiv – 2023

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METHODICAL INSTRUCTIONS FOR PREPARING COURSE WORKS AND FULFILLMENT INDIVIDUAL WORK IN THE COURSE “PROJECT MANAGEMENT” (MANDATORY COMPONENT OF EDUCATIONAL PROGRAM 073 “MANAGEMENT”)

for students of specialty 073 "Management"

educational degree "Bachelor"

CONTENT

INTRODUCTION TO THE COURSE WORK PREPARATION

An integral part of training managers of agrarian sector for the national economy of Ukraine and for the international market is their mastering of a certain amount of managerial and economic knowledge on the problems of development of projects of various types. The discipline that ensure the implementation of the latter is "Project Management". An important form of independent work of students and a way to involve them into research work is the preparation and defense of course works.

The course work is performed by students under the guidance of a professor on one of the relevant topics in project management. Fulfillment of course work is one of the types of educational and research work of students, designed to certify the level of knowledge acquired by students and the ability to use them in the development of theoretical and specific practical issues in the field of management.

Preparing of course work *aims to* consolidate and deepen the knowledge acquired by students in the process of studying management; to develop students' skills of independent work with special literature, reference books, manuals, sources of statistical information, etc.; to teach students to generalize theoretical materials, to interpret the collected data, to independently formulate conclusions, to substantiate and defend their own point of view on the researched problems.

Purpose, objectives, and competencies of the course “Project Management” as an important mandatory component of Educational Program 073 “Management” are the following:

The purpose is to teach students the project management, the acquisition of skills to use the acquired knowledge for the effective implementation of the project solutions in the practical activities of the enterprise.

In the process of studying the discipline "Basics of Business Projecting" students solve the following main **objectives**:

– studying of the basic provisions of project management;

– determining the place of the project at the enterprise and identifying the most common approaches to the formation of the structure of the project life cycle, acquaintance with the principles of change and project management at the enterprise;

– definition of the project methods and tools;

– substantiation of the need to manage the quality, time and resources of the project, determining the forms of organization of project activities at the enterprise.

Acquisition of competencies:

Integrated competency (IC): The ability to solve complex specialized tasks and practical problems in the management of organizations or in the learning process, which involves the application of certain theories and methods of the relevant science and is characterized by the complexity and uncertainty of conditions**.**

General competencies (GC):

GC 3. Ability to abstract thinking, analysis, synthesis.

GC 10. Ability to conduct research at an appropriate level

GC 13 Appreciation and respect for diversity and multiculturalism

GC 14 Ability to work in an international context

Professional (special) competencies (SC):

SC 1 Ability to identify and describe organizational characteristics

SC 2 The ability to analyze the results of the organization's activities, to compare them with the factors of influence of the external and internal environment

SC 5 The ability to manage the organization and its divisions through the implementation of management functions,

SC 6 The ability to act socially responsibly and consciously

SC 7 Ability to choose and use modern management tools

SC 9 Ability to work in a team and establish interpersonal interaction when solving professional tasks

SC11 Ability to create and organize effective communications in the management process

SC 16 Ability to identify and analyze new market opportunities opportunities, including an international business environment, formulate new ideas, develop projects and organize business process management.

Program learning outcomes (PLO):

PLO 7 Demonstrate organizational projecting skills

PLO 8 Apply management methods to ensure the effectiveness of the organization

PLO 17 Conduct research individually and/or in a group under the guidance of a leader.

PLO 18 Demonstrate the ability to develop and implement projects, identify sources of their funding and manage them.

I. REQUIREMENTS FOR THE CONSTRUCTION, PRESENTATION AND DESIGN OF THE WORK

1.1. The main stages of course work

While working on the course work, the student must learn the skills of correctly posing the problem and justifying its relevance, formulating the goal and objectives of the research, building a logical plan and optimal structure of the course work, working with literary sources and statistical information, analyzing and evaluating various aspects of the chosen project, substantiating one's own generalizations, conclusions and proposals.

The main form of effective organization of a student's work on coursework preparation is planning the allocation of time for performing the necessary types of work, taking into account their interrelationship.

Completion of the course work involves the sequential implementation of the following stages:

1) selection of direction, topic of work and object of research;

2) review of legal documents, literary sources and practical material on the topic of work and selection of material for work;

3) drawing up a plan according to the topic of the course work;

4) writing a term paper, editing;

5) registration of coursework according to requirements;

6) submission of work for verification;

7) defense of coursework.

The key to successful writing and defense of the coursework is students' adherence to the approximate schedule (Table 1.1), as this provides the

opportunity to timely identify and eliminate shortcomings and errors in content and design.

Table 1.1

Coursework schedule

№	Stages of implementation	Weeks
1	selection of direction, topic of work and object of research	1-2
2	review of legal documents and literary sources on the topic of work and selection of material for work	3
3	drawing up a coursework plan	4
4	writing a term paper, editing	
	- Fulfillment of chapter 1	5-6
	- Fulfillment of chapter 2	7-9
	- Fulfillment of chapter 3	10-12
5	preparation of course work according to requirements	13
6	submission of work for review of the professor	14
7	defense of coursework	15

1.2. Selection of direction, topic and object of research

At the first stage, the student chooses the direction, object and topic of research.

The object of research is the entire set of connections, processes or phenomena, relationships of various aspects of the theory and practice of science, which serves as a source of necessary information, creates a problem situation and is chosen for study.

The subject of coursework is developed by the department in accordance with the approved course program and covers the most important issues from the discipline "Project Management".

Approximate topics of course projects are given in **Appendix A.**

The topic of the course work is chosen by the student independently in accordance with the direction of his own scientific and research interests according to the indicative lists and in agreement with the teacher. The topics of the works should have a problem-practical orientation.

In accordance with his/her own research interests and opportunities to obtain the necessary information, in agreement with the academic supervisor, the student may choose a topic that is not included in the given list of topics.

The choice of the same topic by several students within the same academic group is unacceptable. Having chosen a topic, the student must clearly define the purpose of the course work, the object of research and outline the range of tasks that must be solved to achieve it, select the appropriate scientific literature and regulatory and legal materials on the chosen topic, statistical information material.

1.3. Review of legal documents and literary sources

In the process of drawing up a plan and writing a coursework, the student selects and studies relevant literary sources and compiles a bibliography in accordance with the requirements for compiling a bibliographic description according to DSTU 8302:2015.

Examples of the list of references are given in **Appendix B.**

The search and study of the necessary literature and practical material is connected with the use of the catalogs of the departments of scientific and scientific and technical information of the library of NUBiP of Ukraine, etc. The practical material for writing a term paper is the indicators that the student uses in the practical part, as well as the characteristics of the proposed project.

According to the chosen topic, the student performs a complete analysis of literary printed and Internet sources, the content of which is related to the topic of the course work: textbooks, study guides, monographs, brochures and articles from various domestic and foreign periodicals, statistical collections, laws, regulations, decrees, other normative legal documents, as well as standards, actual statistical indicators and accounting and financial reporting data, planned and forecast indicators.

When presenting the material on the chosen topic, not all information is used, but only that part of it, which directly relates to the topic of the course work, is the most valuable and useful for solving the research tasks. All literary sources used by the student during work should be referenced in the coursework. In addition, all of them must be presented in the list of references, which is one of the elements of the coursework.

When processing literary sources and normative documents, it is advisable to keep records in the form of abstracts or abstracts for their further use when writing a term paper.

The information base of the course work is:

- current and reporting materials of the enterprise - the object of research: planned and actual indicators of its economic activity, the charter of the enterprise, statistical and accounting reports, agreements, certificates, orders, orders, results of observations, surveys, surveys, etc.;
- own research and calculations when developing projects.

1.4. Drawing up a coursework plan

After studying legislative and regulatory documents, literary sources, the student drafts a work plan with a list of questions that reveal the content of the topic. Drawing up a work plan is a stage of course work that highlights the main issues of the topic in a clear logical sequence. The plan actually serves as the basis of the conducted research, indicates the direction of achieving the goal.

The plan of the course work is given in its separate section called "CONTENTS". Drawing up a plan is one of the most important stages of coursework preparation, as it forms the basis of a general idea of the quality of the work, implemented research directions of the chosen topic, the logical connection between its individual components, and the problem statement of individual questions.

The plan consists of a list of questions related to the internal sequence of the description of the research results by topic. The wording of the names of sections and subsections must meet the following requirements: specificity, brevity, problem orientation, lack of ambiguity. When drawing up a plan, the basic

questions must be placed in such a sequence that is the most logical and acceptable for this research scheme of presentation of the material.

The student draws up a course work plan in accordance with the proposed elements of disclosure of the research subject and agrees it with the supervisor. At the same time, it can be specified in the future, but leaving the main task of the work unchanged. The developed plan is submitted by the student to the supervisor for approval.

Mandatory elements of the coursework plan are the following parts:

An introduction that reveals the relevance of the chosen topic and the tasks that need to be solved during the work.

Chapter 1, which consists of 2-3 paragraphs and contains theoretical statements justifying the problem under investigation.

Chapter 2, which consists of 2-3 paragraphs, which characterizes the object of research and analyzes the financial and economic activity of the enterprise over the past three years, provides an analysis of project solutions subject to business planning, as well as the results of research into a specific problem.

Chapter 3. The concluding and recommendatory chapter, in which, as a result of the study of the selected material and the systematization of literary sources, the student performs an analysis of the conducted research and offers ways to solve the problem.

Conclusions and suggestions from the work performed regarding the results of the research.

List of used sources.

Appendices (if necessary).

An approximate version of the coursework plan is given in Appendix B.

1.5. Collection and analysis of information necessary for work

Coursework in the discipline “Project Management” must be performed on actual material reflecting the activities of the organization.

When starting to work on the course work, the students should familiarize themselves with the organizational structure of the enterprise – the object of research.

Information about the scope and nature of the enterprise’s activities, the state of the investigated problem must be selected for the last three years. This contributes to the identification of trends and regularities in the development of the enterprise. In order to process the collected information, it is advisable to use information technologies.

1.6. Text writing and editing

After agreeing and approving the plan, the student begins writing the course work in accordance with the requirements given in these methodological recommendations for writing and defending the coursework in the discipline “Project Management”

When writing the text of a term paper, it is necessary to adhere to the following requirements for the presentation of the material:

- logic,
- sequences,
- perfection,
- accuracy of thoughts,
- literacy (observing spelling and stylistic rules),

- citation rules and references to used sources.

The content of each section should correspond to the title of the section and the topic of the entire work.

In the process of writing chapters or subsections of the course work, the student can submit them for review to the supervisor in order to clarify and correct individual positions and questions.

The responsibilities of the course work supervisor are:

- development of a calendar plan for course work and its approval;
- control of the student's implementation of the individual coursework schedule;
- organization and holding of consultations on course work;
- according to the course work schedule, at the request of students, revision of individual parts of the work;
- verification and acceptance for defense (or rejection) of the course work completed, completed and signed by the student;
- after the completion of the schedule of coursework, the continuation of counseling, but with the revision and verification of already fully completed and completed coursework.

The supervisor's signature on the coursework and its admission to defense testifies to the compliance of the work with all regulatory requirements and the student's readiness to solve specific project management tasks.

1.7. Requirements for course work design

The course work must be completed in the English language in compliance with the requirements set forth in these Methodological Guidelines. During the writing process, students send coursework electronically to the supervisor for

checking and approval. The final version is submitted to the manager before the defense in printed form.

The volume of the course work is: 30-35 pages;

The practice report is drawn up on A4 format sheets.

The text must be printed on one side of the A-4 sheet. Pages are numbered in the upper right corner starting from the second. The title page is included in the numbering, but the page number is not.

It is not allowed to abbreviate words in the text, except for generally accepted ones. It is necessary to provide an interpretation of the meanings in the formulas and indicate their units of measurement.

The font of the main text: Times New Roman, size 14, spacing – 1.5, paragraph – 1.25 cm. The text page is limited by margins: left – 30 mm, right – 10 mm, top – 20 mm, bottom – 20 mm.

The text of the main part of the work is divided into sections, subsections (paragraphs), points and subsections according to the plan.

The text of each section, conclusions, list of used sources begins on a new page.

Chapters are numbered with Arabic numerals throughout the work. “Contents”, “Introduction”, “Conclusions”, “List of used sources” are not numbered. A period is placed after the section number. A paragraph number consists of a section number and a paragraph number separated by a period. A period is also placed at the end of the paragraph, for example: 2.3. (the third paragraph of the second section).

Headings of sections are printed in capital letters in the center of the page, subheadings of paragraphs – in small letters in the center of the page. Do not put a period at the end of the title. It is not allowed to underline the title and move words in the titles.

The distance between the title and the next or previous text should be two lines.

The contents should contain the titles and initial page numbers of each section or subsection.

1.8. Designing tables in the course work

Tables are numbered within the section with Arabic numerals. Place the inscription “Table” to the right of the main text and indicate the number of the section and the serial number of the table in the section, which are separated by a period.

There is no period at the end of the table number. After that, the name of the table is indicated, highlighted in bold. The word “Analysis” cannot be present in the name of the table. The word “Table” in the printed text is written in italics.

The table is placed after the first mention of it in the text. If the table is transferred to another page, “continuation of the table” is written above the subsequent parts. In the tables, it is necessary to indicate the unit of measurement of the corresponding indicator (kg, thousand hryvnias, etc.). If all units of measurement are the same, they are placed in the header of the table. All table columns must contain names. After drawing up the table, indicate the source of information in square brackets. If the table is created by the author, write: “created by the author”.

Example:

Table 2.1

Sources of financing the project (thousands of hryvnias)

N	Indices	Year 1	Year 2	Total
1.				
2.				
…				
7.				
	Total			

Source: [15]

1.9. Designing illustrations and formulas in course work

Illustrations are marked with the word "Fig." and are numbered with two numbers separated by a period: the section number and the serial number of the illustration in the section. If only one illustration is included in the report, it is also numbered according to the given rules.

Example:

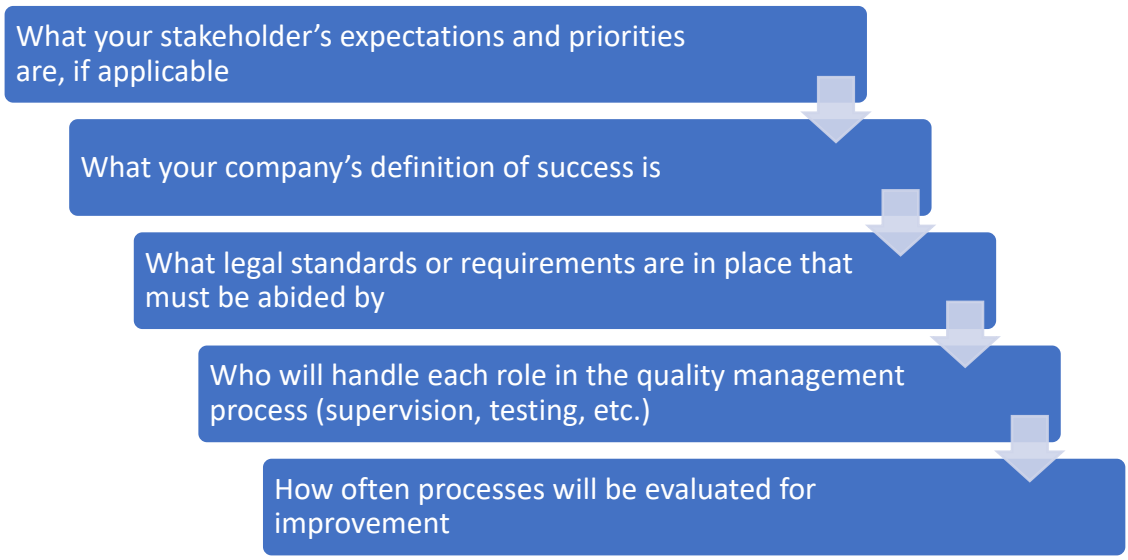

Fig. 1.5 Planning stages of Quality management

Source: scheme developed by the authors on the basis of [8]

The drawing number, its name and explanatory captions are placed under the illustration in the center of the drawing. The source of information is indicated after the figure.

Formulas are placed in the middle of the page immediately after they are mentioned in the text. There should be at least one free line above and below each formula (equation). The numbering of formulas is double (similar to tables and figures) and is made out in round brackets at the level of the formula in the extreme right position of the line. The explanation of the formula is given directly below the formula in the sequence in which they are given in the formula. The explanation of each symbol is given on a new line. The first line begins without a paragraph with the word "where" without a colon. Formulas submitted one after the other are separated by a comma.

Example:

$$PV = \sum_{t=1}^{n} \frac{D_t}{(1+r)^t} \qquad (2.1)$$

where PV is the total discounted income;

Dt - income in the t-th period (at the end of the period);

r - discount rate (expected rate of return);

n - the life of the project.

1.10. Preparation of the References

References to literary sources to the text must be given in square brackets, for example [4, p. 15]. This means that the author of the work refers to the source in the list of used literature under number 4, where on page 15 the problem under consideration is mentioned.

The references that were used in the execution of the practice report is made in the following sequence:

1. In alphabetical order.

2. In order of reference in the text.

The refernces is drawn up in accordance with the general rules and basic requirements for compiling a bibliographic description according to DSTU 8302:2015 Information and documentation. Bibliographic reference:

- the description is in the original language;

- as a sign that separates the zones of the bibliographic description, in the bibliographic reference it is recommended to use the sign "dot" (instead of the sign "dot and dash" (". - "), as it was before);

- indications of the volume, part, issue, number, as well as the year of publication are given in Arabic numbers;

- the name of the place of publication is provided in full;

- the description of the document is carried out on the title page. The missing information is borrowed from other places of the document: cover, back of the title page, preface, table of contents, source data, etc.; submission of information other than the title page is allowed without square brackets;

- the description is allowed to be written in an abbreviated form, limited to information necessary for identification;

- the title - from one to three authors - and/or the name are mandatory elements;

- listing of four or more authors in the title (before the title) - if necessary;

- it is not necessary to repeat information about the author(s) with a slash;

- it is allowed to submit one author and the phrase "and others" after a slash;

- submission of the designation of the material ("Text", "Electronic resource", "Notes", etc.) is not mandatory;

- submission of the name of the publishing house or the name of the publisher is optional;

- it is not necessary to submit information about the series and the International Standard Number;

- it is allowed in the analytical description to replace the punctuation mark "two slashes" ("//") with a dot, and to highlight the name of the document in font. The name can be shortened;

- the phrase "Access mode" or its equivalent in another language is allowed to replace "URL";

- it is recommended to use DOI instead of email address.

An example of the list of used sources is provided in **Appendix B**.

1.11. Designing Appendices

Appendices are submitted in the order they are mentioned in the text of the work, they must have a title printed at the top in small letters. Above the title, the word "Appendix..." and the capital letter that this app stands for should be printed in small letters from the first capital letter. Appendices should be marked consecutively with capital letters of the English alphabet, for example: appendix A, appendix B, etc. One appendix is designated as appendix A. If necessary, the

text of the appendices can be divided into sections, subsections, paragraphs and sub-paragraphs, which should be numbered within each appendix. In this case, each number is preceded by a designation (letter) and a dot (see Appendix D, Fig. D. 1). Appendices must have the same page numbering as the report.

If the term paper contains appendices, they are numbered as appendices with reference to them in the text.

Course work that meets the requirements for disclosure of the chosen topic and design is returned to the student with a review and an indication of admission to its defense. The final evaluation of the course work is carried out after its defense.

1.12. Reviewing and defense of course work

Completed course work is submitted to the academic supervisor for verification and review by the deadline specified in the schedule. After reviewing the work, the student revises the work according to the supervisor's recommendations (if available).

A course work that is allowed to be defended must have a resolution of the academic supervisor - "The work is allowed to be defended."

The day and time of the defense of the course work is determined by the professor-supervisor according to the schedule of the educational process. The approximate duration of the coursework defense is 10 minutes. The student is given no more than 5-7 minutes to reveal the content of the coursework.

In preparation for the defense of the work, the student prepares a speech in the form of a presentation, prepares illustrated material, considers answers to the comments indicated in the supervisor's review. In his/her speech, the student must reflect: the results of the analysis on the chosen topic, specific proposals for solving the problem or directions for improving the relevant processes with

justification of the possibility of their implementation in real conditions, while it is possible to refer to the illustrative material submitted for the defense.

Approximate structure of the presentation (8-10 slides):

slide 1: title page (topic name, author, scientific supervisor);

slide 2: relevance, purpose, task, object and subject of research;

slides 3-6: the main provisions of the study in subsections;

slide 7: brief conclusions

slide 8: Thank you for your attention!

It is desirable to build the speech based on the materials of one's own research, omitting generally known facts, normative provisions or generalizations. Special attention should be focused on your own conclusions and recommendations, answers.

After the speech, the student answers the questions.

During the defense of the course work, the student must demonstrate a high level of mastery of the material on the research topic, orient himself in the content of the work, and the ability to answer questions.

The defense of the coursework is evaluated according to the criteria provided by these methodical recommendations. At the end of the defense, a grade is issued, which is formed as the sum of points for the completion and defense of the course work.

Course work is not allowed to be defended in the following cases:

if it is not independent, has signs of plagiarism or fraud;

the text is not written in the English language, there are gross grammatical errors, the requirements for formatting are not met, the scientific apparatus is incorrectly formatted;

the main questions are not fully disclosed, the research is carried out superficially, there is no logical construction of the work.

II. EVALUATION CRITERIA OF COURSE WORK DEFENSE

In the process of determining the grade, a number of important indicators of the quality of the course work are taken into account:

1. Content aspects of the course work:

- relevance of the chosen research topic;
- focus of work on the development of real practical recommendations;
- correspondence of the logical structure of the coursework to the set goals and objectives;
- the breadth and adequacy of the methodological and diagnostic apparatus;
- the availability of alternative approaches to solving certain problems;
- professional level of substantiation and presentation of the proposed solutions;
- the degree of independence of the research;
- development of the language of the course work and its general design.

2. Quality of coursework protection:

- the ability to concisely, consistently and clearly state the essence and results of the research;
- the ability to defend one's proposals, thoughts, views with arguments;
- the general level of the student's training.

The coursework rating will have two components. The first characterizes the student's work and its result. The second component characterizes the quality of the student's defense of the course project.

The size of the scale of the first component equals 60 points, and the second component - 40 points.

System of rating points

1. Starting component (60):

- timeliness of the work schedule - 6-9 points;

- modernity and justification of the decisions made - 10-17 points;

- correct application of analysis and calculation methods - 8-15 points;

- quality of design, compliance with the requirements of regulatory documents - 8-11 points;

- quality of graphic material and compliance with DSTU requirements for design of sources - 6-8 points.

2. The coursework defense component (40):

- degree of mastery of the material - 4-5 points;

- completeness of the analysis of possible options - 6-10 points;

- degree of substantiation of the decisions made - 15-25 points;

- ability to defend one's opinion - 7-10 points;

- logical sequence of presented research results in the presentation - 4-5 points.

The sum of the points of the two components is converted into a passing grade.

The student's knowledge is assessed on a 100-point scale and translated into national assessments according to the table. 1 "Regulations on examinations and credits at NULES of Ukraine" (order on implementation dated 04/26/2023, protocol No. 10):

- grade "excellent" - the student completed the main tasks according to the calendar plan, showed the ability to analyze, compare, generalize, abstract and concretize during the defense, classify and systematize materials;

- grade "good" - the student, according to the calendar, completed the main tasks of the course work, drew conclusions taking into account cause-and-effect relationships and mechanisms (algorithms);

- rating "satisfactory" - the student completed the main tasks, but the insufficient level of acquired abilities and skills in working with documentation and information is observed, conclusions are drawn without taking into account cause-and-effect relationships and mechanisms (algorithms) of the course of phenomena (processes));

- rating "unsatisfactory" – the student did not complete the course work, did not prepare a presentation report, received negative feedback from supervisor.

After the defense of the course work, the grade is entered in the credit and examination list and in the student's credit book in accordance with the national scale:

Table 3.1

Rating of a higher education applicant, points	**The national assessment for the results of passing exams**	
	exams	**creditsв**
90-100	excellent	passed
74-89	good	
60-73	satisfactory	
0-59	unsatisfactory	unpassed

III. TASKS FOR INDIVIDUAL WORK OF STUDENTS IN PROJECT MANAGEMENT

3.1 Tasks for individual work

Independent work 1. “The most successful projects: success factors”

Purpose: to determine what are the formative factors affecting the success of the project.

Task progress:

According to the additional material provided on the main page of the course: https://elearn.nubip.edu.ua/course/view.php?id=3987, the following task must be completed:

Choose 1 task and give a written answer (optional):

1. Find and describe the 5-10 most famous Ukrainian startups.

2. Find and describe the 5-10 most famous global startups.

This task is performed independently by each student, regardless of project groups and cannot coincide.

Submission of independent work is expected in a written answer in MS Word or MS Power Point format.

Independent work 2 “Calculation of project efficiency”

Purpose: to master the skills of calculating the effectiveness of the project, including and with the use of information technologies.

Task progress:

1. Master the lecture material, presentation for the topic.

2. Give your own definition of the concepts: project efficiency, net present value, project break-even point.

3. As part of your project, complete the following steps:

3.1. Calculate the net cash flows of your project for 2-3 years.

3.2. Calculate the NPV, IRR, PI and simple payback period of the project.

For ease of calculations, you can use MS Excel. Instructions and an example of calculation are given at the link: https://youtu.be/-TUWtnKylEc

On p.p. 3.1, 3.2 a written answer in MS Word or MS Excel format is assumed.

Independent work 3 “Project risk assessment systems”

Purpose: to master the skills of risk identification and risk management

Task progress:

1. Familiarize yourself with the lecture material, the presentation for topic 7.

2. Give your own definition of the categories: risk, uncertainty, risk management, insurance, risk diversification.

3. As part of your team's project, it is necessary to describe the risks of the project, structure them and provide methods of managing them.

On p.p. 3 a written answer in MS Word or MS Power Point format is assumed.

Independent work 4 “Project Business Plan”

The purpose of the work: to consolidate the knowledge and skills acquired during training

Task progress:

At the end of the semester, you must present two files with the business plan developed by your project group. For this you need:

1. Draw up the final version of the project in the form of a business plan in MS Word format.

2. Develop a project presentation in MS PowerPoint.

1st file - Text document.

The design of the project in MS Word must be carried out according to the following points:

1. Concept of the project, its purpose and tasks. Feasibility assessment according to SMART criteria. Description of the target audience.

2. Description and analysis of the project market.

3. Organizational structure of the project.

4. Production plan of the project.

5. Marketing plan of the project.

6. Financial plan of the project. Assessment of project effectiveness.

7. Assessment of project risks.

2nd file - Presentation of the project in MS Power Point or in another format that allows you to develop a business plan presentation.

The presentation of the business project should highlight the following points and consist of the following slides:

1. Name of the project.

2. Project idea, goal, task. The target audience of the project.

3. Organizational structure of the project.

4. Production plan.

5. Financial plan.

6. SWOT analysis of the project.

7. Project risks.

Take a creative approach to the presentation and you can make your own corrections.

3.2 Questions for self-control

1. Describe the “project” category.

2. Which project participants does PMBOK identify?

3. External and internal environment of the project: main characteristics.

4. Define the category “business plan”? Describe its components?

5. Describe the PMBOK? Is this a project management standard?

6. How are business plan and project related?

7. What criteria of relevance and viability of the project stand out?

8. Give the main classifications of projects?

9. For what purpose can a business plan be developed?

10. What factors affect the composition, size and content of a business plan?

11. Describe the SMART criteria for project goal formulation. Decode the abbreviation and describe the meaning of each letter.

12. Give a typical structure of a business plan.

13. What are the components of a project summary?

14. What are the various business plan standards developed for?

15. What is the difference between UNIDO and EBRD business plan standard?

16. What stages form the development of the project concept?

17. Define the life cycle of the project, what stages does it consist of?

18. Describe the essence and procedure of additional project studies?

19. Describe the essence, meaning and stages of the stage of preliminary assessment of the project?

20. What is the purpose of developing an organizational plan? Describe its components.

21. At what stage is the possibility of attracting specialists through outsourcing determined?

22. Give an example of project goal formulation according to SMART criteria.

23. Describe the procedure for calculating the project team's needs.

24. List the main sections of the business plan of the project?

25. The essence, purpose, stages of development of the “Production plan” section?

26. The essence of the Labor Remuneration Fund and the calculation procedure.

27. Describe the procedure for calculating the need for resources and necessary equipment.

28. What is the difference between variable and fixed costs?

29. Describe the costs of the project and the method of their distribution.

30. Describe the procedure for developing a production plan for a project.

31. What is the purpose of developing a marketing plan?

32. Describe the 4R marketing complex? What is the difference between the 7P complex?

33. Describe the methods of pricing in project activities.

34. Describe the SWOT analysis of the project? Should it be used to analyze competitors?

35. What is the purpose and procedure of the financial plan of the project?

36. What is the purpose of researching the market of the project?

37. What is the purpose of developing an investment project?

38. What sources of project financing are allocated?

39. Describe the network project schedule?

40. What are the project performance evaluation indicators?

41. State the main risks of the project.

42. Describe risk management methods.

43. Describe the Gantt chart? What does it reflect?

3.3 Test tasks for self-preparation in project management

1. A temporary measure aimed at creating a unique product or service is...

A) Business project.

B) Social project.

C) Ordinary project.

D) Business plan.

2. A project that combines several is called -

A) Megaproject.

B) Monoproject.

C) Complex project.

D) Multi-project.

3. What are the names of people or organizations that are involved in the implementation of the project and those individuals, communities, structures that depend on the results of the project or are interested in its effective implementation:

A) Project sponsors.

B) Project owners.

C) Project customers.

D) Project participants.

4. What is a business plan?

A) This is a temporary event planned to create a unique service or product.

B) It is a working management tool, the starting point of both planning and executive activities of the company.

C) This is a planned sequence of steps that are necessary to achieve the set goal.

D) This is a fixed system of goals, means and tasks aimed at changing the situation in the predicted environment.

5. A business plan can be developed in the following case:

A) For organizations or structures that are at the stage of bankruptcy.

B) Only to create a new unique product.

C) Both for enterprises that are already functioning, and for new business ideas that are being developed for the purpose of project development.

D) There is no correct answer.

6. Decipher the SMART criteria?

A) Conciseness, reasonableness, formality, creativity, correctness.

B) Specificity, creativity, possibility of realization, time limitation, peculiarity.

C) Certainty, reliability, concreteness, relevance, durability.

D) Specificity, measurability, presence of an executor, realism, time limitation.

7. In what case can the project apply for the development of a UNIDO or TACIS standard business plan or others?

A) If he wants, he aims to receive a grant from the IMF.

B) If he wants, he aims to receive a grant from the World Bank.

C) If he wants to participate in the competition of entrepreneurs from the Cabinet of Ministers of Ukraine.

D) If writing a project application for a grant from a business angel.

8. What distinguishes a business plan according to the EBRD standard from other business plan standards?

A) There is no competitive analysis

B) There is no SWOT analysis in this standard.

C) It has the largest number of points among the existing standards of various organizations and companies.

D) The financial analysis is presented the most in the structure of the business plan, in contrast to other points.

9. What phases of the project life cycle does the World Bank distinguish?

A) Design, implementation.

B) Initiation, implementation, planning and completion.

C) Initiation, monitoring, planning, implementation and control, final phase.

D)Pre-investment, post-investment, investment phases.

10. The beginning of the project can be considered:

A) Coordination of prior consent from the investor.

B) Sales forecasting.

C) Selection of the project team.

D) Genesis of an idea.

11. What does the “Organizational Plan” section of the project consist of?

A) Determination of key elements of enterprise development.

B) Formulation of the project goal according to SMART criteria.

C) Definition of roles, functions and subordination in the project.

D) Procedures for determining items of production costs.

12. To which part of the business plan can the motivation system of the project team belong?

A) Financial.

B) Production.

C) Organizational.

D) Summary of the project.

13. In which section of the business plan is the business's need for personnel calculated?

A) Production plan.

B) Organizational plan.

C) Risk assessments.

D) Financial plan.

14. In which part of the business plan is the organizational and legal form of the business chosen?

A) Production plan.

B) Organizational plan.

C) Risk assessments.

D) Financial plan.

15. What affects the choice of the form of taxation (simplified, general system) of the project?

A) Number of personnel.

B) Territorial affiliation of the project.

C) Qualification of the company manager.

D) The scale of the business, the scope of the project's work team, revenues.

16. What are the monthly costs of the enterprise, which directly depend on the volume of production, called?

A) Primary.

B) Financial.

C) Variables.

D) Permanent.

17. How can you name the expenses required for starting the project, purchasing the necessary material and technical equipment, etc.?

A) Primary.

B) Financial.

C) Variables.

D) Permanent.

18. What are the labor costs if they are paid on a fixed basis?

A) Primary.

B) Financial.

C) Variables.

D) Permanent.

19. What are the costs under the article “office rent”?

A) Primary.

B) Permanent.

C) Mixed.

D) Variables.

20. Costs of raw materials can be attributed to:

A) Mixed.

B) Elementary.

C) Variables.

D) Permanent.

21. How can unforeseen costs (those that are difficult to predict) be calculated?

A) They are always clearly fixed.

B) They can be calculated as a certain percentage of the volume of fixed or variable costs, and as a fixed amount.

C) They make up 5% of the total cost of the project.

D) They make up 10% of the amount of fixed costs of the project.

23. There is such a pricing method as “Following the competitor”. What disadvantages can be identified? (more than one answer may be correct)

A) This pricing method is the most suitable for many industries.

B) This method is the most effective when entering the market, so it cannot be a drawback.

C) A competitor's costs may be lower than ours.

D) A competing company can quickly change the price, and we will not have time to change and lose.

24. What is the essence of the cost method of pricing?

A) Pricing based on maximum marketing costs.

B) Pricing based on the average market price in the industry.

C) Pricing based on production costs.

D) Pricing based on competitors.

25. How can you determine the target audience of the project?

A) It is represented by all potential consumers of our product on the market.

B) As a group of people that we target when producing a product or service.

C) The entire population of the market where our enterprise/project operates.

D) Population over 25 years old in the area where our project operates.

26. What can marketing costs depend on? (more than one answer may be correct):

A) Cost of competitors on marketing.

B) Organizational plan of the project.

C) General budget of the project.

D) Project goals.

27. In which part of the business plan is the general budget of the project described, planned, and compiled?

A) Production plan.

B) Marketing plan.

C) Financial plan.

D) Organizational plan.

28. How can the full cost of production be characterized?

A) This is the sum of costs for the production of a product or service and its sale.

B) This is the amount of advertising costs of the project.

C) As the workshop cost of goods.

D) This is the sum of production costs.

29. Give a brief definition of the cost of production. (Choose one most complete answer).

A) These are the costs of transporting goods to the place of direct sale.

B) These costs are production costs.

C) This is the sum of expenses for the sale of goods or services, which can be expenses for advertising, transport.

D) These are costs for advertising goods or services.

30. Define the amount of funds received by the organization as payment for sold goods or services.

A) Marginal profit.

B) Operating profit of the project.

C) Net profit of the project.

D) Revenue from the sale of products.

31. What formula can be used to calculate revenue from the sale of goods or services?

A) B = C*C (where C is the cost price, C is the price)

B) B = C*P (where P is quantity, C is cost price)

B) B = P*D (where D is income, P is the number of products)

D) B=P*Q(where P - price, Q - quantity of products)

32. We cannot include the following as alternative sources of project financing:

A) Funds of venture capital funds.

B) Project grant funds.

C) Investment of business angels.

D) Retained earnings.

33. We can NOT attribute this source of funding to our own:

A) Shareholding.

B) Retained earnings.

C) Insurance payments.

D) Depreciation deductions.

34. What sources of financing are classified as loan funds?

A) Crowdfunding income.

B) Bank loans.

C) Insurance payments.

D) Depreciation deductions.

35. What sources of funding can be attributed to those involved?

A) Shareholding.

B) Insurance proceeds.

C) Bank loan.

D) Money of the statutory fund.

36. Define the dynamic model of the production process, which visualizes the sequence of execution of a complex of works and technological dependence, and coordinates the completion of works in time and takes into account the costs of resources and the cost of works?

A) Network diagram of the project.

B) Target schedule of completed works.

C) Decision tree and project problem tree.

D) Project organizational structure.

37. A flow that accumulates at each step the sums of cash flows for this and previous periods:

A) Accumulated cash flow.

B) Cash flow outflow.

C) Inflow of cash flow.

D) Net cash flow.

38. Indicators of income, gross profit or sales, operating profit, net profit belong to the following group of indicators:

A) profitability of the project.

B) profitability of the project.

C) project payback.

D) Investment attractiveness.

39. Indicators of return on assets, return on equity, return on sales refer to:

A) profitability of the project.

B) profitability of the project.

C) project payback.

D) Investment attractiveness.

40. The indicators of the net present value of the project, the internal rate of return, the discounted payback period are among the indicators:

A) profitability of the project.

B) profitability of the project.

C) project payback.

D) Investment attractiveness.

41. What is the difference between payback period (PP) and discounted payback period (DPP) indicators?

A) DPP is always higher than RR.

B) PP must equal DPP

C) These are completely different indicators that cannot be compared.

D) If the discount rate is less than 10%, then they are equal to each other.

42. The ratio of the amount of discounted cash flows to the initial investment or the indicator of the efficiency of the invested investment is:

A) Profitability index, return on investment.

B) Net present value of the project.

C) Internal rate of return.

D) The payback period of the project.

43. The maximum permissible investment amount is

A) IRR

B) NPV

B) PI

D) DPP.

44. This indicator is also called the break-even point of the project:

A) IRR.

B) NPV.

B) PI.

D) DPP.

45. If NPV = 0, then this project:

A) is unprofitable and rejected.

B) this project is neither profitable nor unprofitable. The company fully covers its investments and is responsible for its obligations.

C) is profitable and accepted for consideration.

D) is rejected in any case.

46. A situation in which there is a probability of achieving results more or less than expected, and the probability distribution of deviations of these indicators from their expected values is known is:

A) Risk.

B) Uncertainty.

C) Force majeure.

D) Unknown.

47. A situation in which we cannot estimate the probability of divergence of our planned indicators from possible future values is:

A) Risk.

B) Uncertainty.

C) Force majeure.

D) Unknown.

48. This risk arises when a large share of loan capital violates the principle of enterprise liquidity.

A) Financial risk.

B) Tax risk.

C) Economic risk.

D) Force majeure.

49. Tax risk is:

A) Risk of violation of the principle of liquidity of the enterprise.

B) Impossibility of using tax benefits, which are defined by legislation.

C) Change in initial management decisions, as well as market and political circumstances.

D) Outbreak of wars, natural disasters, sudden climate change.

50. Which of the directions are NOT used in risk management?

A) Risk avoidance.

B) Risk redirection.

C) Agreeing with the presence of risk.

D) Risk denial.

51. This type of business plan is developed to substantiate radical strategic changes in the company's activities.

A) Business plan of an operating enterprise.

B) Conceptual business plan.

C) Business plan for external use.

D) Business plan of a new enterprise.

52. PEST analysis of the external environment of the project involves:

A) Analysis of political, economic, social and technical factors that may affect the project.

B) Analysis of the competitive environment.

C) Analysis of the environment according to the legal environment.

D) Analysis of consumers, suppliers and competitors.

53. How the composition and content of the business plan are affected by the characteristics of the business product:

A) If a completely new product is created, more attention is paid to its technical components and description, the content of the business plan in this case can be expanded.

B) The characteristics of the product do not affect the composition and content of the business plan. This is typical and does not depend on the properties of the product.

C) The simpler the product, the less content of the business plan.

D) The characteristic of the business product affects only the scope of the marketing plan.

54. Can a business plan be developed for the purpose of modeling the management system.

A) Yes, maybe. If there are management problems at the enterprise, a decision can be made to make changes.

B) No, it cannot. A business plan is developed only for the purpose of attracting investment.

C) Yes, maybe. If the company does not have a management system, it must be created.

D) No, it cannot. The business plan has other components that do not include a description of management systems.

55. In the SMART criteria, the letter M means:

A) concrete.

B) measured.

C) achievable.

D) relevant.

56. In the SMART criteria, the letter R means:

A) concrete.

B) measured.

C) achievable.

D) relevant.

57. When calculating the need for personnel, it is more appropriate to:

A) Employ own staff as much as possible and reduce the number of outsourcing partners.

B) Formation of a team of employees who are necessary for the implementation of the project, and technical and support personnel should not be involved in the project and refuse these services in order to save money.

C) Involvement of as many people as possible in outsourcing, due to the reduction of own staff.

D) Maintaining such a ratio of own personnel and involvement in outsourcing, which will make it possible to implement the project and allocate costs more efficiently and effectively.

58. What depends on the decision to hire specialists for outsourcing?

A) From the scope of the project, the size of its financing, the specifics of the activity.

B) From the wishes of the owners.

C) From labor market conditions.

D) From the qualifications of the main managers.

59. If the company decides to open a new beauty salon, where 3 hairdresser specialists, 1 make-up artist and 1 nail service master will work, the amount of income is approximately UAH 4 million. per year, then outsourcing should involve (several answers may be correct):

A) a lawyer.

B) accountant.

C) nail service master.

D) make-up artist.

60. Net profit is:

A) This is the profit of the enterprise that remains after paying taxes.

B) The profit of the enterprise, which remains after deducting the cost pfig.

C) The profit of the enterprise, which remains after the payment of wages.

D) The profit of the enterprise, which remains after the payment of depreciation deductions.

61. The EBIT indicator means:

A) Profit of the enterprise before deduction of interest and taxes.

B) Profit of the enterprise before deduction of interest, taxes and depreciation.

C) Profit of the enterprise before deducting interest on loans.

D) Profit of the enterprise after taxes.

62. The EBITDA indicator means:

A) Profit of the enterprise before deduction of interest and taxes.

B) Profit of the enterprise before deduction of interest, taxes and depreciation.

C) Profit of the enterprise before deducting interest on loans.

D) Profit of the enterprise after taxes.

63. The indicators of the net present value of the project, the internal rate of return, the discounted payback period are among the indicators:

A) Profitability of the project.

B) Profitability of the project.

C) Payback of the project.

D) Investment attractiveness.

64. What is the difference between payback period (PP) and discounted payback period (DPP) indicators?

A) DPP is always higher than IRR.

B) PP must equal DPP

C) These are completely different indicators that cannot be compared.

D) If the discount rate is less than 10%, then they are equal to each other.

65. If NPV = 0, then this project:

A) is unprofitable and rejected.

B) this project is neither profitable nor unprofitable. The company fully covers its investments and is responsible for its obligations.

C) is profitable and accepted for consideration.

D) is rejected in any case.

IV. GLOSSARY IN PROJECT MANAGEMENT

- A-

Accept – A decision to take no action against a threat. Project teams typically accept risks when they fall below risk thresholds or when the team thinks it best to act only if and when a threat occurs. (See also *risk acceptance*)

Acceptance criteria – The specific requirements expected of project deliverables. To be formally accepted, deliverables must meet all acceptance criteria.

Acceptance test – A test in which a team of end users runs a product through its full range of use to identify potential problems.

Acquisition process – This process obtains the personnel and resources necessary for project work. Acquisitions are closely coordinated with project budgets and schedules.

Action item – An activity or task that must be completed.

Action item status – This tracks an action item's progress from creation to closure. Since work packages comprise multiple action items, keeping action item statuses updated is important for project progress.

Activity – The smallest unit of work necessary to complete a project work package (which includes multiple activities). Time, resources, and finances are required to complete each activity.

Activity code – An alphanumeric value by which activities can be grouped and filtered. A code is assigned to each activity.

Activity identifier – A unique alphanumeric value by which an individual activity can be distinguished. An activity identifier is assigned to each activity.

Activity label – A short descriptor for an activity. Activity labels may be placed below arrows representing activities in activity-on-arrow (AOA) diagrams.

Activity-On-Arrow (AOA) – In this network diagram, arrows represent activities and nodes represent events or milestones. AOA diagrams can only indicate finish-to-start relationships.

Activity-On-Node (AON) – In a network diagram of this nature, nodes represent activities and arrows illustrate logical relationships between activities. AON diagrams can illustrate four relationship types: start-to-start, start-to-finish, finish-to-start, and finish-to-finish.

Actual cost of work performed (ACWP) – This represents the total cost incurred for work done in a given period of time.

Actual duration – The length of time taken to complete an activity.

Actual effort – The amount of labor performed to complete an activity. It is expressed in person-hours or similar units of work.

Actual expenditure – The sum of costs paid from a budget.

Actual progress – This measures the amount of work completed on a project. It is used to assess the comparison between project progress and project baselines and is usually stated as a percentage.

Adaptive project framework (APF) – An approach to project management that rejects traditional, linear project management and instead accepts changing requirements and allows projects to be affected by external business environments. The ADF stresses flexibility in many aspects of project management and focuses on performing and evaluating project work in stages to allow room for replanning due to changing business goals, objectives, and requirements.

Administrative closure – This refers to the set of formal requirements fulfilled to end a project. Among other things, it involves documenting the formal acceptance of deliverables and ensuring that all relevant information is sent to a project's sponsor and stakeholders.

Aggregate planning – This strategy uses demand forecasts to manage scheduling and planning for project activities between three and 18 months in advance, so that the necessary resources and personnel can be efficiently acquired or assigned.

Agile – The Agile family of methodologies is a superset of iterative development approaches aimed at meeting ever-changing customer requirements. Agile development proceeds as a series of iterations, or sprints, with incremental improvements made in each sprint. Since agile projects do not have fixed scopes, agile methodologies are adaptive, and the iterative work is guided by user stories and customer involvement.

Agile project management – Agile project management draws from concepts of agile software development. Agile approaches focus on teamwork, collaboration, and stakeholder involvement, as well as the use of iterative development methods.

Agile software development – Agile software development originates from the Agile Manifesto, a set of principles that emphasizes meeting changing requirements through collaborative development and making ongoing improvements through iteration. It stresses the importance of being reactive to rapid changes in external environments.

Alert – Notifications by email or to a home page, updating users to changes to items that they have subscribed. Examples might include notifications about performance changes or commentary.

Allocation – The assigning of resources for scheduled activities in the most efficient way possible. (See also *resource allocation*)

Alternative analysis – The evaluation of possible courses of action for project work in order to find the most suitable course of action.

Analogous estimating – This technique uses historical project data to prepare time and cost estimates. It is considered the most inaccurate estimation technique. (See also *top-down estimating*)

Analytical estimating – This technique computes total project time and cost estimates by preparing estimates for each project activity and adding them together. Analytical estimating is considered the most accurate estimation technique. (See also *bottom-up estimating*)

Application area – The specific project category of which the project is a part. Application areas can be defined on the basis of project products' characteristics or applications or by the projects' customers or stakeholders.

Apportioned effort – Project work associated with components of a work breakdown structure and performed in proportion, with discrete effort. Since the amount of apportioned effort (which includes activities such as quality assurance) depends directly on the amount of discrete effort, it cannot be considered separately from discrete effort. It is one of three types of activities used to measure work performance as part of earned value management.

Approach analysis – During the project planning phase, this type of analysis is used to examine the various methods by which a project's goals may be achieved.

Arrow diagramming method (ADM) – A method of constructing a network diagram that uses arrows to represent activities and nodes to represent events or milestones. The ADM is used to construct activity-on-arrow (AOA) diagrams.

Artifact – Items that support software development. Artifacts include both items associated with the process of development, such as project plans, and items used to support actual aspects of development, such as use cases and requirements.

Assignment contouring – The process of assigning people to project work for changing numbers of hours per day as the project moves through different stages. Assignment contouring is typically done using project management software.

Assumption – Factors deemed to be true during the project planning process, though proof of their validity is not available. A project's assumptions can affect its risks and outcomes, so you must consider them carefully.

Authorization – In general, authorization is the power to make decisions that the management grants. The specific remit for authorization varies on a case-by-case basis.

Authorized work – Work that management or others in authority approve.

Avoid – A response to a negative risk that seeks to ensure the risk does not occur or (if the risk cannot be eliminated) seeks to protect the project objectives from the negative risk's impact. (See also *risk avoidance*)

- B -

Backward pass – This calculates late-start and finish dates for project activities by working backwards from the project end date.

Balance – A phase in the portfolio life cycle that involves balancing a portfolio's components based on risk, costs, and use of resources. It is an aspect of organizational project management. (See also *portfolio balancing*)

Balanced scorecard – A Balanced scorecard is a concept or tool used to assess whether an organization's activities are correlated with its general vision and objectives.

Bar chart – A diagrammed calendar schedule of project activities' start and end dates in logical order. (See also *Gantt chart*)

Baseline – This term represent the costs and schedules approved at the start of the project. They use baselines as a basis for monitoring and evaluating performance.

Benchmarking – The comparison of similar processes across organizations and industries to measure progress, identify best practices, and set improvement targets. Results may serve as potential targets for key performance indicators.

Benefits realization – This term focuses on ensuring that project results give customers and stakeholders the benefits they expect.

Blueprint – A document that explains what a program means to accomplish and describes a program's contribution to organizational objectives.

BOSCARD – This method details and considers the background, objectives, scope, constraints, assumptions, risks, and deliverables of new projects.

Bottom-Up estimating – This calculation computes total time and cost estimates for projects by preparing individual estimates for each of a project's activities and adding them together. Bottom-up estimating is considered the most accurate estimation technique. (See also *analytical estimating*)

Brief – This refers to the document produced during a project's concept phase. It is the primary document outlining requirements.

Budget – The sum of money allocated for a project. The term may also refer to a comprehensive list of revenues and expenses.

Budgeted cost of work performed (BCWP) – The portion of the budget allocated to scheduled work actually performed in a period of time. (See also *earned value*)

Budgeted cost of work scheduled (BCWS) – The portion of the budget allocated to work scheduled to be performed in a period of time. (See also *planned value*)

Burn down chart – A graph that shows the relationship between the number of tasks to be completed and the amount of time left to complete these tasks.

Burst point – A point in a network diagram at which multiple successor activities originate from a common predecessor activity. None of the successor activities may start until one finishes the predecessor activity.

Business analysis – The practice of identifying and solving business problems. It focuses on creating and implementing solutions to business needs via organizational development, process reengineering, or any number of other methods.

Business case – A documentation of the potential outcomes of a new project, including benefits, cost, and effects. It shows the reasoning for starting the project.

Business imperative – An issue, situation, or circumstance with the potential to affect a business in one way or another, depending on the course of action used to address it. Organizations prioritize business imperatives for actions that will realize any potential benefits or avoid any potential harm.

Business model – A company's business model is the system by which the organization's profitable activities are planned, structured, and executed, and by which it interacts with its customers.

Business operations – The entire ensemble of activities or business processes through which a company uses its assets to create value for its customers.

Business Plan –These comprise the Corporate, Directorate, Service and Team plans, which specify the key priorities and activities to be undertaken.

Business Performance Management – A type of performance management that includes finance, covering compliance issues, competition, risk and profitability and human resources performance management encompassing employee performance appraisals and incentive compensation and other types of performance management include operational performance management and IT performance management.

Business process – A Business process is a system of activities by which a business creates a specific result for its customers. There are three categories of business processes: management processes, operational processes, and supporting processes.

Business process modeling (BPM) – Business process modeling is the representation, analysis, and evaluation of business processes in an effort to improve them.

Business requirements – The conditions a product must satisfy to effectively serve its purpose within a business.

Business value – The business value of a project is the sum of positive effects – tangible and intangible – it has on the business.

- C -

Calendar unit – The smallest unit of time – usually hours or days – by which project activity durations are measured.

Capability maturity model (CMM) – This model is used to assess the maturity of business process capabilities. It was created to assess the capabilities of software development processes but is now used in a number of other industries as well. Like

other maturity models, the CMM allows organizations to assess themselves against external benchmarks and provides recommendations for improvement.

CAPEX – CAPEX, or capital expenditure, is the money a company spends to acquire new fixed physical assets or upgrade old ones, typically for long-term use.

Cascading– The process of developing aligned goals throughout an organization, connecting strategy to operations to tactics, allowing each employee to demonstrate a contribution to overall organizational objectives. Methods of cascading include identical (objectives and measures are identical), contributory (translated, but congruent, objectives and measures), unique (unique objectives and measures; do not link directly to parent) and shared (jointly-shared unique objective or measure).

Case study – A case study involves extensive and in-depth formal research into an area of a company, a situation, or an event. Case studies typically result in formal reports that are published in academic or professional publications. They investigate important, singular, or locally representative cases that contribute to the advancement of knowledge.

Cause and Effect – The way perspectives, objectives, and/or measures interact in a series of cause-and-effect relationships demonstrate the impact of achieving an outcome. For example, organizations may hypothesize that the right employee training (Employee, Learning and Growth Perspective) will lead to increased innovation (Internal Process Perspective), which will in turn lead to greater customer satisfaction (Customer Perspective) and drive increased revenue (Financial Perspective).

Certified Associate in Project Management (CAPM) – This is an entry-level certification for project managers offered by the Project Management Institute. It is designed to build knowledge of project management processes and terms.

Champion – A project champion makes project success a personal responsibility. This person pushes the project team to work hard, liaise with stakeholders on behalf of the project, and support the project manager. Project champion is an informal role.

Change control – Change control is the process of identifying, evaluating, approving, and implementing changes to a project. It ensures that changes are introduced in a controlled and effective manner and that any adjustments necessitated by changes are also addressed.

Change control board – An appointed group of stakeholders who evaluate proposed changes and decide when and whether to make them.

Change control system/process – The process by which changes to the project are evaluated before approval, implemented, and documented.

Change freeze – The point at which scope changes to a project are no longer permissible.

Change management plan – A Change management plan details the change control process. It is created to ensure all changes are managed according to procedure. Change management plans can be created for individual projects or for organizations undergoing transitions.

Change request – A formal document submitted to the change control board that requests changes to the finalized project management plan. Change requests are usually made only for significant changes, as smaller changes with little to no impact on the project work can be brought to the project manager.

Client/Customer – The people who will directly benefit from a project. A team executes a project with specific attention to a client's requirements.

Closing phase – The final phase of the project management life cycle, in which all aspects of the project are officially completed and closed. This includes making sure that all deliverables have been given to the client, that the team notifies suppliers of completion, and that the team updates stakeholders regarding the end of the project and overall project performance.

Code of accounts – An alphanumeric system used to assign unique identifiers to all work breakdown structure components.

Collaborative negotiation – Collaborative negotiation entails all negotiating parties obtaining at least some of what they want from negotiations.

Communications log – This document is used to track all project-related communications. It is organized and edited by the project manager and details who communicated, when and where the communication took place, what information was shared, and the results of the communication.

Communications management plan – This plan states who will send and receive information on aspects of the project, what details are communicated, and when communications are sent. It is part of the project management plan.

Communities of practice – Groups of people who share an area of interest within project management. They meet regularly to share and develop knowledge in the area of interest.

Competence – The ability and knowledge required to perform the tasks associated with a specific role.

Competence framework – The set of competence expectations by which one assesses a person's suitability for a specific role.

Concept – The beginning phase of the project management life cycle. In the concept phase, the team presents the opportunity or problem (along with possible solutions) and examines the general feasibility of the project.

Conceptual project planning – Conceptual project planning involves developing the documentation from which a project's organization and control system will originate.

Concurrent engineering – A product development approach where design and development are carried out at the same time. It is used to shorten the development life cycle and to release products more quickly. The simultaneous execution of design and development can help to improve design practicality.

Configuration – Configuration of a product involves shaping its functions and characteristics to make it suitable for customer use.

Configuration management – Configuration management ensures that the product of a project meets all necessary specifications and stipulations. It provides well-defined standards for the management and team to guarantee that they meet quality and functional requirements, as well as any other characteristics considered important.

Consensus – A decision agreed upon by all members of a group.

Constraint – A limitation on a project. Among other things, constraints may be financial or based on time or resource availability.

Constructability – Constructability is a concept used in complex hard projects to assess and examine the entire construction process before beginning construction. It reduces the number of errors, setbacks, and delays once construction work actually begins.

Construction – The process by which a team builds infrastructure. Construction projects are complex. Engineers and architects supervise them, while a project manager manages

the project work.

Consumable resource – A nonrenewable resource that cannot be used once consumed.

Contingency plan – An alternative or additional course of action planned in anticipation of the occurrence of specific risks.

Contingency reserve – An allocation of time or money (or both) set aside for the occurrence of known possibilities that could delay a project or make it more expensive. It is not the same as a management reserve, which is an allocation made for unforeseeable circumstances. Use of a contingency reserve is typically authorized upon the occurrence of a contingency.

Contract administration – The process by which a team manages a relationship with a contracting party. It establishes protocols for dealings between contracting parties.

Contract closeout – The process of determining whether the terms of a contract were completed successfully and of settling any remaining terms.

Control Account – A work breakdown structure tool that allows aggregation of costs for work packages as part of earned value management calculations.

Control chart – Control charts compare process results with historical averages and process control limits to show whether a process meets results expectations. If a process's results are inconsistent or fall outside process control limits, it may need to be examined and adjusted.

Core process – A process that follows an established order and is central to the performance of the process system or project of which it is part.

Corrective action – A step taken to bring work back into alignment with performance expectations after it has failed to meet expectations. A corrective action, which is reactive, is not the same as a preventive action, which is proactive.

Cost baseline – The sum of work package estimates, contingency reserve, and other associated costs by which project performance is assessed. A formal change control process is necessary to change the cost baseline.

Cost benefit analysis – A Cost benefit analysis is used to weigh project costs against anticipated tangible project benefits.

Cost engineering – The application of scientific and engineering principles to several aspects of cost management. Among other things, cost engineers contribute to estimation procedures and project cost management. Cost engineering may also be called project controls in some industries.

Cost management plan – This plan details how project costs will be planned, funded, and controlled. It is a part of the project management plan.

Cost of quality – The cost associated with ensuring project quality. This cost may mean the difference between unacceptable and acceptable project results.

Cost overrun – A cost overrun occurs when unexpected costs cause a project's actual cost to go beyond budget.

Cost performance index – A cost performance index measures the cost efficiency of a project by calculating the ratio of earned value to actual cost.

Cost plus fixed fee contract (CPFC) – Under a cost plus fixed fee contract, the seller is reimbursed for costs incurred and paid a predetermined fixed fee.

Cost plus incentive fee contract (CPIF) – Under a cost plus incentive fee contract, the seller is reimbursed for costs incurred and paid an additional fee if they meet performance criteria specified in the contract.

Cost plus percentage of cost contract (CPPC) – Under a cost plus percentage of cost contract, the seller is reimbursed for costs incurred and paid an additional amount equal to a percentage of the costs incurred if they meet performance criteria specified in the contract.

Cost reimbursable contract – A cost reimbursable contract is a contract under which a seller is reimbursed for costs incurred and paid an additional sum as per a predetermined agreement as profit. They are typically negotiated for projects with costs that are not fully known or not well defined.

Cost variance – The Cost variance of a project is its earned value minus its actual cost. A negative cost variance indicates that a project is running over budget. A positive cost variance indicates that a project is running below budget.

Cost/schedule impact analysis – A cost/schedule impact analysis determines the effects of a particular change on a project's cost or schedule.

Crashing – A schedule compression technique used to speed up project work by increasing the rate at which critical path activities are completed by adding more resources — usually more personnel or more equipment. Crashing increases project costs, so it is used first on activities that can be sped up at the least additional cost.

Critical chain project management (CCPM) – Critical chain project management is an approach to managing projects that emphasizes the resources needed to complete project activities over activity order and durations set in a schedule. It uses resource optimization techniques like resource leveling and requires that activity start times be flexible.

Critical incident stress debriefing (CISD) – CISD is a psycho-educational exercise for small groups who have experienced a traumatic event. It is sometimes used in project management to help project teams cope with trauma and to rebuild team cohesion.

Critical path activity – A scheduled activity that is part of a project's critical path.

Critical path method – The Critical path method is used to estimate the shortest length of time needed to complete a project and to determine the amount of float for activities that are not part of the critical path.

Critical success factor – A critical success factor is an aspect of a project that is crucial to the success of the project.

Criticality index – Each project activity is assigned a percentage called a criticality index, which is a measure of how frequently it is a critical activity in project simulations. Activities with high criticality indexes are likely to prolong project duration if delayed.

Current finish date – The most up-to-date estimate of when an activity will finish.

Current start date – The most up-to-date estimate of when an activity will start.

Current state – A detailed representation of current business processes that is used as a point of comparison for efforts to analyze and improve processes' efficiency, effectiveness, and outputs.

Customer-Facing Operations– Encompasses those facets of the organization that interface directly with customers; typically an organization's sales, service and marketing functions. Also referred to as Demand Chain.

Customer Perspective – Measures are developed based on an organization's value proposition in serving their target customers. In many organizations,

especially public sector and non-profit, the Customer perspective is often elevated above or placed alongside the Financial perspective.

- D -

Dashboard – A dashboard is a reporting tool that consolidates, aggregates and arranges measurements, metrics (measurements compared to a goal) and sometimes scorecards on a single screen so information can be monitored at a glance. Dashboards differ from scorecards in being tailored to monitor a specific role or generate metrics reflecting a particular point of view; typically they do not conform to a specific management methodology.

Data date – A data date, also called an as-of date, is a point at which a project's status is measured and documented. It separates actual data from scheduled data.

Decision tree analysis – A diagrammatic technique used to illustrate a chain of decisions and to examine the implications of multiple decision-making or situational outcomes.

Decomposition – The hierarchical breaking down of project deliverables into smaller components that are easier to plan and manage.

Defect repair – An action taken to remedy a product that is nonfunctional or does not match expectations or requirements.

Define – The phase in the portfolio life cycle in which projects, programs, and any organizational changes needed to realize strategic objectives are identified and examined.

Definitive estimate – A definitive estimate reaches a total project cost estimate by computing cost estimates for all a project's work packages. Definitive estimating is

considered a highly accurate estimation technique, with estimates falling within a ten-percent range of the actual budget.

Deflection – The transferring of risk to another party, generally via a contract.

Deliverable – A final product or product component that must be provided to a client or stakeholder according to contractual stipulations.

Delphi technique – An estimation method based on expert consensus. Experts make estimates individually and simultaneously and then review their estimates as a group before making another set of estimates. The process is repeated, with the pool of estimates typically becoming narrower after each round of review until a consensus is reached. (See also *wideband delphi*)

Dependency – A logical relationship between project activities in a network diagram that determines when a dependent activity may begin.

Discrete effort – Project work directly associated with components of a work breakdown structure. It is directly measurable. Discrete effort is one of three types of activities used to measure work performance as part of earned value management.

Discretionary dependency – The preferred way to sequence activities when there is no logical limitation on how they must be ordered.

Do nothing option – An element of a project business case that states the consequences, if any, of not undertaking the project.

Drawdown – A method used to exercise control on the release of project funds. Instead of making entire project budgets available from the outset, management may choose to release funds at specific times. These releases are called drawdowns. Drawdowns may coincide with phase gates so that funds are released at the beginning of each phase.

Dummy activity – In activity-on-arrow diagrams, where arrows represent activities, dummy activities show logical relationships between activities. They are not actual activities themselves – dummy activity arrows are drawn with broken lines to differentiate them from regular activity arrows.

Duration – The amount of time taken to complete an activity or task from start to finish.

Duration compression – Duration compression techniques shorten a project's duration without reducing its scope. This typically requires additional expenditure. There are two main duration compression techniques: crashing and fast tracking. (See also *schedule compression technique*)

Dynamic systems development method –The dynamic systems development method is one of the agile product development methodologies. Like other members of the agile family, it conducts development in a series of iterations, with user-story-based improvements made in increments. The dynamic systems development method operates with fixed cost and time constraints and uses the MoSCoW prioritization method to identify the desired product requirements with these constraints in mind.

- E -

Early finish date – The earliest time by which a scheduled project activity can logically finish.

Early start date – The earliest time by which a scheduled project activity can logically start.

Earned schedule – A method of measuring schedule performance that improves upon traditional earned value management. Earned value management tracks schedule variance only in terms of money and not in terms of time and thus does not accurately

indicate schedule performance by the end of a project. To address this discrepancy, earned schedule theory uses the same data as traditional earned value management but tracks schedule performances separately with respect to money and time.

Earned value – A concept used to gauge project schedule and cost performance. Portions of the project budget are assigned to components of the work breakdown structure, and successful completion of a work breakdown structure component is understood as value earned through work.

Earned value management – A method of measuring project performance and progress with regard to scope, time, and costs. It is based on the use of planned value (where portions of the budget are allotted to all project tasks), and earned value (where progress is measured in terms of the planned value that is *earned* upon completion of tasks).

Effort – The amount of labor needed to complete a task. It is measured in person-hours or similar units.

Effort estimate – A calculated approximation of the effort – measured in staff-hours or similar units – needed to complete an activity.

Effort management – The most efficient allocation of time and resources to project activities.

End user – The person or persons who will eventually use the product of a project. Products are designed with end users in mind.

Enhancement, maintenance, and upgrade (EMU) – Enhancement, maintenance, and upgrade are project classifications used in the software development industry. Enhancement projects involve improving the functionality or performance of software. Maintenance projects keep software functioning as expected. Upgrade projects create a new version of the software, called a release.

Enterprise environmental factors – Internal and external factors that can impact projects. They include such things as climate, available resources, and organizational structure.

Enterprise modeling – Enterprise modeling is the creation of a model to represent an organization's structure, processes, and resources. Enterprise models are built to increase understanding of how organizations work. They form the basis of improvement or restructuring efforts.

Epic – A set of similar or related user stories.

Estimate at completion (EAC) – The estimated total cost for all project work, calculated as the sum of the actual cost and the estimate to complete.

Estimate to complete (ETC) – At a given point in a project, the estimate of the cost of the work that still needs to be completed.

Estimating funnel – A metaphor for the increased accuracy in estimation made possible as a project progresses.

Estimation – The use of estimating techniques to reach approximations of unknown values.

Event chain diagram – A visual representation of a schedule network based on event chain methodology. It shows relationships between project activities and risk events.

Event chain methodology – A schedule network analysis method that enables uncertainty modeling. It is used to identify risk events' impact on a schedule.

Event-Driven – The adjective describes an action that is prompted by the occurrence of an event.

Execution phase – The execution phase begins after activity approval and is the phase in which the team executes the project plan. Execution is typically the longest and most expensive phase in the project management life cycle.

Executive sponsor – Typically a member of the organization's board who is ultimately responsible for the success of the project. They provide high-level direction to project managers and are accountable to the board for project success.

Expert judgment – The practice of using expert opinion to guide decision making.

External dependency – An outside relationship that affects the completion of a project activity.

Extreme programming (XP) – An agile software development methodology that emphasizes a high degree of responsiveness to evolving customer demands. Development cycles in extreme programming are short, and releases are frequent. Its main features include high-volume communication with customers and pair programming.

Extreme project management (XPM) – An approach to project management used mostly for complex projects with a high degree of uncertainty. XPM is designed for projects where requirements are expected to change. Therefore, it focuses on flexibility more than rigid scheduling. Where traditional project management proceeds sequentially through the project management life cycle and thus clearly defines problems, scopes, and solutions, extreme project management accepts that all three aspects will change as the project proceeds and thus emphasizes continual learning over deterministic planning.

- F -

Fallback plan – A predetermined alternative course of action adopted if a risk occurs and a contingency plan proves unsuccessful in avoiding the risk's impact.

Fast tracking – A schedule compression technique or duration compression technique in which the duration of a critical path is shortened by performing sections of some critical path activities concurrently instead of consecutively.

Feasibility study – An evaluation of how likely a project is to be completed effectively, or how practical it is, taking resources and requirements into consideration.

Financial Perspective – The perspective that looks at bottom line results. In public sector and non-profit organizations, the Financial Perspective is often viewed within the context of the constraints under which the organization must operate.

Finish-To-Start – In a finish-to-start relationship, a successor activity cannot start until a predecessor activity has finished.

Finish-To-Finish – In a finish-to-finish relationship, a successor activity cannot finish until a predecessor activity has finished.

Fishbone diagram – A fishbone diagram is used in project management to identify and categorize the possible causes of an effect. (See also *Ishikawa diagram*)

Fixed duration – A task in which the time required for completion is fixed.

Fixed formula method – The fixed formula method calculates earned value in a given period of time by splitting a work package budget between the start and completion milestones of a work package. A known proportion of value is earned upon beginning the work package, and the rest is earned upon completing the work package.

Fixed price contract (FPC) – A fixed price contract pays an agreed-upon fee and does not incorporate other variables, such as time and cost.

Fixed units – A task in which the number of resources used is fixed.

Fixed work – A task in which the amount of effort required is fixed.

Float – A measure of the schedule flexibility involving a particular task.

Flowchart – A diagram that lays out the complete sequence of steps in a process or procedure.

Focused improvement – An improvement strategy based on the theory of constraints. Attention is focused on addressing one limiting factor – called a constraint – at a time in order to optimize a system. Each constraint is improved until it no longer limits the system's performance.

Fordism – Fordism, named for Henry Ford, is a manufacturing system in which mass-produced goods are priced affordably enough that those producing them may reasonably buy them with their own wages.

Forecast – A prediction or estimation of future project status based on available information.

Formal acceptance – The step at which authorized stakeholders sign off on a product, indicating that it meets their expectations.

Forward pass – A technique used to calculate early start and finish dates by working forwards from a point in a project schedule model.

Free float – The amount of time by which an activity can be postponed without affecting the early start dates of a successor activity.

Functional manager – The individual in charge of all activities carried out by a particular functional department within an organization.

Functional organization – An organization which organizes and manages staff members in groups based on specialty areas.

Future state – A detailed representation of the ideal condition of a company's business processes after improvement.

- G -

Gantt chart – A Gantt chart is a type of bar chart that shows all the tasks constituting a project. Tasks are listed vertically, with the horizontal axis marking time. The lengths of task bars are to scale with tasks' durations. (See also *bar chart*)

Gate – An end-of-phase checkpoint at which decisions are made regarding whether and how to continue with the project. (See also *phase gate*)

Go/No go – A point in a project at which it is decided whether to continue with the work.

Goal – An objective set by an individual or an organization. It is a desired endpoint reached by setting and working towards targets.

Goal Diagram – Generically used to describe the one-page visualization that shows the different goals of the organization and how they are related. Examples of goal diagrams include strategy plans, strategy maps and process diagrams.

Goal setting – The process of creating specific, measurable, and attainable goals and of setting deadlines for these goals if desired.

Gold plating – The practice of incorporating features and improvements that go beyond a product's agreed-upon characteristics. This is generally done to boost customer satisfaction.

Governance – The structure by which roles and relationships between project team members and an organization's high-level decision makers are defined.

Graphical evaluation and review technique (GERT) – A network analysis technique that uses Monte Carlo simulation to bring a probabilistic approach to network logic and the formation of duration estimates. It is an alternative to the PERT technique but is not often used in complex systems.

- H -

Hammock activity – In a schedule network diagram, a hammock activity is a type of summary activity that represents a number of grouped – but unrelated -smaller activities that occur between two dates.

Handover – In the project life cycle, a handover is the point at which deliverables are given to users.

Hanger – An unplanned break in a network path, usually caused by oversights regarding activities or dependent relationships between activities.

HERMES – A project management method created by the Swiss government and used by IT and business organizations. It is a simplified project management method that can be adapted to projects with varying degrees of complexity. It provides document templates to expedite project-related work.

High-Level requirements – The high-level requirements explain the major requirements and characteristics of the final product, including its purpose as a product and within the company. (See also *product description*)

Historical information – Data from past projects used in the planning of future projects.

Human Capital – A metaphor for the transition in organizational value creation from physical assets to the capabilities of employees. Knowledge, skills, and relationships, for example. Closely related to terms such as intellectual capital and intangible assets. Some experts suggest that as much as 75% of an organization's value is attributable to human capital.

Human resource management plan – A human resource management plan details the roles of and relationships between personnel working on a project, as well as how personnel will be managed. It is part of the project management plan.

Hypercritical activities – Critical path activities with negative slack time. They are created when a sequence of critical path activities leading up to another activity is too long to be completed in the stated duration.

- I -

Information distribution – The channels used to provide stakeholders with timely information and updates regarding a project.

Initiatives – Initiatives organize people and resources and dictate which activities are required to accomplish a specific goal by a particular date; initiatives provide the how while goals provide the what. As differentiated from projects, initiatives directly support an organization's strategic goals; projects may or may not have strategic impact.

Initiation phase – The formal start of a new project. It involves receiving proper authorization and creating a clear definition for the project.

Inputs – The information required to start the project management process.

Inspection – The process of reviewing and examining the final product to assess compliance to initial requirements and expectations.

Integrated assurance – The process of coordinating assurance activities across a number of assurance providers.

Integrated change control – The coordination of changes throughout all aspects of a project, including scope, budget, and schedule.

Integrated master plan (IMP) – A project management tool used to break down project work in large, complex projects. It lists project tasks and events in a hierarchical structure and shows relationships between them.

Integrated master schedule (IMS) – An integrated master schedule is produced from an integrated master plan. It is a list of all project tasks represented as a networked schedule.

Integration management plan – A document that explains integration planning and details how changes to project aspects will be managed.

Integration planning – The process of deciding how project elements will be integrated and coordinated and how changes will be addressed throughout the project management process.

Integrative management – Management processes that coordinate a number of project aspects including cost, schedule, and resources (among others).

Internal Process Perspective – Internal Process Perspective: The perspective used to monitor the effectiveness of key processes at which the organization must excel in order to achieve its objectives and mission.

Invitation for bid – An invitation for expressions of interest that a procuring organization extends. (See also *request for proposal*)

Ishikawa diagram – Ishikawa diagrams are used in project management to identify the possible causes of an effect. (See also *fishbone diagram*)

ISO 10006 – A set of quality-management guidelines for projects. It is a standard created by the International Organization for Standardization.

Issue – Anything that can cause problems for a project. The term typically refers to major problems that cannot be tackled by the project team on their own.

Issue log – Project issues and the persons responsible for resolving them. It may also include issue status, plans for resolution, and resolution deadlines.

Iteration – A concept from iterative software development that specifies a fixed time cycle for development work, typically a few weeks long. The development life cycle consists of a number of iterations, sometimes with a functional version of the software produced at the end of each one. Iterative development prioritizes time over scope, so there are rarely concrete requirements to be achieved in an iteration.

Iterative development - Iterative development focuses on developing products in a series of repeated fixed-time iterations, instead of working towards a single deliverable. At the end of an iteration, the team assesses progress and sets targets for the next iteration.

Iterative and incremental development – Iterative and incremental development is any combination of the iterative and incremental development approaches. It is an alternative to the waterfall development method: instead of focusing on sequential development with a single end product, it passes through a number of development cycles, with an improved version of the product, called an increment, produced at the end of each iteration.

- K -

Kanban – The word *kanban* means *visual signal* in Japanese. Kanban is a visual communication approach to the project management process. It uses visual tools like sticky notes or virtual cards in an online bulletin board to represent project tasks and to track and indicate progress throughout a project.

Kickoff meeting – The first meeting between a project team and stakeholders. It serves to review project expectations and to build enthusiasm for a project.

Key Outcome Indicator (KOI) – Often used in the public sector to describe key performance indicators, those metrics most critical to gauging progress toward objectives. KOIs are metrics that are: tied to an objective; have at least one defined time-sensitive target value; and have explicit thresholds which grade the gap between the actual value and the target.

Key performance indicator (KPI) – A Key performance indicator is a metric for measuring project success. Key performance indicators are established before project execution begins.

- L -

Lagging Indicator – Backward-looking performance indicators that represent the results of previous actions. Characterizing historical performance, lagging indicators frequently focus on results at the end of a time period; e.g., third-quarter sales. A balanced scorecard should contain a mix of lagging and leading indicators.

Lag/Lag time – A necessary break or delay between activities.

Late finish date – The latest possible date a scheduled activity can be completed without delaying the rest of the project.

Late start date – The latest possible date a scheduled activity can be started without delaying the rest of the project.

Lateral thinking – Lateral thinking involves using a roundabout method to inspire new ideas or solutions. It can be done in a variety of ways, from using a random word to choosing an object in a room as a basis for thought.

Leading Indicator – Forward-looking in nature, leading indicators are the drivers of future performance. Improved performance in a leading indicator is assumed to drive better performance in a lagging indicator. For example, spending more time with valued customers (a leading indicator) is hypothesized to drive improvements in customer satisfaction (a lagging indicator).

Lead/Lead time – The amount of time an activity can be brought forward with respect to the activity it is dependent upon.

Lean manufacturing – A production methodology based on the idea of streamlining and doing more with less, such as by providing customers with the same product value while eliminating waste and thus reducing production costs.

Lean six sigma – Lean six sigma combines the no-waste ideals of lean manufacturing with the no-defects target of six sigma. The goal of Lean six sigma is to eliminate waste and defects so that projects cost less and deliver more consistent quality.

Learning and Growth Perspective – May also be termed "Skills and Capability." Measures in this perspective are often considered enablers of measures appearing in other perspectives; therefore, this perspective is often placed at the bottom or foundation of a strategy plan. Employee skills and training, availability of information, and organizational culture are often measured in this

perspective. More latterly, this perspective has included ‘Capacity’ to indicate that it is concerned with more than the human aspect and all includes other physical resources.

Lessons learned – The sum of knowledge gained from project work, which can be used as references and points of interest for future projects.

Level of effort – Work that is not directly associated with components of a work breakdown structure but that can instead be thought of as support work. Examples of level of effort include maintenance and accounting. It is one of three types of activities used to measure work performance as part of earned value management.

Life cycle – The entire process used to build its deliverables. Life cycles are divided into a number of phases. A variety of life cycle models are in use in project management.

Line of balance – A graphical technique used to illustrate relationships between repetitive tasks in projects such as building identical housing units. Each set of repetitive tasks is illustrated as a single line on a chart. Project managers look for places where dependent

tasks intersect, indicating that the successor task must be delayed.

Linear sequential model – A linear sequential model moves through a project life cycle’s phases systematically and sequentially. It is typically used for small projects with straightforward requirements, since sequential development makes it difficult to revise design based on testing or preliminary feedback. (See also *waterfall model*)

Linear scheduling method – A graphical scheduling technique used to assign resources when project work consists of repetitive tasks. It focuses on maximizing resource use and reducing time wastage due to interruptions.

Logic Model – Having gained prominence in the ’90s largely in response to the Government Performance and Results Act (GPRA), the Logic Model is now a widely accepted management tool in the public and non-profit sectors as well as the international arena. The model is a roadmap or picture of a program that shows the logical relationships among resources or inputs (what an organization invests); activities or outputs (what an organization gets done); and outcome-impacts (what results or benefits happen as a consequence).

Logic network – A chronologically arranged diagram that shows relationships between project activities.

Logical relationship – A dependency between project activities or between project activities and milestones.

- M -

Malcolm Baldridge – Established by the U.S. Congress in 1987, the Malcolm Baldridge performance framework is a rating tool that assesses management systems and helps identify major areas for improvement in seven categories of performance criteria: Leadership; Strategic Planning; Customer and Market Focus; Measurement, Analysis, Knowledge Management; Human Resource Focus; Process Management; and Business Results.

Management – The act of overseeing planning, personnel, and resources to achieve a goal.

Management process – The act of planning and executing a project or process to meet a defined set of objectives or goals. Management processes may be carried out at multiple levels within organizations, with the scale and scope of activities typically increasing up the organizational hierarchy.

Management reserve – An allocation of money or time (or both) to address unforeseeable circumstances that might delay or increase the costs of a project. A management reserve is not the same as a contingency reserve, which is an allocation made for known possibilities. The senior management must typically approve any release of funds from a management reserve.

Management science (MS) – A field of study that seeks to improve organizational decision making through the use of quantitative and scientific research methods. It evaluates management decisions and outcomes to find optimal solutions to problems, and thus enables better decision making. (See also *operations research*)

Master project – A master project file comprises a number of smaller projects, called subprojects, arranged hierarchically.

Matrix organization – Employees in a matrix organization report to more than one boss, with different lines of reporting representing different organizational projects or functions. A matrix structure can boost employee engagement and cross-field approaches to problem solving, but it can also create ambiguity over an employee's role.

Maturity model – Maturity is the extent to which an organization's methods, processes, and decisions are standardized and optimized. A maturity model assesses one or more of these aspects against a set of external benchmarks to determine an organization's maturity level. Maturity models allow organizations to assess themselves according to management best practices. They typically offer recommendations for improvement.

Measure (also called metric) – Term to describe a standard used to communicate progress on a particular aspect of a program. Measures typically are quantitative in nature, conveyed in numbers, dollars, percentages, etc. (e.g., $ of revenue,

headcount number, % increase, survey rating average, etc.) though they may be describing either quantitative (e.g., sales made) or qualitative (e.g., employee motivation) information.

Megaproject – A complex, large-scale, and high-investment project. Only hard projects may be termed megaprojects.

Metric (also called measure) – A framework to establish and collect measurements of success/failure on a regulated, timed basis that can be audited and verified. The term used in commercial organizations to describe a standard used to communicate progress on a particular aspect of the business. Measures typically are quantitative in nature, conveyed in numbers, dollars, percentages, etc. (e.g., $ of revenue, headcount number, % increase, survey rating average, etc.) though they may be describing either quantitative (e.g., sales made) or qualitative (e.g., employee motivation) information.

Merge point – A point in a network diagram at which multiple predecessor activities culminate in a single successor activity. The successor activity may not start until all the predecessor activities have finished.

Milestone – Milestones indicate specific progress points or events in project timelines. They mark progress needed to complete projects successfully.

Milestone schedule – A milestone schedule details the time relationships associated with project milestones.

Mission – Concise statement that describes, in motivating and memorable terms, the current top-level strategic goal of the organization. A mission provides both an internal rallying cry and external validity. Usually financial-, process-, or customer service-oriented, with a mid-term (three to five years) horizon, an effective mission is inspiring as well as easily understood and communicated.

Mission statement – A concise enunciation of the goals of an activity or organization. Mission statements are usually a short paragraph, and can be created for entire organizations or for individual projects. They are designed to provide direction and guidance.

Modern project management – An umbrella term for a number of contemporary management strategies. In contrast to traditional management, modern project management: features more recognition of quality and scope variation; refines processes more frequently; stresses collective, interdisciplinary knowledge and team consensus over individual leadership. It is also less based on traditional hierarchies- modern project teams draw from a range of organizational levels and functional areas.

Monte Carlo simulation/technique – Monte Carlo simulation is a computer-based technique that performs probabilistic forecasting of possible outcomes to facilitate decision making. For each possible decision – from the most high-risk to the most conservative – a Monte Carlo simulation provides decision makers with a range of possible outcomes and the likelihood that each will occur.

MoSCoW – The MoSCoW prioritization method allows project managers to communicate with stakeholders on the importance of delivering specific requirements. The acronym indicates four categories of priority and importance for project requirements. Each requirement is prioritized as a "must have," a "should have," a "could have," or a "won't have."

Most Likely Duration – An estimate of the most probable length of time needed to complete an activity. It may be used to compute expected activity duration through a technique called three-point estimation.

Motivation – A reason or stimulus that makes a person behave in a certain manner. In management, motivation refers to the desire to pursue personal or organizational goals and is positively associated with productivity.

Murphy's Law – Murphy's Law – "What can go wrong will go wrong." – is cited in project management as a reason to plan adequately for contingencies.

- N -

Near-critical activity – A near-critical activity has only a small amount of total float, or slack time. Near-critical activities have a high chance of becoming critical since their float is easily exhausted.

Near-critical path – A series of activities with only small amounts of total float, called near-critical activities. A near-critical path may become a critical path if its float is exhausted.

Negative variance – The amount by which actual project performance is worse than planned project performance. Negative variances in time and budget show the project is taking longer and is more expensive than planned, respectively.

Negotiation – A discussion to resolve an issue between parties. Negotiations can take place at any point during an activity and may be formal or informal.

Net present value (NPV) – Net present value is a concept that compares the present value of a unit of currency to its inflation-adjusted possible value in the future. It allows organizations to determine the financial benefits, or lack thereof, of long-term projects.

Network Path – In a schedule network diagram, a network path is a logically connected continuous series of activities.

Node – In a network diagram, a node is a point at which dependency lines meet. In activity-on-node diagrams, nodes represent activities. In activity-on-arrow diagrams, they represent events or stages.

Nonlinear management (NLM) – Nonlinear management refers broadly to management practices which emphasize flexibility, self-organization, and adaptation to changing circumstances. It runs counter to concepts in linear management, which seek to impose structure on organizations. The defining characteristics of nonlinear management include encouragement of out-of-the-box thinking, proactivity in responding to challenges, and flexible working arrangements for employees.

- O -

Objective or Outcome Scorecard – A specific application of a scorecard/objective scorecards monitor progress toward a given set of objectives or outcomes using a threshold-based rating scale. Typically, objective status is determined by normalizing one or many key performance indicators and comparing it to a given rating scale.

Objective – A clear, concise statement about what an activity is meant to accomplish. Objectives are written to be SMART: specific, measurable, achievable, realistic, and time-bound. A successful project meets all its stated objectives.

Operations and maintenance – Operations and maintenance is the stage at which a project or system is handed over to staff who will put it into full operation and carry out routine maintenance.

Operational Alignment – The means to and/or state of alignment of an organization's day-to-day activities with its strategic goals or objectives,

operational alignment helps ensure that an organization's daily activities are advancing its longer-term goals and mission.

Operations management – The duty of ensuring that an organization's operations are functioning optimally. Operations managers maintain and improve the efficacy and efficiency of business processes. They seek to develop operations which deliver high-quality outputs while keeping costs low.

Operational Performance Management – A type of performance management that addresses the growing pressure to increase revenue while managing costs, while meeting ever-evolving and expanding customer demands. Other types of performance management include business performance management and IT performance management.

Operational Reviews – Usually used to describe the regularly scheduled internal status meetings of an organization. Going by different names based on the organization, manufacturing companies typically call them Operational Excellence (OPX) meetings, other organizations sometimes just refer to them as Performance reviews.

Operations research (OR) – A field of study that uses mathematical, statistical, and scientific methods to aid and optimize decision making. It uses techniques such as mathematical modeling and optimization to enable better decision making. (See also *management science*)

Opportunity – In project management, an opportunity is a possibility that can contribute to project objectives. Opportunities in project management are classified as a type of risk.

Opportunity cost – The opportunity cost of a particular course of action is the loss of potential gains from all alternative courses of action.

Optimistic duration – An estimate of the shortest length of time needed to complete a specific activity or task. It may be used to compute expected activity duration through a technique called three-point estimation.

Order of magnitude estimate – An order of magnitude estimate provides an early, imprecise idea of the time and money required to complete a project. It uses historical data from completed projects to form adjusted estimates for similar new projects, usually presenting these estimates as ranging from -25 percent to +75 percent of the actual budget to indicate the levels of uncertainty involved.

Organization – A formally structured arrangement of parties that actively pursues a collective purpose. Organizations can be affected by external factors, and they in turn can affect the external environment.

Organization development – Broadly, organization development involves strategic efforts to improve aspects of organizational performance such as efficacy, efficiency, and sustainability, as well as aspects of organizational health such as employee satisfaction and engagement. The term may also refer to a field of study focusing on the characteristics of organizations and their growth and evolution.

Organizational breakdown structure – A hierarchical model of an organization's units and all its activities. It shows relationships between activities and organizational units and indicates the responsibilities of each unit, thus providing a holistic perspective of how an organization operates.

Organizational enabler – Any practice, tool, knowledge, or skill base that facilitates an organization’s pursuit of its objectives may be termed an organizational enabler.

Organizational planning – The strategic process of defining roles, responsibilities, and reporting hierarchies for parties within an organization, keeping the organization’s

objectives in mind. It is carried out based on the principles and strategies by which an organization manages its members.

Organizational process assets – The specific set of formal and informal plans and processes in use at an organization. They also constitute the sum of knowledge and experience accumulated from past efforts. Organizational process assets are essentially the unique knowledge and processes that facilitate an organization's operations.

Organizational project management – A strategic approach that emphasizes the effective management of projects, programs, and portfolios as the best way to pursue organizational objectives. It focuses on aligning an organization's activities with its objectives and on managing these activities collectively, so they contribute to objectives.

Organizational project management maturity – A measure of an organization's ability to meet its objectives by effectively managing all its activities. It can be assessed with a maturity model called the OPM3, which, like other maturity models, provides comparisons and recommendations for improvement.

Outcome – Commonly used within the Logic Model, outcomes (also called outcome-impacts) describe the benefits that result as a consequence of an organization's investments and activities. A central concept within logic models, outcomes occur along a path from shorter-term achievements to medium-term and longer-term achievements. They may be positive, negative, neutral, intended, or unintended. Examples of outcomes include changes in knowledge, skill development, behaviour, capacities, decision-making, and policy development.

Output – In project management, an output is the (usually physical) end product of a process.

Overall change control – The evaluation, coordination, and management of project-related changes. It concerns both the effective integration of changes to benefit the project and the management of adverse changes or emergencies, so that project activities are not disrupted.

- P -

P3 assurance – P3 assurance involves satisfying sponsors and stakeholders that projects, programs, and portfolios are on course to meet performance expectations, fulfill objectives, and meet requirements.

P3 management – P3 management refers collectively to the management of projects, programs, and portfolios.

Parallel life cycle – In a parallel life cycle, certain phases are conducted in parallel (they overlap).

Parametric estimating – A technique for estimating cost and duration based on using historical data to establish relationships between variables — for example, calculating unit costs and the number of units required to complete a similar activity.

Pareto chart – A Pareto chart is a combination bar chart and line graph where the bars represent category frequencies in descending order from left to right, and the line tracks the cumulative total as a percentage.

Path convergence – On a schedule network diagram, path convergence occurs when an activity has multiple predecessors.

Path divergence – On a schedule network diagram, path divergence occurs when an activity has multiple successors.

Percent complete – The percent complete indicates the amount of work completed on an activity as a percentage of the total amount of work required.

Performance Driver – Measures that indicate progress against a process or behaviour. These measures are helpful in predicting the future outcome of an objective.

Performance-Based Budgeting – A performance budget is an integrated annual performance plan and budget that shows the relationship between program funding levels and expected results. It indicates that a goal or a set of goals should be achieved at a given level of spending.

Performance Gap – The "difference" between actual and target, the trend of the performance or target gap shows an organization's momentum.

Performance measurement baseline – A performance measurement baseline uses the schedule, cost, and scope baselines to create a point of comparison by which project performance is assessed. Variance from the performance measurement baseline may prompt corrective action.

Performance reporting – Performance reporting is formally informing stakeholders about a project's current performance and future performance forecasts. The aspects of performance to be reported are typically laid out in a communications management plan.

Performing organization – The performing organization for a project is the one whose members and resources most directly perform the project work.

Perspective – Representing the various stakeholders, internal and external, critical to achieving an organization's mission. Together, the perspectives provide a holistic, or balanced, framework for telling the "story of the strategy" in cause-and-effect terms. While the traditional Balanced Scorecard includes the four

perspectives of Financial, Customer, Internal Process, and Employee Learning and Growth, an organization may choose to modify and/or add to these to adequately translate and describe their unique strategy.

Pessimistic duration – The pessimistic duration is an estimate of the longest length of time needed to complete a specific activity or task. It may be used to compute expected activity duration through a technique called three-point estimation.

PEST analysis – A PEST analysis examines how political, economic, social, and technological factors might affect a project.

Phase – A distinct stage in a project life cycle.

Phase gate – A phase gate is an end-of-phase checkpoint where the project leadership reviews progress and decides whether to continue to the next phase, revisits work done in the phase, or ends the project.

Planned value (PV) – The budget assigned to the work it is meant to accomplish. (See also *budgeted cost for work scheduled*)

Planning – The development of a course of action to pursue goals or objectives.

Planning phase – In project management, planning refers specifically to a phase of the life cycle that involves creating plans for management, control, and execution, as well as for what a project is meant to accomplish.

Planning poker – A consensus-based estimation technique. It attempts to avoid the anchoring effect – where the first estimate forms a baseline for all subsequent estimates – by having project team members make estimates simultaneously and discuss their estimates until they reach agreement.

Portfolio – A collectively managed set of programs and projects.

Portfolio balancing – An aspect of organizational project management, portfolio balancing involves selecting and tailoring a portfolio's components so they can be managed in line with organizational objectives.

Portfolio charter – A portfolio charter details the formal structure of a portfolio and describes what it is meant to achieve. It authorizes the creation of a portfolio and connects its management with organizational objectives.

Portfolio management – The collective management of portfolios and their components in line with concepts of organizational project management.

Portfolio manager – The individual responsible for balancing and controlling a portfolio in line with concepts of organizational project management.

Portfolio, program, and project management maturity model (P3M3) – The P3M3 assesses organizational performance in portfolio, program, and project management via a set of key process areas (KPAs). Like other maturity models, the P3M3 allows organizations to measure their performance against external benchmarks and provides a roadmap for project performance and delivery improvement.

Positive variance – The amount by which actual project performance is better than planned project performance. Positive variances in time and budget show the project is proceeding faster and is less expensive than planned, respectively.

Precedence diagramming method (PDM) – The process of constructing a project schedule network diagram. It illustrates the logical relationships between project activities and shows the order in which they must be performed by using nodes to represent activities and arrows to show dependencies. PDM also indicates early and late start and finish dates, as well as activity durations.

Precedence network – A precedence network visually indicates relationships between project activities. Boxes and links are used to represent activities and activity

relationships. Precedence networks also detail the time relationships and constraints associated with activities.

Predecessor activity – In a schedule, a predecessor activity logically comes immediately before another activity, which is dependent on the predecessor.

Preventive action – A step taken to ensure future work does not stray from performance expectations. A preventive action, which is proactive, is not the same as a corrective action, which is reactive.

PRINCE2 is an acronym for projects in controlled environments, version 2. It is a project management methodology that emphasizes business justifications for projects.

PRINCE2 management is based on clear organization of project roles and responsibilities and managing when necessary rather than by obligation. It involves planning and executing projects in a series of stages, with stipulated requirements for each work package.

PRiSM – PRiSM is an acronym for projects integrating sustainable methods. It is a project management methodology that focuses on minimizing negative impacts on society and the environment. PRiSM focuses on sustainability. It is essentially green project management.

Probability and impact matrix – A visual framework for categorizing risks based on their probability of occurrence and impact.

Problem statement – A problem statement concisely states and describes an issue that needs to be solved. It is used to focus and direct problem-solving efforts.

Process – A process is a repeatable sequence of activities with known inputs and outputs. Processes consume energy.

Process architecture – The sum of structures, components, and relationships that constitute a process system, which is a complex system of processes.

Process Diagram – Process diagrams typically are used to represent specific processes that are undertaken in an organization and the key steps involved in the process. An example might be a high-level diagram that highlights the customer experience.

Process management – The act of planning, coordinating, and overseeing processes with a view to improving outputs, reducing inputs and energy costs, and maintaining and improving efficiency and efficacy.

Process-based project management – A methodology that views projects as means of pursuing organizational objectives. It involves using an organization's mission and values to guide the creation and pursuit of project objectives. If project objectives aren't in alignment with the company mission statement, they are amended accordingly.

Procurement management plan – A procurement management plan explains how an organization will obtain any external resources needed for a project.

Product breakdown structure (PBS) – A product breakdown structure is used in project management to record and communicate all project deliverables in a hierarchical tree structure. It may be thought of as a comprehensive list of all project outputs and outcomes.

Product description - A product description defines and describes a project product and its purpose. (See also *high-level requirements*)

Product verification – Product verification involves examining a deliverable to ensure, among other things, that it meets requirements, quality benchmarks, and

expectations set by the product description. It is conducted before a product is presented to a customer for acceptance.

Program Assessment Rating Tool – Developed by the Office of Management and Budget within the Office of the President of the United States, the Program Assessment Rating Tool (PART) was developed to assess and improve program performance so that the federal government can achieve better results. A PART review helps identify a program's strengths and weaknesses to inform funding and management decisions aimed at making the program more effective. The PART therefore looks at all factors that affect and reflect program performance including program purpose and design; performance measurement, evaluations, and strategic planning; program management; and program results.

Professional development unit (PDU) – A continuing education unit that project management professionals (PMPs) take to maintain certification.

Program – A collectively managed set of projects.

Program charter – An approved document that authorizes the use of resources for a program and connects its management with organizational objectives.

Program Evaluation and Review Technique (PERT) – PERT is a statistical method used to analyze activity and project durations. PERT networks are typically illustrated with activity-on-arrow diagrams. The method makes use of optimistic, pessimistic, and most likely durations to estimate expected durations for project activities and to determine float times, early and late start dates, and critical paths. (See also *three-point estimating*)

Program management – The collective management of programs and their components in line with concepts of organizational project management.

Program manager – A program manager has formal authority to manage a program and is responsible for meeting its objectives as part of organizational project management methods. They oversee, at a high level, all projects within a program.

Progress analysis – The measurement of progress against performance baselines. Progress analysis collects information about the status of an activity that may prompt corrective action.

Progressive elaboration – The practice of adding and updating details in a project management plan. It aims at managing to increase levels of detail as estimates are revised, and more up-to-date information becomes available.

Project – A temporary, goal-driven effort to create a unique output. A project has clearly defined phases, and its success is measured by whether it meets its stated objectives.

Project accounting – In project management, project accounting deals with reporting on the financial status of projects. It measures financial performance and actual costs against budgets or baselines. Therefore, it complements project management while providing financial information to the sponsor. Project accounting may also be referred to as job cost accounting.

Project baseline – A project baseline comprises the budget and schedule allocations set during the initiation and planning phases of a project. Assuming the scope of the project remains unchanged, it may be used to determine variance from budget or schedule.

Project calendar – A project calendar indicates periods of time for scheduled project work.

Project charter – A Project charter is a document that details the scope, organization, and objectives of a project. It is typically created by a project manager and formally

approved by the sponsor. A project charter authorizes the project manager's use of organizational resources for the project and is understood to be an agreement between the sponsor, stakeholders, and project manager. (See also *project*)

Project cost management (PCM) – The use of an information system to estimate, measure, and control costs through the project life cycle. It aims at completing projects within budgets.

Project definition – A project definition or project charter is a document created by a project manager and approved by a project sponsor that details the scope, organization, and objectives of a project. It authorizes a project manager's use of resources for a project and constitutes an agreement between the sponsor, stakeholders, and project manager (See also *project charter*)

Project management body of knowledge (PMBOK) – The PMBOK is a collection of project management-related knowledge maintained by the Project Management Institute.

Project management office – An organizational unit that oversees project management-related activities within an organization. It seeks to facilitate and expedite project work through the use of standard procedures. A project management office also functions as a repository of general, project-related knowledge and resources.

Project management process – A management process that encompasses all phases of a project, from initiation to the meeting of objectives.

Project management professional (PMP) – A Project management professional (PMP) is a person certified by the Project Management Institute upon completion of a course of formal education, an examination, and a certain number of hours managing projects. The certification is considered the gold standard in project management.

Project management simulators – Software training tools that teach project management skills via interactive learning and provide real-time feedback by which project management trainees can practice and reassess their decision making. Some simulators, such as the Monte Carlo simulator, are used to support and complement decision making in real projects.

Project management software – Project management software is a family of tools typically used in the management of complex projects. They provide the ability to: calculate estimates; create and manage schedules and budgets; track and oversee project activities and progress; assign and allocate resources; optimize decision making; and communicate and collaborate with members of a project team.

Project management triangle – A visual metaphor that illustrates relationships between scope, cost, and schedule. It expresses the idea that none of the three aspects can be amended without affecting the others.

Project manager – The person tasked with initiating, planning, executing, and closing a project, and with managing all aspects of project performance through these phases. The term is typically used for a project management professional. Project managers are able to use organizational resources for projects. They serve as contact points for sponsors, program managers, and other stakeholders.

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Project network – A visual representation of the activities and dependencies involved in the successful completion of a project.

Project performance indicators – Measures used to assess project performance, usually with reference to project or performance baselines. These typically include cost, schedule, and scope statuses.

Project phase – A distinct stage in a project management life cycle. Each phase comprises a set of project-related activities.

Project plan – A document formally approved by the project manager, sponsor, and other stakeholders which states the approved cost, schedule, and scope baselines. It guides project execution, control, and quality and performance assessment. The project plan also

forms the basis for communication between parties involved in a project. Project plans can vary in their levels of detail.

Project planning – Project planning is usually the longest phase of the project management life cycle. It involves determining cost, schedule, and scope baselines and using these to create a detailed roadmap for executing project activities and producing deliverables.

Project portfolio management (PPM) – A method of collectively managing a portfolio's constituent programs and projects to pursue organizational objectives. It involves optimizing the mix and scheduling of projects to pursue objectives as effectively as possible. Project portfolio management is closely related to organizational project management.

Project schedule network diagram – A diagram is a visual representation of how scheduled project activities are ordered and related. Depending on the type of network diagram, boxes represent activities or events, and arrows indicate activities or dependencies, typically with expected durations.

Project scope statement – A project scope statement details what a project is meant to achieve and describes the deliverables expected. It forms the basis of measurable objectives by which the success of a project will be assessed. Project scope statements are typically part of project plans.

Project stakeholders – Broadly, a Stakeholder is any party which may be affected by a project. In project management, the term usually refers to parties with an interest in the successful completion of a project.

Project team – A project team is responsible for leading and collectively managing a project and its related activities through the project's life cycle. Project teams may contain members from several different functional groups within an organization. Depending on the nature of the project, a project team may be disbanded upon completion of a project.

Project tiers – Project sizing categorizes projects into project tiers based on staff power or time required for completion to determine the most appropriate project management practices.

Projectized organization – A projectized organization arranges all its activities into a collection of projects, programs, and portfolios. Projects are typically completed for external clients or customers. The prioritization of project work means the project manager can utilize resources and assign work as they see fit.

Proof of concept – A proof of concept is derived from a pilot project or experiment that examines whether an activity can be completed, or a concept can be realized. It shows the feasibility of an idea.

Proport – The term proport is used to define the sum of unique skills that team members bring to a project. These skills can be harnessed for collective benefit.

- Q -

Qualitative– Subjective, as opposed to quantitative (measured). A common source of qualitative metrics are surveys of customers, stakeholders or employees.

Qualitative risk analysis – A project management technique that subjectively analyzes risk probability and impact. The risks are categorized on a probability and impact matrix, and those deemed significant may undergo a quantitative risk analysis.

Quality – In project management, quality is a measure of a deliverable's degree of excellence. Quality may also refer to a clearly defined set of stakeholder requirements by which results are assessed.

Quality assurance – A set of practices designed to monitor processes and provide confidence that result in deliverables meeting quality expectations. It may involve quality audits and the stipulated use of best practices.

Quality control – The use of standardized practices to ensure that deliverables meet stakeholder expectations. It involves not only the definition and identification of unacceptable results but also the management of processes to optimize results.

Quality management plan – A quality management plan identifies stakeholders' quality expectations and details quality assurance and quality control policies to monitor results and meet these expectations. It is part of a project management plan.

Quality planning – Quality planning involves identifying expected quality standards and creating mechanisms to ensure these standards are met. It may also recommend corrective action if quality standards are not being met.

Quality, cost, delivery (QCD) – QCD is an approach to management that focuses on assessing production processes with regard to three aspects: quality, cost, and delivery. It seeks to simplify process management and facilitate decision making by providing

objective information about each of the three aspects, with an understanding that modifications to any one aspect will also affect the others.

Quantitative – Measured, as opposed to qualitative (subjective). Quantitative measures often come from transactional systems.

Quantitative risk analysis – The mathematical analysis of risk probability and impact. In project management, it is not a substitute for qualitative risk analysis. Instead, quantitative analysis is conducted after qualitative analysis and assesses risks that qualitative analysis has identified as significant.

- R -

RAID log – RAID is an acronym for risks, assumptions, issues, and dependencies. The RAID log is a project management tool that records developments in these four aspects of project work for the stakeholders' benefit and for an end-of-project review.

RASCI/RACI chart – A RASCI chart is created during project initiation to identify those who are: responsible for project activities, accountable for ensuring that work is done, signing off on the work, consulted in relation to work activities, and informed about the status of the work. The acronym may be simplified as RACI. (See also *responsibility assignment matrix*)

Readiness Scorecard – A specific application of a scorecard, a readiness scorecard can be used to evaluate an organization's state of readiness/acceptance of a given strategy.

Reengineering – Reengineering involves the extensive redesign or rethinking of core processes to achieve major performance improvements. It focuses on optimizing key performance areas such as quality and efficiency. Reengineering often involves

restructuring organizations so that multi-functional teams can manage processes from start to end.

Release – In IT project management, a release is a fully functional software delivered to a customer as agreed, typically after a series of iterations.

Remote team – A remote team's members work in collaboration, usually electronically, from different geographic locations.

Repeatable – The term repeatable is used to describe a sequence of activities that may be easily and efficiently replicated. Repeatable processes are economical since they typically avoid negative variances and have established operations.

Reports – Typically show the details of performance for a metric or multiple metrics. Reports are often used to drill down to the root cause of performance issues.

Request for proposal – A formal invitation for expressions of interest that is extended by an organization looking to procure goods or services. (See also *invitation for bid*)

Request for quotation – Upon receipt of proposals after issuing a request for proposal, an organization will issue a request for quotations to shortlisted proposers, asking for detailed cost estimations for specific goods or services.

Requirements management plan – A requirements management plan explains how project requirements will be defined, managed, and delivered. It is part of a project management plan and is used to guide project execution and control to adequately deliver requirements.

Requirements traceability matrix – A table that tracks requirements through the project life cycle and product testing. It is used to ensure that a project is able to deliver the stipulated requirements during the verification process.

Requirements – A set of stipulations regarding project deliverables. They are a key element of the project scope and explain in detail the stakeholders' expectations for a project.

Residual risk – Any risks that have not or cannot be addressed by risk mitigation or risk avoidance procedures.

Resource allocation – The assigning and scheduling of resources for project-related activities, ideally in the most efficient manner possible. Resource allocation is typically handled by a project manager, though they may be overridden by a program manager if resources are to be shared between multiple projects. (See also *allocation*)

Resource availability – Resource availability indicates whether a specific resource is available for use at a given time.

Resource breakdown structure – A hierarchical list of resources needed for project work, classified by type and function.

Resource calendar – A resource calendar indicates resource availability, usually by shift, over a period of time.

Resource leveling – A technique that involves amending the project schedule to keep resource use below a set limit. It is used when it is important to impose limits on resource use. Resource leveling can affect a project's critical path.

Resource loading profiles – Resource loading profiles indicate the number and type of personnel required to do project work over periods of time.

Resource optimization techniques – Resource optimization techniques seek to reconcile supplies and demands for resources. Depending on whether project duration or limiting resource use is prioritized, they can be used to amend activity start and

finish dates in ways that do or do not affect a project's critical path. (See also *resource leveling* and *resource smoothing*)

Resource smoothing – A technique that makes use of float when allocating resources so as not to affect total project duration. It is used when project time constraints are important. Resource leveling does not affect a project's critical path.

Resource-Limited schedule – A resource-limited schedule has had its start and end dates adjusted based on the expected availability of resources.

Resources – The elements needed for a project to successfully meet its objectives. Examples of resources include equipment, staff, locations, facilities, and money.

Responsibility assignment matrix – A responsibility assignment matrix identifies those who are: responsible for project activities, accountable for ensuring that work is done, consulted about work activities, and informed about the work status. (See also *RASCI/RACI* chart)

Retainage – The sum of money withheld from a contract payment until completion of the contract according to terms.

Return on investment (ROI) – The expected financial gain of a project expressed as a percentage of total project investment. It is used to assess the overall profitability of a project.

Risk – The probability of occurrence of a specific event that affects the pursuit of objectives. Risks are not negative by definition. In project management, opportunities are also considered risks.

Risk acceptance – Risk acceptance involves acknowledging a risk and not taking preemptive action against it.

Risk appetite – The amount and type of risk an organization is willing to accept in anticipation of gains. It is not the same as risk tolerance, which is the amount of variation in performance measures that an organization is willing to accept.

Risk assessment – An activity that involves identifying possible risks to a project and examining how these risks, if they occur, would affect objectives.

Risk avoidance – Risk avoidance focuses on avoiding threats that can harm an organization, its projects, or assets. Unlike risk management, which is geared toward mitigating the impact of a negative event, risk avoidance seeks to address vulnerabilities and make sure those events do not occur.

Risk breakdown structure – A hierarchical model of all risks, arranged categorically.

Risk category – A set of risks grouped by cause.

Risk efficiency – A concept based on the idea of maximizing the return-to-risk ratio. It can do this in two ways: by minimizing exposure to risk for a given level of expected return or by seeking the highest possible expected return for a given level of risk.

Risk enhancement – Risk enhancement involves increasing the probability of an opportunity, or positive risk, occurring.

Risk exploitation – Risk exploitation focuses on ensuring that an opportunity, or positive risk, occurs.

Risk identification – The process of identifying and examining risks and their effects on project objectives.

Risk management – A subset of management strategies that deals with identifying and assessing risks and acting to reduce the likelihood or impact of negative risks. Risk managers seek to ensure that negative risks do not affect organizational or project objectives.

Risk mitigation – Risk mitigation involves decreasing the probability of a negative risk occurring, as well as protecting project objectives from a negative risk's impact.

Risk monitoring and control – The risk monitoring and control process uses a risk management plan to identify risks and implement appropriate risk responses.

Risk owner – A risk owner is responsible for determining and enacting appropriate responses to a specific type of risk. (See also *risk response owner*)

Risk register – A risk register, or risk log, is a tool used to chronicle risky situations and risk responses as they arise.

Risk response owner – A risk owner monitors a specific type of risk and implements appropriate risk responses when necessary. (See also risk owner)

Risk response planning – Risk response planning is typically conducted after risk analyses to determine appropriate courses of action for risks is deemed significant.

Risk sharing - Risk sharing involves handing ownership of a positive risk to a third party who is typically specialized and better able to realize the opportunity.

Risk threshold – The level at which the likelihood or impact of a risk becomes significant enough that the risk manager deems a risk response necessary.

Risk tolerance – The level of variation in performance measures that an organization is willing to accept. It is not the same as risk appetite, which is the level and type of risk an organization is prepared to accept in anticipation of gains.

Risk transference – Risk transference involves handing ownership of risk to a third party who is typically specialized and better able to address the risk or to withstand its impact.

Risk trigger – An event that causes a risk to occur. A trigger can serve as a warning that a risk has occurred or is about to occur.

Rolling wave planning – A planning approach that focuses on in-depth detailing of work to be accomplished in the near term and progressively lower levels of detail for work scheduled farther in the future. It is based on the idea that work scheduled in the future is more subject to change and thus less worth planning in detail. Rolling wave planning only works for schedules with clearly defined iterations.

Root cause – The primary reason an event occurs.

Run book – A comprehensive catalog of information needed to conduct operations and to respond to any emergency situations that arise during operations. It typically details, step by step, all regular operational procedures and emergency responses.

- S -

S-Curve analysis – An s-curve tracks cumulative financial or labor costs. S-Curve analysis is used to compare a project's cumulative costs at any given point with a cumulative cost baseline created during the planning phase. It allows project managers and sponsors to assess performance and progress.

Schedule – A comprehensive list of project activities and milestones in logical order, with start and finish dates for each component.

Schedule baseline – A schedule baseline is the original project schedule – approved by the project team, sponsor, and stakeholders – by which performance is assessed. Schedule baselines are generally inflexible, though alteration of a schedule baseline via a formal change control process may be allowed.

Schedule compression technique – A schedule compression technique speeds up projects without affecting scope by decreasing the duration of a project's critical path. There are two main schedule compression techniques: crashing and fast tracking. (See also *duration compression*)

Schedule model – A logically arranged, time-based plan for project activities. It is used to create a project schedule.

Schedule model analysis – Schedule model analysis examines the project schedule created from a schedule model. It aims to optimize the schedule, usually via the use of scheduling software.

Schedule network analysis – Schedule network analysis uses a variety of techniques to identify early and late start and finish dates for project activities and thus to create project schedules.

Schedule performance index (SPI) – The ratio of earned value to planned value at a given point in time. It shows whether a project is running to schedule. An SPI lower than one indicates the project is behind schedule. An SPI higher than one indicates the project is ahead of schedule.

Schedule variance – Schedule variance is the difference between earned value and planned value at a given point in time.

Scientific management – Scientific management was an early attempt to bring scientific approaches to process management. Its earliest form was derived from a 1911 monograph by Frederick W. Taylor, who focused on increasing economic efficiency via the analysis and optimization of labor processes.

Scope – The scope of a project constitutes everything it is supposed to accomplish in order to be deemed successful.

Scope baseline – The set of requirements, expectations, and work packages approved as project deliverables. It is used to guide and assess project performance.

Scope change management – Scope change management deals with amendments to the scope as set in the scope baseline and project management plan. Since scope

amendments typically affect cost and schedule estimates, scope change management involves revising estimates and adequately communicating these to stakeholders, as well as obtaining the resources necessary to fulfill new scope requirements.

Scope creep – Scope creep refers to gradual changes in project scope that occur without a formal scope change procedure. Scope creep is considered negative since unapproved changes in scope affect cost and schedule but do not allow complementary revisions to cost and schedule estimates.

Scorecard – A scorecard is a visual display of the most important information needed to achieve one or more objectives, consolidated and arranged on a single screen so the information can be monitored at a glance. Unlike dashboards that display actual values of metrics, scorecards typically display the gap between actual and target values for a smaller number of key performance indicators.

Scrum – Scrum is an iterative development procedure used in software development projects. Scrum-based projects focus on prioritizing requirements and working towards a clear set of goals over a set time period, called a sprint. The development team thus works through the list of requirements over a number of sprints. Scrum-based projects usually do not have project manager. Instead, the project team meets daily for progress updates.

Secondary risk – A risk created by a risk response.

Security – Security in project management refers broadly to protecting humans, information, and resources from risk.

Six Sigma – An approach to process management that focuses on the near total elimination of product or service defects. It uses quality management methods to improve and optimize processes involved in the production of a product or service so that 99.9 percent of process outcomes are defect-free.

Slack time – The length of time an activity's early start can be delayed without affecting project duration. (See also *float*)

Slip chart – A slip chart graphically compares predicted activity completion dates with originally planned completion dates.

Slippage – The negative variance between planned and actual activity completion dates. Slippage may also refer to the general tendency of a project to be delayed beyond planned completion dates.

Soft project – A soft project does not have a physical output.

Software engineering – Software engineering is generally defined as the use of engineering principles in software development. It systematically employs scientific and technological approaches in the design, operation, and modification of software.

Spiral life cycle – An IT system's development model that aims to learn from experience by drawing from both iterative development and the waterfall model. It has four sequential phases: identification, design, construction, and evaluation and risk analysis. At the end of each life cycle, an iteration is assessed by the customer, and the spiral sequence begins again upon receipt of customer feedback. The spiral model is typically used in long-term projects or those where requirements are expected to vary, and customer feedback is to be incorporated in phases.

Sponsor – A sponsor has ultimate authority over a project. They provide high-level direction, approve project funding as well as deviations from cost and budget, and determine project scope. Sponsors are typically members of the senior management and are expected to provide high-level support for a project.

Sprint – In iterative project development, a sprint is a fixed unit of time during which the project typically passes through a complete development life cycle. A sprint is usually a few weeks long.

Stakeholder – In project management, a Stakeholder is any party with an interest in the successful completion of a project. More generally, the term refers to anyone who is affected by a project. (See also *project stakeholder*)

Standards – A standard prescribes a collection of standardized rules, guidelines, and characteristics requirements for processes or products that are approved by a recognized body. Standards are not by definition mandatory. They are adopted by consensus, although they may be enforced as a requirement for participation in certain markets.

Start-To-Finish – In a start-to-finish relationship, a successor activity cannot finish until a predecessor activity has started.

Start-To-Start – In a start-to-start relationship, a successor activity cannot start until a predecessor activity has started.

Statement of work (SoW) – A Statement of work is a comprehensive and detailed list of deliverables expected under a contract, with expected dates for each deliverable.

Steering committee – A steering committee provides high-level strategic guidance on a project. It typically comprises individuals from a number of stakeholder organizations and serves to provide consensus-based direction on projects with a large number or a diversity of stakeholders.

Story point – In sprint-based projects, a story point is a measure of the amount of work required to implement a particular user story. Assigning and totaling story points allows project teams to target a realistic number of user stories for action during an iteration or sprint.

Strategic Management System – Describes the use of the Balanced Scorecard in aligning an organization's short-term actions with strategy. Often accomplished by cascading the Balanced Scorecard to all levels of the organization, aligning

budgets and business plans to strategy, and using the Scorecard as a feedback and learning mechanism.

Strategy – Strategy is the way an organization seeks to achieve its vision and mission. It is a forward-looking statement about an organization's planned use of resources and deployment capabilities. Strategy becomes real when it is associated with: 1) a concrete set of goals and objectives; and 2) a method involving people, resources and processes.

Strategy Map – A specific version of a strategy plan that adheres to the Balanced Scorecard methodology. Strategy maps depict objectives in multiple perspectives with corresponding cause and effect linkages.

Strategy Plan – A visual representation of an organization's strategy and the objectives that must be met to effectively reach its mission. A strategy plan can be used to communicate, motivate and align the organization to ensure successful execution.

Successor activity – In a schedule, a successor activity logically comes after and depends on an activity immediately preceding it.

Summary activity – In a network diagram, a summary activity combines a set of related activities and visually represents them as a single activity.

Sunk cost – A cost that cannot be recovered once spent.

Systems development life cycle (SDLC) – In systems engineering, the systems development life cycle is the process of creating, releasing, and maintaining an information system, which may comprise hardware, software, or both. The typical SDLC has six sequential phases: planning, analysis, design, implementation, testing, and maintenance.

Systems engineering – A field of engineering that applies principles of systems thinking to the development of complex systems. Since complex systems are more difficult to coordinate and make cohesive, systems engineering focuses on developing and optimizing systems as interactive wholes instead of sums of parts. As complex systems comprise both technical and human elements, systems engineering is, by nature, interdisciplinary.

- T -

Target – A target is the defining standard of success, to be achieved over a specified time period, for the key performance indicators associated with a particular strategic objective. Providing context to make results meaningful, targets represent the organization's "stretch goals."

Task – In project management, a task is a unit of work or activity needed for progress towards project goals. Typically, a task must be completed by a set deadline. Tasks may be further broken down into assignments or subtasks.

Task analysis – A task analysis details the actions or resources required to complete a task.

Testing – The testing phase involves assessment of the product developed so as to gauge quality and performance and to determine whether requirements have been met.

Theme – Descriptive statement representing a major component of a strategy, as articulated at the highest level in the Vision. Most strategies can be represented in three to five themes. Themes are most often drawn from an organization's internal processes or the customer value proposition, but may also be drawn from key financial goals. The key is that themes represent vertically linked groupings of objectives across several scorecard perspectives (at a minimum, Customer and

Internal). Themes are often stated as catchy phrases that are easy for the organization to remember and internalize. For example: Operational Excellence or Customer Intimacy or Strategic Partnering.

Theory of constraints – The theory of constraints explains that any process is limited from optimum performance by its weakest link or links, called constraints. The theory of constraints methodology involves identifying these weak links via a strategy called focusing and improving them until they no longer limit performance.

Threat – A negative risk that could adversely affect project objectives.

Three-point estimating – A superset of estimating techniques that use averages (or weighted averages) of most likely, optimistic, and pessimistic costs, and duration estimates to form final estimates.

Threshold – A means of describing and/or depicting the performance gap in easily understandable terms. Examples of threshold methods include "letter-grade" (A/B/C/D/F) and "traffic-light" (green/yellow/red).

Time and material contract – A time and material contract pays per unit of time and reimburses materials costs for contracted work.

Time chainage diagram – In project management, a time chainage diagram graphically represents scheduled activities for a hard project completed sequentially over a geographic distance, such as the construction of a motorway or the laying of a pipeline. It thus provides both a scheduled time and a relative geographic location for each activity.

Time limit – The time limit for a task is the window of time or deadline by which it must be completed.

Time-scaled network diagram – A network diagram is time scaled if the lengths of activities are drawn to scale to indicate their expected durations.

Timebox – Timeboxing is a project management strategy that prioritizes meeting deadlines over scope requirements. It involves assigning specific lengths of time, called timeboxes, to project activities. Project teams work to address as many requirements as possible within each timebox, proceeding to successor activities once the time limit has passed.

Timeline – A Timeline is a graphical, sequential representation of project activities.

To-Complete Performance Index (TCPI) – A project's to-complete performance index is the cost performance it needs to achieve to be completed within budget. The TCPI is calculated as the ratio of work remaining to budget remaining.

Tolerance – The acceptable level of variance in project performance. The project sponsor is typically informed if tolerance levels are crossed.

Top-Down estimating – Top-Down estimating uses historical data from similar projects to compute time and cost estimates. (See also *analogous estimating*)

Total cost of ownership (TCO) – The total cost of ownership estimates the sum total of direct and indirect costs incurred in the purchase, operation, and maintenance of an asset through its life.

Total float – The length of time an activity can be delayed from its early start date without affecting the project end date.

Trigger condition – A condition that causes a risk to occur. Trigger conditions can serve as warning signs that risks have occurred or are about to occur. (See also *risk trigger*)

- U -

Unified process – A unified process may refer to any one of a family of iterative software development process frameworks. Unified processes have four phases: inception, elaboration, construction, and transition. Each phase comprises a number of time boxed iterations, which in turn involve a cycle of specifying requirements, analysis, design, implementation, and testing, with emphases on these shifting as the project team proceeds through iterations. Each iteration results in an improved version of the system called an increment.

Use case – In software development, a use case is a step-by-step list of actions that end users would take to achieve specific goals. Use cases facilitate end user-focused software testing.

User story – A project requirement stated in one sentence. It typically identifies users, real or hypothetical, what these users want from software, and why they want it. Project development teams prioritize user stories in each iteration by assigning story points.

- V -

V life cycle – The V in V life cycle stands for verification and validation. It is a sequential software development process that matches a corresponding testing phase to each phase in the software development life cycle. During the verification phase, a project team works at increasingly granular levels of detail to identify requirements and design, and then builds the software. Validation proceeds in the opposite direction, as testers examine software components in turn before moving on to systems testing and finally checking that the project as a whole meets requirements.

Values – Representing an organization's deeply-held and enduring beliefs, an organization's values openly declare how it expects everyone to behave and are often embedded in its vision.

Value Chain – The process steps by which a company moves from the identification of its customer needs to customer fulfilment.

Value engineering – Value engineering seeks to increase the functionality-to-cost ratio of a product by providing improved functionality at lower cost. Some applications of value engineering attract criticism, as manufacturers may decrease costs by using lower-quality components that decrease product lifespans.

Value for money ratio – In project management, the value for money ratio is expressed as the ratio of financial and other benefits to the resources expended in a project.

Value tree – A hierarchical model of the characteristics of a product or service that determine its value.

Value Proposition – Describes how an organization intends to differentiate itself in the marketplace and what particular value it will deliver to customers. Many organizations choose one of three "value disciplines" operational excellence, product leadership, or customer intimacy.

Variance analysis – The practice of investigating deviations between planned and actual performance.

Variance at completion (VAC) – A project's variance at completion is the difference between its budget at completion and its estimate at completion.

Vertical slice – A performance indicator that demonstrates progress across all project components or performance areas at a given point in time.

Virtual design and construction (VDC) – A method based on using technology in design and construction projects. It uses building information modeling (BIM) tools that focus on designable and manageable aspects of projects to create integrated models that predict project performance.

Virtual team – A virtual team comprises people from different organizations, locations, or hierarchies. It is not necessarily the same as a remote team, which is a group of people working together from different locations.

Vision – A concise statement defining an organization's long-term direction, the vision is a summary statement of what the organization ultimately intends to become five, 10 or even 15 years into the future. It is the organization's long-term "dream," what it constantly strives to achieve. A powerful vision provides everyone in the organization with a shared mental framework that helps give shape to its abstract future.

- W -

Waterfall model – The Waterfall model is a software development life cycle in which development phases are sequential, non-iterative, and do not overlap. It is typically reserved for small projects with straightforward, clearly defined requirements since a sequential development process makes it difficult to revisit the analysis and design phases once testing has begun. (See also *linear sequential model*)

Weighted milestone method – The weighted milestone method allows project managers to estimate earned value by splitting work packages into weighted segments. Each segment represents a portion of the budget value for the work package and ends with a milestone. When a segment milestone is classified as complete, a portion of the total work package value has been earned.

What-If scenario analysis – A simulation technique that allows project managers to determine and compare specific conditions' effects on project schedules and objectives.

Wideband Delphi – An estimation technique based on expert consensus. Each member of an estimation team uses a work breakdown structure to create anonymous estimates of the effort required to complete each project element or work package. The estimates are then reviewed as a group before the experts create new estimates, and the process is repeated for a number of rounds until a consensus is reached. (See also *delphi technique*)

Work – In project management, work is the amount of effort needed to complete a task.

Work authorization system - A formal procedure to ensure that project work is performed on time and in logical order.

Work breakdown structure (WBS) – A Work breakdown structure is a comprehensive, hierarchical model of the deliverables constituting the scope of a project. It details everything a project team is supposed to deliver and achieve. A work breakdown structure categorizes all project elements, or work packages, into a set of groups and may be used to form cost estimates.

Work breakdown structure dictionary – A document that details, describes, and provides scheduling information for every element of a work breakdown structure. It may be thought of as a dictionary-cum-schedule of work packages.

Work package – The work packages of a project are its lowest-level deliverables. They are detailed in a work breakdown structure dictionary.

Work stream – In project management, a work stream is a logically arranged series of activities that must be completed to pursue project objectives. The term typically refers to the full sequence of work activities from project initiation to project closure.

Workaround – A way to circumvent a problem which does not have a permanent solution or for which no adequate response was planned.

- X -

X-Bar control charts – An x-bar control chart includes two separate charts that display the means and sample ranges for a number of periodically gathered, same-size samples. The sampled data constitute some characteristic of a product or a process.

RECOMMENDED SOURCES OF INFORMATION

Basic

1. Alekseieva K.A., Dielini M.M. Methodical recommendations for preparation for practical classes, independent work and preparation for the exam in the for students studying “Basics of business projecting” for getting a degree in 073 "Management", 075 “Marketing” of the Faculty of Agricultural Management NULES of Ukraine K. Ed. NULES Center, 2021. 160 p. URL: https://nubip.edu.ua/sites/default/files/u317/metodichka_proj_man_angl.pdf

2. Shynkaruk L.V., Dielini M.M., Alekseieva K.A., Artiukh T.O., Sukhanova A.V. Project management: study guide for students of the specialty 073 “Management”.. Kyiv: NULES Ukraine, 2023. 318 p.

3. Алексеєва К.А., Дєліні М.М. Методичні вказівки до самостійної підготовки з курсу «Основи бізнес проектування» для студентів спеціальності «Менеджмент», «Маркетинг» та ін. англ. мовою, Київ: НУБіП, 2021, 160 с. URL: https://scholar.google.com/citations?view_op=view_citation&hl=ru&user=LjZQNQgAAAAJ&sortby=pubdate&citation_for_view=LjZQNQgAAAAJ:GnPB-g6toBAC

4. Шинкарук Л.В., Дєліні М.М., Суханова А.В., Алексеєва К.А. Управління бізнес-проєктами: навчальний посібник зі спеціальності 073 "Менеджмент". Київ: НУБіП, 2021. 325 с. URL: https://nubip.edu.ua/sites/default/files/u317/2021_posibnik_ubp.pdf

Additional

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управління, управління портфелями, програмами та проектами. 2019. № 1. С. 3-10. URL : http://nbuv.gov.ua/UJRN/vntux_ctr_2019_1_3.

2. Войтушенко А. А. Поняття креативного потенціалу у сфері управління проектами. Управління розвитком складних систем. 2019. Вип. 37. С. 13-17. URL : http://nbuv.gov.ua/UJRN/Urss_2019_37_4.

3. Карташов Є. Г. Особливості впровадження моделей управління проектами у державному секторі. Вісник післядипломної освіти. Серія : Управління та адміністрування. 2019. Вип. 8. С. 10-21. URL : http://nbuv.gov.ua/UJRN/vpoupra_2019_8_4.

4. Черчата А. О. Проектний менеджмент на підприємстві: застосування в контексті взаємодії з функціональним та процесним підходами. Науковий вісник Івано-Франківського національного технічного університету нафти і газу. Серія : Економіка та управління в нафтовій і газовій промисловості. 2019. № 1. С. 172-179. URL : http://nbuv.gov.ua/UJRN/nvifnunge_2019_1_18.

Internet resources

1. Бізнес-ідеї: проєкти для бізнес-покнсультантів. URL: https://mind.ua/publications/20203443-biznes-ideyi-proekti-dlya-biznes-konsultantiv

2. Постановка цілей по SMART. URL : https://goal-life.com/uk/smart-cil

3. Складові успішного проекту на прикладах. URL: https://i.factor.ua/ukr/journals/ms/2018/june/issue-6/article-37269.html

4. Як зробити аналіз ринку, щоб відкрити свій інтернет-магазин. URL: https://neoseo.com.ua/uk/kak-sdelat-analiz-rynka

5. Аналіз ринку для написання бізнес-плану. URL: https://buduysvoe.com/publications/analiz-rynku-dlya-napysannya-biznes-planu;

6. Аналітичне дослідження ринку. URL: https://pro-consulting.ua/ua/services/analiticheskoe-issledovanie-rynka;

7. Як провести аналіз ринків без маркетологів. URL : https://gc.ua/uk/yak-provesti-analiz-rinkiv-bez-marketologa/.

8. Структура бізнес-плану. URL: https://sites.google.com/site/biznesplanplanuvanna/struktura-biznes-planu.

9. Бізнес-план підприємства : поняття, структура, приклади. URL: https://pro-consulting.ua/ua/pressroom/biznes-plan-predpriyatiya-ponyatie-struktura-primery

10. Розробка бізнес-плану за міжнародними стандартами. URL : https://pro-consulting.ua/ua/services/sostavlenie-biznes-plana-po-standartam-unido

11. З чого почати бізнес – вибір організаційно-правової форми. URL: https://www.olans.com.ua/z-chogo-pochati-biznes

12. Вибір системи оподаткування. URL: http://firstconsulting.com.ua/resources/putivnyk-pidpryiemtsia/124-ukrainian/putivnyk-pidpryiemtsia/biznes-z-nulia/261-vybir-systemy-opodatkuvannia

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14. Як написати маркетинговий план для бізнес-плану. URL: http://monetary-flow.com/yak-napisati-marketingoviy-plan/

15. Основи маркетингової стратегії. URL: https://leosvit.com/art/osnovy-marketyngovoyi-strategiyi

16. Розробка маркетингової стратегії. URL: https://koloro.ua/ua/razrabotka-marketingovoj-strategii.html.

17. Вибір цільового ринку. URL: http://marketing-helping.com/konspekti-lekcz/21-konspekt-lekczj-qosnovi-marketinguq/391-vibr-czlovogo-rinku.html

18. 8 найкращих рекламних кампаній за 100 років. URL: https://24tv.ua/lifestyle/8_naykrashhih_reklamnih_kampaniy_za_100_rokiv_n87922

19. SWOT-аналіз. URL : https://lanet.click/swot-analiz/

20. Коронавірусна економіка: хто втрачає, а хто заробляє? URL: https://hromadske.ua/posts/koronavirusna-ekonomika-hto-vtrachaye-a-hto-zaroblyaye-na-epidemiyi.

21. Грантова програма COSME: коротко про головне. URL: https://sme.gov.ua/cosme/grantova-programa-cosme/

APPENDICES

Appendix A

Oriented topics of course works

1. Study of project conditions (project name)
2. Project management in the management system of organizations
3. Justification of the feasibility of the project (name of the project)
4. Organizational support of the project (name of the project)
5. Project content management (project name)
6. Management of project deadlines (project name)
7. Project cost management (project name)
8. Project implementation control (project name)
9. Project quality management (project name)
10. Human resources management (project name)
11. Project communications management (project name)
12. Project risk management (project name)
13. Project supply management (project name)
14. Project management (project name)
15. Project completion management (project name)
16. Project financing
17. Project information management (name of the project)
18. Specifics of social project management in Ukraine
19. Fundraising and design
20. Project planning and control (project name)
21. Implementation of social projects in _____ sphere
22. Project management in the activities of public organizations
23. International project management: current state and prospects
24. Relevance of project management in Ukraine
25. Project management as a tool for managing economic competition
26. Project approach in enterprise management as an important component of its functioning

Appendix B

EXAMPLES OF BIBLIOGRAPHICAL DESCRIPTIONS

FOR THE LIST OF LITERATURE LINKS
(according to the DSTU 8302: 2015 "Information and documentation. Bibliographic link. General provisions and rules of compilation")

Source characteristics	**Example of formalizing**
DOCUMENTS	
One author	Chepinoga V.G. Fundamentals of economic theory: textbook. Kyiv: Lira-K, 2017. 240 p. Konnov O.F. Historical dynamics of the artistic style: monograph. Kyiv: Publishing House of the National Pedagogical University named after M.P. Drahomanov. 2015. 187 p
Two authors	Zabrotsky M.M., Shaposhnikova Y. G. Pedagogical psychology. Lectures: textbook. Kherson, 2017. 144 p.
Three authors	Kryvovyazyuk I.V., Smerichevsky S.F., Kulyk Y. M. Risk management of the logistics system of machine-building enterprises: monograph. Kyiv: Condor, 2018. 200 p.
Four authors and more	The world of plants in the work of I.P. Kotlyarevsky: popular science essays Grinyova M.V. and others. Poltava, 2017. 112 p. The world of plants in the work of I.P. Kotlyarevsky: popular science essays. Poltava, 2017. 112 p. or

	Hrynyova M. V., Onipko V. V., Kupriyan K. V., Khodunai V. V. The world of plants in the works of I. P. Kotlyarevskyi: popular science essays. Poltava, 2017. 112 p.
Multi-volume edition	Encyclopedia of the History of Ukraine: in 10 volumes. Editor: Smoliy V.A. and others. Kyiv, 2003–2013. T. 1–10. Legal system of Ukraine: history, state and prospects: in 5 volumes / Acad. Of Law Sciences of Ukraine. Kharkiv: Pravo, 2009. Vol. 2: Constitutional principles of the legal system of Ukraine and problems of its improvement. General. ed. Bityak Yu. P.. 576 s.
Collective author	Management in the XXI century: methodology and practice: a collective monograph. Poltava National Technical University. Y. Kondratyuk. Poltava: Simon, 2015. 347 p.
Editor, compiler	International economic relations: textbook. Edited by: S.O. Yakubovsky, Y.O. Nikolaev. Odessa: ONU, 2015. 306 p. Dakhno II, Alieva-Baranovska V.M. Intellectual property law: textbook. way. By ed. I.I. Dakhno. Kyiv: CUL, 2015. 560 p. Print of Ukraine. 2016: stat. yearbook. Compl. Buryak S.V.. Kyiv: Book Chamber of Ukraine, 2017. 100 p.
Abstracts, conference proceedings	Library local lore in the cultural space of Ukraine: collection of materials of All-Ukrainian scientific-practical conf., Kyiv, November 2. 2017. Kyiv: National Academy of Management of Culture and Arts, 2017. 246 p.

	Synanthropization of vegetation of Ukraine: theses of sciences. All-Ukrainian Science. conf., Pereyaslav-Khmelnytsky, April 27-28. 2006. Pereyaslav-Khmelnytsky, 2006. 240 p.
Collection	Ukraine - the constellation of cultures: a collection. Kyiv: Novy Druk, 2018. 244 p. Science of Ukraine in the world information space: a collection. Kyiv: Academic Periodicals. 2018. Ed. 15. 104 p.
Translation from another language	Garford, Tim. Things that changed the world. History of economics in 50 inventions: transl. from English Kyiv, 2018. 352 p.
Standards	DSTU 3582: 2013. Bibliographic description. Abbreviations of words and phrases in Ukrainian. General requirements and rules (ISO 4: 1984, NEQ; ISO 832: 1994, NEQ). [To replace DSTU3582-97; valid from 2013-08-22]. Offic. Kyiv: Ministry of Economic Development of Ukraine, 2014. 15 p. (Information and documentation). DSTU EN 61010-2-020: 2005. Safety requirements for electrical equipment for measurement, control and laboratory use. Part 2-020. Additional requirements for laboratory centrifuges (EN 61010-2-020: 1994, IDT). Kyiv: Derzhspozhyvstandart of Ukraine, 2007. IV, 18 p.
Patents	A method of treating attention deficit hyperactivity disorder in children: US Pat. 76509 Ukraine. № 2004042416; declared 01.04.2004; publ. 01.08.2006, Bull. № 8 (book 1). 120 p.

	Two-chamber jet-irrigation sulfitator: US Pat. 112332 Ukraine. № 201606608; declared 16.06.2016, Bull. № 23. 4 p.
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Appendix C

INDICATIVE CONTENT OF THE COURSE WORK

CONTENT

Appendix D

COURSE WORK TITLE PAGE SAMPLE

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
NATIONAL UNIVERSITY OF LIFE AND
ENVIRONMENTAL SCIENCES OF UKRAINE
Faculty of Agrarian Management

Coursework

Project Management

on the topic:

"**Investment projects in the economy of Ukraine in afterwar conditions**"

Performer:
Maria Y. Yastrebinska, student of the Faculty of Agrarian Management
4 course, 6 group specialty "Management"
Scientific adviser:
Kateryna A. Alekseieva, As. Professor of the Production and Investment Management Department
NULES 2023

Date of submission of work for reviewing _____

Registration number _____

Protection date _____

Kyiv – 2023