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MANAGERIAL TECHNOLOGIES AT ENTERPRISE IN PROCESS OF INNOVATIVE–INVESTMENT DEVELOPMENT

Monograph

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The monograph addresses issues related to the development and implementation of managerial technologies in the process of sustainable innovation and investment development of an industrial enterprise. A terminological paradigm of management science is introduced, on the basis of which the essence of managerial technologies is clarified, and a standardized technology for personal planning of management activities at an enterprise is developed. A personal regulatory policy is substantiated as a set of goals, principles, and rules of self-management, along with an appropriate methodology for its formation.

The practical significance of the obtained results lies in the fact that, on their basis, it is possible to initiate at a specific enterprise the work on designing and implementing a technology for personal planning of various aspects of innovation and investment development.

The conducted research is intended for enterprise and organization managers, researchers, and university lecturers who deliver educational courses in organizational management.

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НАЦІОНАЛЬНИЙ УНІВЕРСИТЕТ «ОДЕСЬКА ПОЛІТЕХНІКА»

В. І. ЗАХАРЧЕНКО, Д. М. МЕРКУЛОВ

УПРАВЛІНСЬКІ ТЕХНОЛОГІЇ НА ПІДПРИЄМСТВІ У ПРОЦЕСІ ІННОВАЦІЙНО-ІНВЕСТИЦІЙНОГО РОЗВИТКУ

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У монографії розглядаються питання розробки і впровадження управлінських технологій у процесі сталого інноваційно-інвестиційного розвитку промислового підприємства. Введено термінологічну парадигму науки про управління, на основі якої уточнюється сутність управлінських технологій, розроблено типізовану технологію персонального планування діяльності менеджменту на підприємстві. Обґрунтовано персональну регламентну політику, як сукупність цілей, принципів та правил самоменеджменту з відповідною методикою її побудови.

Практична значимість отриманих результатів полягає у тому, що на їх основі можливо розпочати на конкретному підприємстві роботу з проєктування і впровадження технології персонального планування різних аспектів інноваційно-інвестиційного розвитку.

Проведене дослідження призначено для керівників підприємств і організацій, вчених та викладачів університетів, які реалізують навчальні курси з менеджменту організацій.

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CONTENT

ЗМІСТ

INTRODUCTION

Scientists and managers devote considerable attention to improving the planning of innovation and investment activities (IIA) at the enterprise level. A sufficient number of publications [3; 4; 6; 11; 18], textbooks [4; 7; 9; 11], regulatory acts [12; 19; 24], and instructional materials [21; 23] have been produced on this subject. These sources examine in detail the theory, methodology, and practice of developing strategic plans and forecasts; preparing plans for the production of innovative products, sales, and logistics; forming financial plans; establishing managerial, accounting, and tax systems within an enterprise; carrying out structural transformations; implementing IIA; developing business plans; and conducting procedures for the selection, training, retraining, and placement of personnel.

Significantly less attention is devoted to the theory and methodology of personal planning of IIA by the managers themselves. Executives and specialists often carry out activities associated with managing the innovative-investment development (IID) of an enterprise guided primarily by common sense, personal experience, habits, and the most general regulatory documents—staffing schedules, job descriptions, departmental regulations, the enterprise's working regime, orders and directives issued by higher-level management, and other normative acts. In other words, at most enterprises, personal planning and the IIA of managers and specialists are implemented in a mode of undefined self-management. Existing general corporate regulations are often formal in nature and are not actually used in day-to-day work. Under such conditions, the effectiveness of managers and specialists becomes a matter of chance rather than a consistent pattern. The efficiency of undefined self-management depends largely on the personal qualities of managers and specialists, such as the ability to comprehend corporate goals; the skill to identify priorities and determine the sequence of personal tasks; a proclivity for teamwork; personal discipline and organization, among others. Not all enterprises have managers and specialists who possess these qualities.

Many enterprises incur significant losses due to the absence of technologies for personal planning of IIA by managers and specialists.

First, unproductive losses of working time for this category of employees often reach 40% or more. Second—and this is the most important—in everyday activities, the priorities of IID are neither defined nor observed, although priority-setting is the key distinguishing feature of an effective manager.

Third, the goals of the enterprise and those of its employees frequently come into conflict under conditions of undefined self-management; in other words, a systematic translation of enterprise-wide goals across all management levels is not ensured. Fourth, synchronization and harmonization of work performed by various managers and specialists is disrupted (some are overloaded, others underloaded; some advance too quickly, others lag behind), and as a result, large tasks are completed at the speed of the slowest link in the production chain.

Fifth, important managerial decisions are made hastily (for this reason, according to research findings, up to 70% of decisions in some companies are erroneous or suboptimal).

These losses can be avoided if the enterprise implements a managerial technology within which formalized procedures for personal planning of IIA for managers and specialists are carried out with pendulum-like regularity. It is essential to implement precisely a technology of IIA planning. As is well known from the experience of organizing any activity, only a technology makes it possible to synchronize and harmonize separate stages, procedures, and operations of a given process. It enables controlling the process. It allows abandoning the notion that "management is an art" or "management is a craft" in favor of the idea that management is a standardized, regulated process.

This, in turn, allows avoiding dependence on the personal qualities and whims of individual performers, as well as other deficiencies and losses associated with undefined self-management.

The widespread application of personal planning technologies for the activities of managers and specialists at domestic enterprises

is constrained by the insufficient development of the scientific foundations of management technologization in general, and of the methodology for designing and implementing technologies of personal planning of IID at enterprises, in particular. This monograph is aimed at developing these scientific and methodological issues, which determines its relevance.

The present study is based on three key concepts: (1) "management;" (2) "managerial technology;" and (3) "personal planning of IIA." Therefore, in our opinion, the degree of development of this problem should be examined from three perspectives: (a) assessing the current state of management science (viewing the problem from the standpoint of methodology); (b) assessing the degree of development of the theoretical and methodological foundations of the technologization of managerial activity (viewing the problem from the standpoint of specific research); (c) assessing the existing theories and methods of personal planning and accounting of the activities of managers and specialists of an enterprise (viewing the problem from the standpoint of practice).

The scientific aspects of improving enterprise management are examined by many authors. Among them are numerous foreign specialists: Ackoff A., Ouchi W., Peters T., Waterman R., Robbins S., Conner D., Deming E., Fulmer W., Kotter J. P., O'Toole J., Pasmore W., and others. A significant contribution to the theory and practice of IID management has been made by domestic scholars: Burkynskyi B., Nekrasova L., Prodius I., Filyppova S.

An analysis of the works of the aforementioned (and other) authors suggests that management science is still in a formative stage. Within this discipline, several alternative sets of theoretical and methodological views exist concerning the nature of the phenomena under study and the methods for solving existing problems. A unified theory of management simply does not exist. The view that it is generally impossible to develop a normative theory in the field of management one that would reliably explain the processes occurring in this domain or serve as a universal tool for solving problems (as is done in mathematics, physics,

and other natural sciences) appears well grounded. Such, evidently, is the nature of management as a type of human activity. This creates certain difficulties in the study of problems related to improving enterprise management. At the outset of their work, each researcher is compelled to construct, from the multitude of existing views and concepts, a set of principles, rules, and propositions within which research tasks can be effectively addressed. It also becomes necessary to refine the terminology applied by the researcher.

Technologization of managerial innovative-investment activity (IIA).

The role of technology is extremely significant across all spheres of human activity. The essence of technology lies in the principle of decomposing any activity into its constituent elements. On the one hand, such decomposition makes it possible to substantially increase the efficiency of performing individual procedures, operations, and stages. On the other hand, the deliberate design and implementation of a rational sequence of stages, procedures, and operations produces a systemic effect enhancing the productivity of human activity. Furthermore, technologies serve as intermediaries between science and practice (scientific knowledge is transmitted into the economic and innovation spheres through technologies), facilitate the dissemination of best practices, and promote the specialization of human activity and labor productivity.

In earlier times, the term "technology" was applied almost exclusively to technical (industrial, construction, manufacturing) processes. In recent years, however, terms such as "political technology," "innovation technology," "information technology," "business technology," "planning technology," and "management technology" have emerged and become widespread. In all these areas, the application of the technological principle - dividing activity into component elements has produced substantial benefits.

Theoretical and methodological foundations for the use of technologies in various types of managerial and innovative-investment activity are covered in the works of the following authors: Merkulov M., Fedulova L., Shypulina Yu., Yermak S., Davenport T., Enos J. L., Stephen H., and others.

It should be noted that in many publications, the concept of "technology" is understood primarily in an everyday sense. The theoretical and methodological views of the listed authors are contradictory, incomplete, and excessively abstract.

For their application in practical developments, it is first necessary to clarify the essence of managerial technologies, classify their types, identify the properties of different types of technologies, as well as the specifics of their design and implementation.

Issues of personal planning and accounting of the activities of managers and specialists are addressed in the works of the following researchers: Dubnytskyi V., Kuzmin O., Blanchard K., Johnson S., Cooper A. M., Trammell D., Davidson J., Douglass M., Douglass D., Mayer J., Moskowitz R., Silber L. T., Taylor H. L., and others.

Existing theories and methodologies of personal planning in innovative-investment activity can be regarded as incomplete and unsystematic. For example, the methodology of calendar planning (using Gantt charts or network planning and control methods) is not universal. It is oriented toward project management, which occupies a limited place in the overall managerial work at an enterprise.

The widely known concept of Time Management is essentially a methodology of self-management. The Time Management system can be viewed as a set of skills for personal management of one's own time. In other words, the ability to plan, track, and analyze one's time using the Time Management system is simply one of the manager's professional skills just like the ability to write an order, conduct a meeting, or work with a computer.

Therefore, without significant adaptation, the Time Management concept cannot serve as a methodological foundation for corporate personal planning of innovative-investment activity for managers and specialists. Moreover, many domestic managers and specialists do not possess Time Management methods.

The above considerations determine the relevance of developing methodological approaches to the design and implementation of effective technologies for personal planning and accounting of the activities of managers and specialists of an enterprise. This, in turn, defines the topic of the present monograph.

In this context, the primary objective of the monograph is to investigate the organizational and economic problems of management technologization at the level of an industrial enterprise, to develop methods and technologies for the personal planning of innovative-investment development (IID) by managers and specialists, and to implement the developed methods and technologies of personal planning of innovative-investment activity (IIA) using the example of a specific enterprise.

The formulated objective necessitates solving a number of tasks, the main of which include:

1. Clarifying the essence of managerial technologies at an industrial enterprise and their role in improving the efficiency of IIA management.
2. Developing a classification of types of managerial technologies for IIA and identifying their properties within the defined types.
3. Determining the goals, tasks, and methods of personal planning for the activities of managers and specialists of the enterprise.
4. Developing a methodology for the self-management of managers and specialists using the principles of the Time Management system.
5. Designing and implementing a technology of personal planning and accounting for the activities of managers and specialists under the conditions of an operating enterprise (using JSC "Odeskabel" as an example).

The monographic research is based on the systemic principle of analyzing management processes at the enterprise level. Through comparative and cause-effect analysis, the essence and various types of managerial technologies were examined in relation to the tasks of personal planning of IIA by managers and specialists. At certain stages of the monograph, methods such as mathematical modeling, systems design, brainstorming, survey questionnaires, problem-oriented meetings, expert sessions, and business games were applied.

The theoretical foundations of the study were formed using the scientific works and developments of domestic and foreign specialists in management theory. The authors made use

of the works of Drucker P., Blank I., Kuznetsov E., Mazaraki A., as well as the results of the authors' examination of practical experience in improving technologies for personal planning of the activities of managers and specialists at enterprises in southern Ukraine.

The information base of the monographic study consists of regulatory and legislative acts, the results of domestic statistical studies and sociological surveys, materials from periodical publications, scientific articles and dissertations, conference proceedings, Internet resources, as well as data on the activities of domestic and foreign enterprises.

Within this publication:

1. The essence of managerial technologies and their role in enterprise management has been defined.
2. A classification of managerial technology types has been developed, and their properties have been identified by category.
3. The goals, tasks, and technologies of personal planning of IIA for managers and specialists have been determined.
4. A methodology of self-management for managers and specialists of the enterprise, based on the principles of the Time Management system, has been proposed.
5. Using the example of a specific enterprise, the effectiveness of the proposed technology of personal planning of IIA for managers and specialists has been demonstrated.

The practical significance of the obtained results lies in the fact that the proposed theoretical and practical material may be used to initiate work at industrial enterprises on the design and implementation of a technology for personal planning of IIA for managers and specialists.

The application of the proposed self-management methodology for managers and specialists based on the ideas of the Time Management system will enable enterprises to increase the productivity and quality of managerial labor through the proper selection of priorities and improvements in managerial decision-making processes. The formulated recommendations for solving specific tasks related to the implementation of managerial

technologies may be applied at an industrial enterprise once these technologies are adapted to its specific operating conditions.

The provisions developed in the monograph on the analysis and design of managerial technologies, as well as the methods for developing and implementing a technology for personal planning of IIA for managers and specialists, may form the basis of university courses for training economists and managers, as well as business education programs.

The preparation and publication of this monograph were carried out as part of research at Odesa National Polytechnic University on the topic (R&D) "Management of Integrated High-Tech Production for the Manufacture of Innovative Products for the Needs of Ukraine's Defense Capability and Sustainable Development" (No. 0125U001609) with the support of the Ministry of Education and Science of Ukraine.

The managerial technology tools presented in this work were used in consulting projects (some results are cited in [6]) and in teaching the course "Strategic Management of Enterprise Innovative Development" at the Institute of Economics and Management of Odesa Polytechnic University.

1

MANAGERIAL TECHNOLOGIZATION—THE PATH TO SUSTAINABLE INNOVATIVE AND INVESTMENT DEVELOPMENT OF AN INDUSTRIAL ENTERPRISE

1.1. Terms and Concepts in the Processes of Managerial Technologization in Innovative-Investment Development

At present, there is no universally accepted terminology on issues related to enterprise management. In numerous publications, as well as in regulatory and legislative acts, different words are used to denote similar concepts. Terminological inconsistency can sometimes be found even within the same book. The situation is complicated by the fact that in recent years a large number of foreign terms have come into use. For example, the words "company," "firm," "enterprise," "organization," and "business entity" may be used as synonyms within a single article.

The reasons for this terminological diversity are clear.

First, issues of managing economic activity are studied, to varying degrees, in different fields of knowledge (economics, sociology, psychology, law, informatics, etc.). Each field relies on its own conceptual apparatus.

Second, management issues are discussed not only in scientific monographs or research reports but also in popular publications, where inaccurate use of terminology is often due to the authors' attempts to simplify texts to make them understandable to an unprepared reader.

Third, translation of foreign terms poses difficulties. For instance, the word "manager" is sometimes translated as "administrator," and at other times as "executive." Neither translation conveys the exact meaning of the term. As a result, the term "manager" is often used without translation.

Fourth, economic science has many branches (as illustrated by the classification of economic specialties approved by the MES

of Ukraine). Each branch has its own "language"—a system of terms that constantly evolves. Terms from one economic discipline are intermixed with terms from another.

Fifth, economic (managerial) vocabulary is part of the living Ukrainian language. Many economic and managerial terms are widely used in everyday life. Words such as "income," "profit," "demand," "plan," "accounting," "budget," "market," "price," "director," "share," "bill of exchange," "currency," "exchange," and many others function both as strict scientific categories and as ordinary concepts. Meanwhile, living language constantly evolves. This is its nature. With language changes, economic and managerial vocabulary also changes. Therefore, it is difficult to imagine a book or textbook in which all economic or managerial terms and concepts would be defined unambiguously. Even if such a book were written, many of the terms contained in it would become outdated before the book is published.

The terminological difficulties listed above are characteristic specifically of economic science and its extensive subfield—the science of managing innovative-investment activity (IIA). For example, in disciplines such as geology, geography, chemistry, and mathematics, terminological systems and definitions are much more stable.

When conducting scientific research on issues related to the management of IIA, these challenges must be addressed. Many authors overcome this difficulty in a simple way—by including in their books, monographs, and scientific reports a special section titled "Glossary," "Dictionary of Terms Used," "Accepted Terms and Symbols," etc. However, this approach has shortcomings. First, a dictionary can provide only a brief explanation of a term. A dictionary entry does not reveal the essence of a concept, nor does it show the relationship between the given term and others. Second, a dictionary is merely a list of terms with brief descriptions.

It does not allow the reader to understand what terminological framework is employed in the research.

A more productive approach, in our opinion, is to use a terminological paradigm when conducting research in the field of enterprise management. The concept of a "paradigm" may be

defined as a stable set of knowledge existing over a certain period. In other words, a paradigm is the currently accepted view of the world. It describes shared beliefs, patterns of perception, value orientations, and practical attitudes that guide the behavior of members of a given community. A paradigm may characterize even a small group, such as a research team. The concept of the paradigm was introduced by T. Kuhn in his work "The Structure of Scientific Revolutions" (1975). According to Kuhn, "A paradigm is what members of a scientific community share, and conversely, a scientific community consists of people who share a paradigm."

The concept of a paradigm is well suited for our case. The system of terms in the field of enterprise management is highly dynamic, variable, diverse, and ambiguous. Therefore, in conducting a specific study, it is useful to fix the commonly accepted worldview at a given moment. Within this "worldview," within the set of terms explained by the authors, one constructs hypotheses and searches for solutions. At the same time, one must recognize that this worldview is temporary.

Thus, we shall attempt to introduce a terminological paradigm—that is, to describe the system of terms associated with the concept of "enterprise management." We note that the definitions below do not claim universality; they are formulated to ensure unambiguous interpretation of the main provisions of this work. The terms "enterprise management" and "management of an enterprise's IIA" will be used as synonyms. The concept of "enterprise management" will be defined from three perspectives: (1) as a system; (2) as a type of labor activity; (3) as a method of problem solving.

1.1.1. System Approach

The key concepts of this subject area are the notions of "system" and "management." A system is commonly understood as an organized set of structural elements performing a specific function. Often, this term is interpreted in a more simplified way: a system is a collection of elements and the relationships between

them. When studied from a systemic perspective, the distinction between one system and another is determined not so much by their constituent elements as by the properties that arise from the nature of their interconnections and interactions. The elements comprising a system may themselves be viewed as independent systems—subsystems of a more complex system.

According to the methodology of systems analysis, any dynamic system—regardless of its material nature—is represented by the following elements: input, process, output, feedback, and constraints. Central to this structure is the concept of a process or function: any system is a set of processes that transform inputs into outputs. This is precisely the purpose of dynamic systems. Connections determine the sequence of processes, where the output of one process serves as the input of another.

If an enterprise is considered a system (Fig. 1.1, see p. 13), then the process is likewise central. Indeed, any enterprise—as a production system—is intended to transform resources into material goods or services; as a social system—to provide conditions for the professional self-realization of individuals; and as an innovation (business) system—to meet consumer demand and thereby generate profit, and so on.

The diagram presented in Fig. 1.1 depicts the enterprise in a highly aggregated form. Depending on the analytical objectives, it may be further disaggregated. In this case, the process is divided into subprocesses (functional blocks) and stages, each of which has its own structure of inputs and outputs. For example, the production process may be represented as a sequence of successive stages performed during the introduction of a new product. In such cases, the following stages are typically distinguished: (1) research; (2) development; (3) production preparation; (4) prototype manufacturing; (5) pilot batch manufacturing; and (6) full-scale production [2, p. 11].

If we follow the logic of the movement of objects of labor within the production of goods, we can distinguish the following processes (functions): material and technical supply, tooling provision, transport services, execution of preparatory operations,

manufacturing of parts and assemblies, product assembly, quality control, packaging and shipment of products, and product sales.

The process of reproducing the means of labor (machinery, equipment, buildings, and structures) may be divided into the following stages: acquisition, installation, adjustment, preventive maintenance and servicing, repair, modernization, reconstruction, dismantling, and disposal. A similar set of stages is inherent in other key enterprise processes as well: innovation, social, commercial, investment, financial, sales, and others. Let us now turn to the concepts of "management," "enterprise," and "enterprise management."

From a systems perspective, management is understood as the process of ensuring the purposeful behavior of a system under changing external conditions. A system in which the management function is exercised is referred to as a control system.

An enterprise is understood as a system consisting of organized employees and production assets, designed to generate material goods, works, and services that are in demand and therefore paid for by consumers, with the aim of generating profit or maintaining

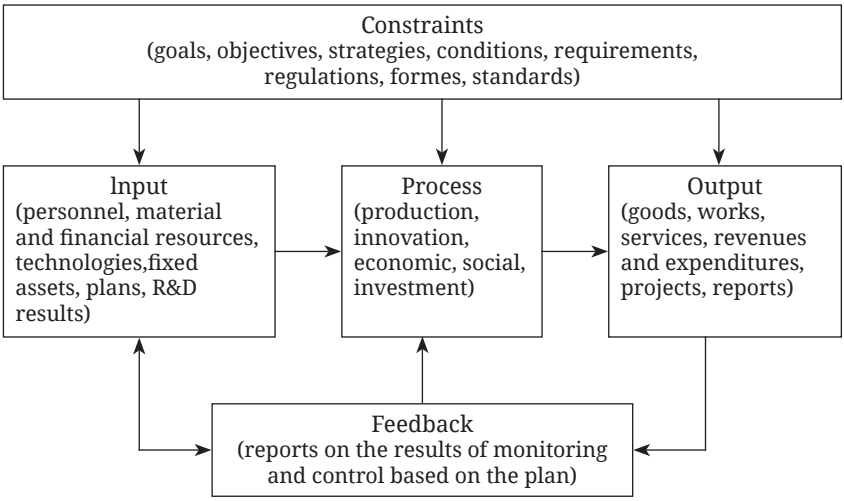

Fig. 1.1. Innovative Enterprise as a Cybernetic System

stable development. As a system, an enterprise consists of two subsystems—the controlling subsystem and the controlled subsystem. The former performs the management functions, while the latter acts as the object of management.

The enterprise management system shall be defined as the aggregate of officials, governing bodies, and the methods and means of management (informational, technical, computational) that ensure the execution of tasks assigned to the object of management within given constraints (see Fig. 1.1). For the sake of conceptual clarity, we will understand the object of management to be the employees (or collectives) who, in turn, may manage the means of production. In other words, within the concept of "enterprise management," we exclude the management of technological processes.

The commonality of management processes in systems of living nature and technical systems allows us to liken an economic organization to a closed-loop automatic control system. The enterprise is viewed as a system, with the enterprise's leadership representing the controlling unit and the employees representing the controlled unit.

The need to regulate the course of the enterprise's innovative-investment activities arises from the fact that, in addition to managerial influences, the controlled objects of innovation systems are affected by factors that cannot be predetermined or regulated (disturbances) and that act in the direction of disrupting system integrity. Deviations between the actual state of affairs and the planned state, or inconsistencies, must therefore be regulated. Reports on work progress and employees' communications to management may be regarded as the actions of a measuring device and interpreted as the implementation of the accounting function, while the issuance of planned assignments and operational instructions may be viewed as the action of an executive device. This analogy is illustrated in Fig. 1.2 (see p. 15).

The process of enterprise management, organized according to the principle of regulation, can be divided into interrelated phases, which are often referred to as management functions. The following key management functions are traditionally distinguished: planning,

accounting, control, analysis, and regulation (a detailed description of these management functions is presented in Table 1.1). Sometimes, immediately after the "planning" phase, an additional phase "organization" is included as an independent management function. The function of "organization" consists in creating conditions that most effectively facilitate the execution of the plan. This activity concerns both the controlled subsystem and the controlling subsystem that is, the entire management system. Moreover, the interaction must be ensured not only within the enterprise but also with the external environment. The purpose of this management function is to achieve coordinated operation of all elements

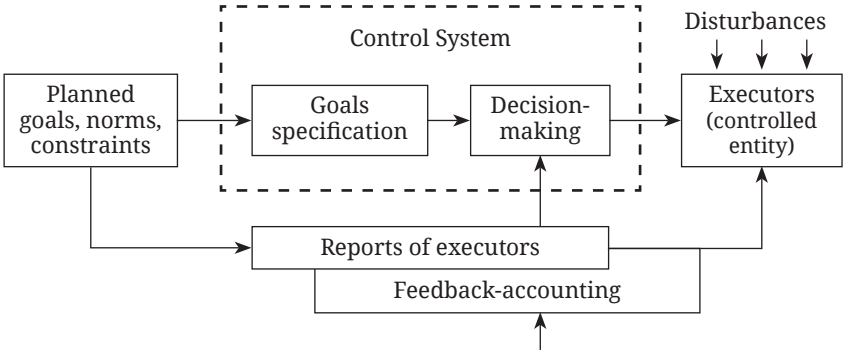

Fig. 1.2. The Enterprise as an Automatic Control System

Table 1.1

Classification of Management Functions by Phase

Management Function	Content of the Function
Planning (plan)	Determination of forecast or directive values of expected results
Accounting (actual)	Recording of the actual values of the results obtained
Control	Comparison of planned values with actual values and identification of deviations
Analysis	Identification of the reasons for deviations of actual results from planned values
Regulation	Taking measures to eliminate deviations of actual results from planned values

of the economic system: rational organization of labor, resource provision for the innovation process, efficient technology, and optimal structure.

The management functions are performed at specific time intervals, meaning they constitute discrete or periodic actions (see Table 1.2). Depending on the period (management interval), planning, for example, is referred to as long-term (more than one year), current (year, quarter), or operational (month, week, day). From this, it becomes clear why the function of "organization" falls outside the general list of management functions. This is because it is not carried out with the same regularity as, for instance, planning and accounting. The organizational structure, as a product of this function, is created for an extended period, whereas a plan or a report may be prepared monthly or even daily. This is precisely why we have excluded the function of "organization" from the general list of management functions.

Table 1.2

Classification of Management Functions by Time

Name of the function	Time Period
1. Strategic management	More than one year (often 2—5–10)
2. Current management	Year, quarter, month
3. Operational management	Month, week, day
4. Dispatching	Day, shift or more frequently

Reports (within the accounting function) may be annual, quarterly, monthly, or daily. The functions of control and analysis are typically performed at the same intervals as the accounting function. Only the function of regulation is not discrete; rather, regulation can be described as a continuous managerial process.

Let us examine the above-mentioned management functions in more detail.

In a broad sense, planning is the activity of formulating and adopting managerial decisions. The entire management cycle begins with planning. A plan serves as the basis for action. It determines the content, sequence, and timing of actions to be carried out.

Therefore, planning is the most important management function. All other managerial activities are aimed either at ensuring that the correct decision is made, or at ensuring that it is executed accurately and on time.

Accounting is the initial, foundational management function. Within the management cycle, it always precedes planning. In essence, accounting serves as feedback in the cybernetic understanding of this term (see Fig. 1.2). Through accounting, new problems are identified that require new managerial decisions and new organizational efforts; that is, accounting activates the planning function. It follows that accounting is inseparable from planning. An important conclusion arises from this: only what has been planned should be accounted for. Only under this condition can management truly be understood as a process of ensuring the purposeful behavior of a system under changing external conditions.

If accounting is regarded as an autonomous type of activity, then it cannot ensure an assessment of the system's purposeful behavior under changing external conditions. Such accounting does not evaluate the degree to which the goal has been achieved. It merely indicates where the enterprise currently stands, without comparing "where it is" with "where it should be according to the plan" or "where it should be according to the enterprise's objectives."

It should be noted that management based on feedback is an objective, fundamental property of most control systems—systems of various physical natures. The fact that this is indeed an objective property, an objective regularity, has been confirmed by numerous studies within the specialized scientific discipline of cybernetics. Regulation of pupil dilation depending on the level of illumination, regulation of carbon dioxide content in the blood of humans and animals, operation of a household refrigerator, tracking of an aircraft by a radar antenna, rocket flight control, aircraft control via autopilot—these are all examples of feedback control. Innovative economic systems cannot be an exception to this general rule.

Effective management of an enterprise's innovative-investment activity (IIA) is possible only as feedback management; that is,

management in which the accounting function performs the role of feedback in terms of the enterprise's objectives. If accounting (feedback) is delayed in time, management cannot be fully effective. If accounting (feedback) measures not the degree of fulfillment of planned targets but instead records actual values of certain characteristics—perhaps important, but not planned—then enterprise management likewise cannot be fully effective.

Unfortunately, the phenomena mentioned above (delays in accounting and inconsistencies between planning and accounting formats) are very widespread in practice when it comes to managing a company's innovative-investment activity (IIA). Moreover, one may say that these phenomena are virtually ubiquitous.

Control, as a management function, consists in comparing the plan with the actual results in order to identify deviations. Such an interpretation of the "control" function is highly productive from the standpoint of constructing real managerial technologies. The cybernetic principle of feedback implies management by deviations. In practical management, deviation-based control makes it possible to substantially rationalize the work of managers. According to this principle, effective enterprise management does not require placing all reporting information on the manager's desk. This information can be filtered, separating the essential from the secondary. For example, a standard may be introduced according to which deviations of up to 10% from the plan are not considered critical and do not require the attention of top management. This measure can significantly relieve the manager from routine tasks and allow them to concentrate on issues truly important for enterprise management.

The term "plan-fact control" came into use relatively recently, although the method of analyzing IIA results by comparing planned indicators with actual values has always been applied in enterprise management practice. It is sufficient to recall the long-criticized method of planning "from the achieved level," which was based precisely on actual performance data from the previous period.

Currently, the term "plan-fact analysis" is frequently encountered in publications [25, pp. 21–22]. It refers to the analysis

of any enterprise performance indicator conducted by comparing its planned and actual value, followed by an evaluation of the reasons for deviations.

There are two possible management schemes. Under the first scheme, plans and reports on their execution are prepared at the same intervals. Some authors believe that this is how enterprise management should be organized [25, pp. 30–31]. In this case, plan-fact control is a direct comparison of actual and planned values with the identification and evaluation of deviations. Under the second scheme, actual data are recorded at shorter intervals than those of plan preparation. For example, plans may be prepared quarterly, while reports are generated monthly. In this case, plan-fact control is carried out on a cumulative basis. The second scheme corresponds more closely to the prevailing ideology of accounting, where plans and reports often differ not only in timing but also in format.

The "analysis" function in the overall enterprise management framework has two objectives—planning and control-motivational [25, p. 19]. The planning objective is achieved by using the conclusions of plan-fact analysis for the previous period when preparing plans for the upcoming (planned) period. In particular, the enterprise's plan for the forthcoming period should be developed on the basis of analyzing the reasons for deviations of actual indicator values from their planned values, as well as on identifying and utilizing internal reserves for improving efficiency.

The control-motivational objective of plan-fact analysis is achieved by using information on deviations of actual results from planned values when evaluating the performance of a particular structural subdivision of the enterprise, as well as when assessing the managers of these subdivisions and departments. Planned targets for the sales volumes of specific products, production volumes by assortment, volumes of purchases of raw materials and supplies, cost levels, collection periods for accounts receivable, or repayment periods for accounts payable may be regarded as a basis for evaluating the performance of subdivisions, their managers, and individual specialists. Based on the results of this evaluation,

measures of both material and moral incentives for personnel may be applied.

The management function of regulation consists in maintaining, supporting, and improving a favorable operating regime of the enterprise [25, p. 33]. The need for regulation arises from the fact that, for various reasons, the actual performance of the enterprise diverges from the plan. Regulation should, to the greatest extent possible, neutralize emerging deviations by means of: changes in the economic system itself or in the enterprise's work plans; mitigating the impact of external environmental factors that cause deviations; partially isolating the economic system from external disturbances; or implementing other corrective measures affecting enterprise activity.

In practice, the management functions listed in Table 1.1 (planning, accounting, control, analysis, regulation) are further

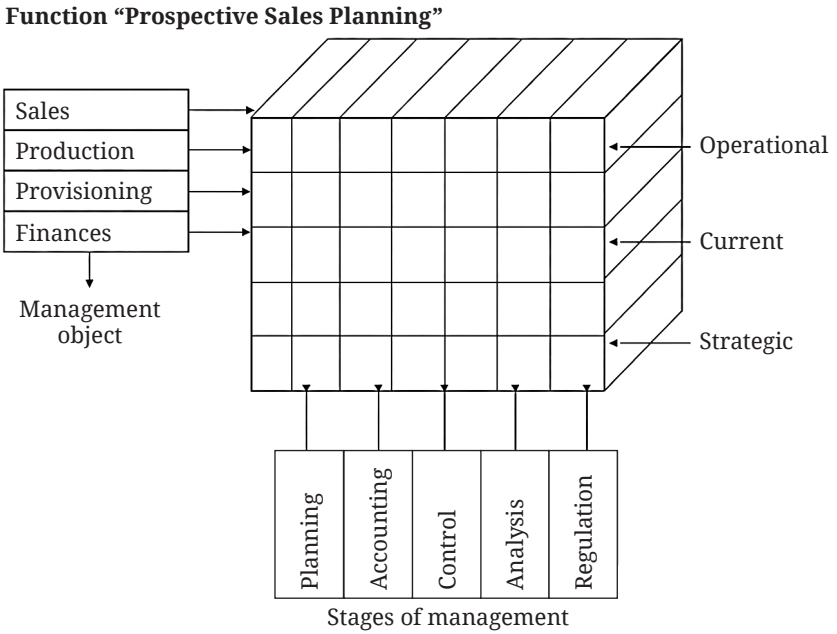

Fig. 1.3. Classification of enterprise management functions

detailed according to the specific subject of management (i.e., which type of activity is being planned or accounted for in the enterprise management process). In this case, the possible management functions of the enterprise can be represented as a three-dimensional matrix (Fig. 1.3, see p. 20).

Each element of this matrix represents a specific management function (for example, "Long-term Sales Planning"). In principle, multidimensional classifications of management functions are also possible, if required by the objectives of the research.

1.1.2. Management in Innovative-Investment Activity (IIA)

In the economic systems under consideration, both the subject and the object of management are people. The subject of management—the bearer of managerial labor—is the manager (executive), who possesses authority and a certain level of competence. Managerial influences generated by managers are directed toward people. At the same time, managerial work (management) is a complex type of labor activity. It involves numerous specialists and officials. Their work is associated with: (1) the need to process large volumes of information; (2) the need to reconcile numerous individual and group interests; (3) a high degree of personal responsibility for the results of their work.

The work activity of a manager, being multifaceted and multi-level, is ultimately reduced to the continuous resolution of discrete (planning) or continuous (regulation) managerial problems. The tools of managerial labor include various methods and instruments of decision-making (ranging from calculators and spreadsheet data analysis to information systems that require modern computers and mathematical models).

The subject and the product of managerial labor is information. The final product of the manager's work is decisions, which determine the magnitude of managerial influences on the object of management. This is precisely why improving enterprise

management primarily means improving the quality of managerial decision-making. Formally speaking, the decision-making process represents the selection of the most preferable course of action from among multiple alternatives (Table 1.3). The making of managerial decisions is related to the concept of a "management function" through the following relationship: the regular resolution of problems within a particular sphere of managerial activity indicates the implementation of the corresponding management function. For example, regular preparation of sales plans represents the implementation of the sales-planning function; regular preparation of reports represents the implementation of the accounting function, and so forth.

Table 1.3

Stages of Decision-Making

Stage Name	Content of the Stage
1. Problem	Identification of problems in terms of the enterprise's goals.
2. Situation	Recording conditions, factors, constraints, and criteria.
3. Alternatives	Generating possible solutions to the problem or alternatives for achieving the goal (within given constraints).
4. Consequences	Forecasting and evaluating the consequences of implementing each alternative (assessment of "pluses" and "minuses").
5. Choice	Selecting an alternative; conducting expert review, model-based, or other types of experiments.
6. Implementation	6.1. Preparation of a directive document (order, program, project, plan, assignment). 6.2. Organization of execution. 6.3. Control. 6.4. Analysis of results. 6.5. Adjustment of plans (projects, programs, assignments).

The managerial activity of an executive (manager) also includes other functions: organizational, educational, leadership, representational, social, and others. As an organizer of work, the manager must be able to coordinate the activities of numerous

performers. To do so, they must possess systemic thinking, be able to formulate and assign tasks to subordinates, and have skills in conducting instructional and problem-oriented meetings, among others. A manager always supervises a certain number of employees and specialists. For them, the manager serves to some extent as an educator. It is the educator who instills labor traditions, conveys the moral values and behavioral norms accepted within the enterprise's collective. The use of various methods of personnel motivation, the formation of a team of like-minded individuals, and the fostering of team cohesion—these and other tasks are solved using methods, techniques, and tools of personnel development.

Furthermore, a manager must be a leader, possess ambition, and command authority among employees. Without these qualities, it is difficult for a manager to expect successful enterprise management under modern conditions. Finally, many business issues must be addressed by the manager in the external environment. This requires networks, communications, and partners. Representational tasks occupy a significant portion of a modern manager's time budget. To successfully carry out such tasks, the manager must possess appropriate personal qualities (communicative ability, authority, charisma) and continuously develop them.

1.1.3. Methods of Management in IID

Existing management methods may be conventionally classified under the following names: "hierarchy," "market," and "culture." Briefly, they can be interpreted as follows:

a) Hierarchy ("the stick")—methods of directive management (the principle of sole authority, control of executive discipline, instructions, etc.);
b) Market ("the carrot")—economic management methods (systems of material incentives, including their most advanced form—collective systems of work organization and remuneration);

c) Culture ("the word")—a set of traditions and informal norms (including elements of corporate patriotism, corporate style, workplace competitions, and other methods and schemes of non-monetary motivation).

The diversity of management methods is due to the fact that employees, by virtue of their intrinsic characteristics, possess different motivations for work. According to psychological theories, personality types may be classified along three dimensions:

1) in relation to work (ranging from workaholic to idler);
2) in relation to oneself (from egoist to altruist);
3) in relation to other people (from individualist to active collectivist).

Corresponding types of managers may be labeled:

1) autocrat;
2) liberal;
3) democrat.

Based on these three criteria, the aforementioned management methods can likewise be categorized as:

1) hierarchy;
2) market;
3) culture (see Table 1.4).

Table 1.4 presents a kind of "motivational map" of the workforce—a basis for classifying types of economic behavior of employees and, consequently, a foundation for developing incentive methods. The logic of constructing such a system may be as follows: first, by means of testing, the structure of the workforce is determined—the proportion of "workaholics," "economically active," and "economically passive" employees.

Then, for each employee group, its own motivation system is developed and applied.

If directive management methods ("hierarchy") have traditionally been well developed at our enterprises, and if material-incentive methods ("market") are applied broadly enough, then ideological methods of influencing employees ("culture") are used spontaneously, inconsistently, or are not addressed at all. As research results show, in such cases a significant part

Table 1.4

Classification of Employees and Managers

Classification Object	Personality Type, If the Main Value for the Individual Is:		
	Work	**Self ("I")**	**Public Opinion**
1. Employee			
1.1. Employee Type	Workaholic	Economically Active Type	Economically Passive Type
1.2. Employee Motto	"Happiness is in work"	"Happiness is in money"	"Happiness is in freedom"
2. Manager			
2.1. Manager Type	Autocrat	Liberal	Democrat
2.2. Method	Hierarchy—"the stick" (directive management)	Market—"the carrot" (indirect, cost-accounting management)	Culture—"the word" (ideological management)

of the workforce (up to 60%) is effectively left "outside the system." This fact is a strong argument in favor of engaging in the deliberate development of corporate culture. Here, the term corporate culture refers to the set of informal moral norms that guide the behavior of members of the workforce. Such norms may include corporate patriotism, team cohesion, mutual assistance, honesty, integrity, responsibility and discipline, a sense of pride in one's work, and similar values. In other words, corporate culture is a system of shared beliefs, views, ideas, behavioral models, and fundamental values held collectively by all members of the enterprise.

In conclusion, it should be noted that we have not examined all aspects of the terminological paradigm of enterprise management. Outside the scope of this discussion remain issues of ownership (every enterprise includes a triad: owner—managers—workforce); management principles (the principle of sole authority, the principle of collective leadership, etc.); legal aspects (organizational and legal forms of the enterprise, labor relations, rules of business conduct, etc.); matters of management information support; the basics of administrative procedures; the techniques of a manager's personal work; and ergonomic and other factors. It seems reasonable to assume that the terminology used in these

areas of managerial activity constitutes the lexical foundation of the languages of other scientific disciplines (law, informatics, ergonomics, sociology, psychology). In the main body of the present work, such terms are used in their commonly accepted meanings.

1.2. The essence of managerial technologies in innovative-investment development

Technology as a scientific discipline emerged alongside the rise of industry at the end of the eighteenth century. At the core of technology lies the principle of decomposing any production process into its constituent elements. Such decomposition allows for a significant increase in the efficiency of performing individual production operations—for numerous reasons (which will be discussed below). It may be said that the technologization of production serves as the primary driver of scientific and technological progress in all sectors of the economy, as well as in society as a whole. This fact constitutes the starting point of the present study.

Historically, the first to emerge was the technology of mechanical work, followed by the technology of chemical production; with further industrial and agricultural development, other types of technologies appeared. Today, technology is subdivided into several independent scientific disciplines depending on the type of production process. Thus, one distinguishes technologies of mechanical engineering, construction technology, weaving technology, and others.

Technology is defined as the science of methods for processing (or transforming) raw materials and substances in order to obtain finished products. The term also refers to the processes of such processing, during which the state of the processed object is altered. (The word technology derives from the Greek technos—art, science, craft—and logos—word, doctrine; according to dictionaries,

it denotes the science of ways of influencing raw materials, substances, or semi-finished products using appropriate means of production. According to the definition contained in the national standard (DSTU), a technological process is a part of the production process that includes actions aimed at changing and subsequently determining the state of the object of production.)

Thus, the concept of "technology" originated and became widespread in the production sphere. As the division of labor deepened and machine-based production emerged, the requirement to decompose the production process into stages, to specify the composition of these stages, and to formalize and regulate procedures and operations became increasingly important. Without meeting this fundamental requirement, standardization and unification of materials, components, assemblies, machines, and mechanisms could not have developed, and mass production would not have been possible. This requirement is realized through the design and application of technologies in production.

It may be said that the Industrial Revolution, driven by the transition to machine-based production, led to the rapid development of methods and tools for creating, implementing, employing, and analyzing production technologies. The next step, evidently, belongs to AI.

A second important reason for the emergence of technology as a scientific and engineering discipline was the need to involve a large number of workers in production. Before the advent of mass machine-based manufacturing, the talent and craftsmanship of the worker played a decisive role. The introduction of technologies made it possible to decompose the production process to such an extent that individual operations and procedures could be performed by less-skilled workers. Technology makes it possible to obtain high-quality products even when the workforce consists of relatively low-skilled employees. In some industries, the role of technology is so significant that it determines the very design of the product. A similar tendency is observed in electronics, radio engineering, and other fields.

Overall, production technologies perform several important functions:

— first, they serve as intermediaries between scientific advances and their practical application (in other words, new scientific knowledge is transmitted into the sphere of production through technologies);
— second, the replication and wide dissemination of best practices is carried out through the transfer of technologies;
— third, technologies help integrate into a unified whole the technological operations, material, informational and energy flows, and the knowledge and skills of various specialists;
— fourth, technologies applied in core production stimulate the development of related industries and areas of activity;
— fifth, decomposition of the production process within the framework of technology, and the specialization of individual types of work and operations, lead to the emergence and development of new professions, new types of equipment, and the creation of new enterprises (technological specialization);
— sixth, the problems that arise in the course of designing, implementing, and using production technologies often serve as the basis for scientific research or development efforts (in this sense, technology acts as a "customer" in relation to science).

In other words, the technologization of production contributes to the development of all areas of economic activity and stimulates scientific and technological progress. This fundamental, objective property of technologies has given rise to a new phenomenon: the technologization of many spheres of human activity. In the second half of the twentieth century, political technologies, quality technologies, social technologies, information technologies, management technologies, educational technologies, and others emerged. In the late 1970s, an expanded definition of the term technology came into common use—it is a method by which people implement a specific complex process by breaking it down into

a system of sequential, interconnected procedures and operations that are performed in a more or less standardized manner and are aimed at achieving high efficiency.

It would be surprising if technologies had not penetrated such an important sphere of human activity as enterprise management. In the extensive literature and online resources, these technologies are referred to in various ways (management technologies, business technologies, organizational development technologies, planning technologies, corporate technologies, etc.). It should be noted that in all these sources, the term "technology" is understood primarily in an everyday sense. None of the authors considers the essence of managerial technology from either a theoretical or a methodological perspective.

In our view, the essence of managerial technologies in IIA lies in the following fundamental fact: the technologization of management presupposes, first and foremost, the decomposition of the management process into individual procedures and operations, followed by the formalization and regulation of the execution of these procedures and operations. Such decomposition and regulation of the management process in IID makes it possible to improve enterprise management efficiency due to the action of the factors listed in Table 1.5. When compiling this table, we relied on the previously discussed role of production technologies (serving as the basis for the division of labor, acting as intermediaries between science and production, etc.), taking into account the specifics of managerial IIA.

It is important to emphasize that the quality of managerial technologies in Table 1.5 (see p. 30–31) is of great significance. One may say that IIA management technologies represent methods for the practical application of modern scientific approaches and tools for planning, organization, accounting, and analysis. Even when managers or researchers do not explicitly use the terms and categories associated with management technologies, in introducing innovations into management practice they nonetheless incorporate new methods or techniques into a certain technology of managerial labor. The fact is that any managerial tools and methods cannot

Table 1.5

Efficiency factor of managerial technologies in IIA

Efficiency Factor of Managerial Technologies	Comments
1. Rationalization and Specialization of Managerial Labor	Rationalization makes it possible to optimize the sequence of procedures and operations when the preceding operation creates favorable conditions for the subsequent ones. Rationalization also means a reasonable alternation of work and rest, as well as an appropriate distribution of work among participants in the managerial process, taking into account their qualifications and competencies. The division of labor based on specialization is, as is well known, the main source of growth in labor productivity.
2. Step-by-Step Control and Deviation Detection	Dividing the technological process into stages, procedures, and operations makes it possible to control managerial activity at intermediate time points. This allows timely detection of deviations of the actual state of affairs from the plan and the adoption of corrective measures.
3. Separation of Routine and Creative Procedures	The deliberate design of technological processes makes it possible to separate creative work from routine procedures, which leads to an improvement in the quality of managerial decisions (the cost of which is currently very high). It is commonly believed that a decision is the main product of a manager's activity—the manager is a "problem-solver." Moreover, a well-thought-out managerial technology enables the manager to perform creative tasks at the most favorable time from the standpoint of productive thinking, while routine procedures and operations may be mechanized, automated, or outsourced, resulting in additional savings.
4. Replication of Best Practices	The transfer of exemplary successful management practices (or effective structural solutions) from one enterprise to another is effective only when such transfer is carried out not in the form of borrowing abstract ideas, but in the format of ready-made managerial technologies. Today, the process of borrowing best practices has taken shape as a methodology known as benchmarking.

End Table 1.5

Efficiency Factor of Managerial Technologies	Comments
5. Adaptation of Scientific Methods and Management Tools	The transfer of scientific methods and management tools into economic practice is effective only when scientific achievements (economic, sociological, psychological, computer-based, informational, ergonomic, didactic) are translated into the form of managerial technologies. The development of new managerial technologies based on modern scientific and technical advances is typically carried out by structures within the R&D sphere, design-technology organizations, and consulting firms.

exist outside a defined sequence of managerial steps, actions, and procedures—in other words, outside of a technology. However, if such a sequence is not perceived as a technology (as a coherent whole), then the work process is formed intuitively, based on common sense, without being developed from unified scientific or methodological positions, and without being formalized in the form of documented guidelines. In such a situation, a very important reserve for labor rationalization is lost—namely, the possibility of constructing effective methods of planning, accounting, control, analysis, and regulation. In our opinion, neglect of the technological aspect of IIA management has been the reason behind numerous cases of unsuccessful implementation of information (computer) systems, as well as budgeting, logistics, and other modern methods of enterprise organization and management.

When managerial technologies for IIA are consciously designed, unnecessary and secondary procedures can be eliminated, duplication of work can be avoided, document flow can be reduced, and clear criteria for the quality of results can be defined at each stage of the management process. Technology enhances the effect of human actions not through individual elements but through the combination of these elements into a single chain. At the same time, it introduces reasonable order into the management process by establishing norms and rules for performing individual

operations. This can be regarded as the basis for intensifying managerial activity on normative principles. Under such conditions, categories such as technological discipline and regulation become applicable to the labor activities of individuals involved in enterprise management. This aspect of management technologization makes it possible to use known methods of material and non-material motivation more effectively.

The following essential characteristics of managerial technologies can be identified:

First, any technology is characterized by breaking down a unified labor process into stages, phases, steps, or procedures. Such decomposition enables the core advantages of management technologization discussed earlier.

Second, a technology is intended to ensure the coordination and synchronization of individual stages, phases, or procedures, which allows the management process to produce systemic or integrative effects.

Third, a technology prescribes unambiguous execution of procedures and operations. This is a critically important condition for the technologization of management, since the greater the deviations in performing individual procedures, the higher the risk of inefficient management as a whole.

Fourth, the structure of a managerial technology—including its methods, techniques, tools, documents, work organization, qualification requirements for executors, timing, and duration of procedures—must be goal-oriented, focused on ensuring the efficiency of the technological process, that is, on achieving high-quality management performance.

In addition, it is necessary to emphasize the regulatory nature of managerial technologies. The development and implementation of specific management technologies imply the introduction of a set of prescriptions mandatory for execution by officials. This entails changes in the existing system of formal and informal relationships among people, restructuring the distribution of rights and responsibilities, and influencing subtle aspects such as real power relations within the enterprise. This feature of managerial

technologies is highly significant, yet it is often not fully recognized by management practitioners. It leads to one of the most important properties of specific technologies—their uniqueness, manifested in the fact that, even when managerial tasks are theoretically identical, each enterprise solves them in its own way, because they are handled by different individuals who are always "embedded" in the real management process in different ways. Moreover, it can be argued that the subjective factor strongly affects the implementation of any given managerial technology. Forecasting, planning, designing organizational structures, selecting personnel, and other managerial processes are primarily intellectual activities, and thus—inevitably—forms of creativity and art. Therefore, managerial technologies and decision-making processes always bear the imprint of individuality. Ignoring this uniqueness, in our view, is a major obstacle preventing domestic enterprises from the widespread adoption of contemporary budgeting systems, managerial accounting, progressive marketing practices, advanced methods of financial or stock-market operations, effective personnel motivation schemes, and so on.

Unlike production technologies, managerial technologies often require calendar anchoring of managerial procedures. For example, quarterly, monthly, or ten-day planning procedures must be performed within the periods preceding the corresponding intervals.

Managerial technology in IIA can be regarded as an independent subject of research. This is because each specific technology is based on certain relatively abstract structural foundations that implement management functions. This allows researchers to abstract from the content of the process, from individual actions, and therefore represent them in a sufficiently generalized form. Many stages of planning, accounting, or analysis (such as problem diagnosis, information gathering, generation of alternatives, choice of a solution) are indispensable for achieving high-quality managerial results in IIA. These standardized stages and procedures can thus be examined at an abstract level, and the rules derived from such analysis can be used to design real managerial technologies for IIA at specific enterprises. Many issues of information support,

computer use, algorithmization of calculations, and organization of group work may also be examined from the standpoint of management technologization in a sufficiently general form.

Given the above, it becomes possible to construct a general structure of an IIA managerial technology. Before presenting this structure, let us examine how the four-level hierarchy of managerial technology—process → phase (stage) → procedure → operation—may be used. For example, the act of managerial decision-making can be viewed as a stage of the planning process. A managerial procedure is defined as a set of operations through which a particular stage of the process is implemented. An operation is understood as the practical act of solving a specific task within the given procedure. An operation is a homogeneous, logically indivisible part of the management process, aimed at achieving a specific goal; it is performed by one or several executors.

These definitions may be insufficiently operational for the purposes of analyzing or designing concrete IIA managerial technologies. Understandably so: the terms "procedure" and "operation" are introduced to structure highly abstract technologies—global technologies of social management (including goal formulation, decision-making, organization of social action, analysis of results), general planning technologies, strategic decision-making technologies, control technologies, and others. For illustration, consider the description of a technology of control activity in IID for the following processes:

1. Selection of the object for control intervention.

Operations: orientation of control activity in accordance with general strategic planning; identification of the problem situation; planning of control actions.

2. Comparative analysis.

Operations: determination of criteria; information gathering and processing; evaluation of the condition of the controlled object.

3. Influence on the controlled object.

Operations: issuing instructions; recommendations to higher-level authorities; measures of influence and actions aimed at personnel development.

This example demonstrates that the level of abstraction in technological descriptions is quite high. For the purposes of practical analysis and the design of managerial technologies, we propose a different structure.

We proceed from the fact that the noun management derives from the verb to manage. Like other nouns formed in this way ("manufacturing," "execution," "allocation"), it denotes a process or activity. Any activity is a sequence of performed actions and operations. According to the psychological theory of activity, any activity has three aspects: a motivational aspect (each distinct activity is separated from the flow of activities by its motive), a goal-oriented aspect (activity consists of actions, each of which has its own goal), and an executive aspect (actions consist of operations performed under certain conditions). This three-level structure applies equally to macro- and micro-analysis of activity. This fact allows for the decomposition of activity: what is considered an "action" at the macro level becomes an independent "activity" at the micro level, which can again be broken down into "actions" and "operations"—and so on.

Managerial technology in IIA is a form or variety of managerial activity. Therefore, the following three-level scheme of IIA managerial technology can be introduced (Fig. 1.4, see p. 36): managerial technoprocess → managerial procedure → managerial operation (For brevity, we will sometimes refer to these as: technoprocess → procedure → operation.)

Under the term managerial technoprocess we shall understand a specific type of managerial activity in IIA. For a large class of managerial activities, the term "managerial technoprocess" and the term "management function" are synonymous. A specific managerial technoprocess (for example, the planning function) is implemented through the execution of all procedures included within it. Technological procedures may be performed sequentially, in parallel, cyclically, or in another order (for instance, as specific events occur). When executed sequentially, a "procedure" becomes a stage or phase in the implementation of a specific technoprocess.

For example, the technoprocess (function) "Quarterly Planning at the Enterprise—IIA" may include such stages (procedures) as:

1) development of the draft plan;
2) coordination of the draft plan with executors or suppliers;
3) approval of the plan.

It should be noted that a managerial technoprocess is not always a management function. For example, the term "technoprocess" may be used to denote activities related to improving the organizational structure, developing corporate culture within the enterprise, or even developing and implementing new managerial technologies.

Under the term procedure we shall understand a component of a technoprocess within which a certain set of managerial tasks is performed. This set of tasks has a defined informational

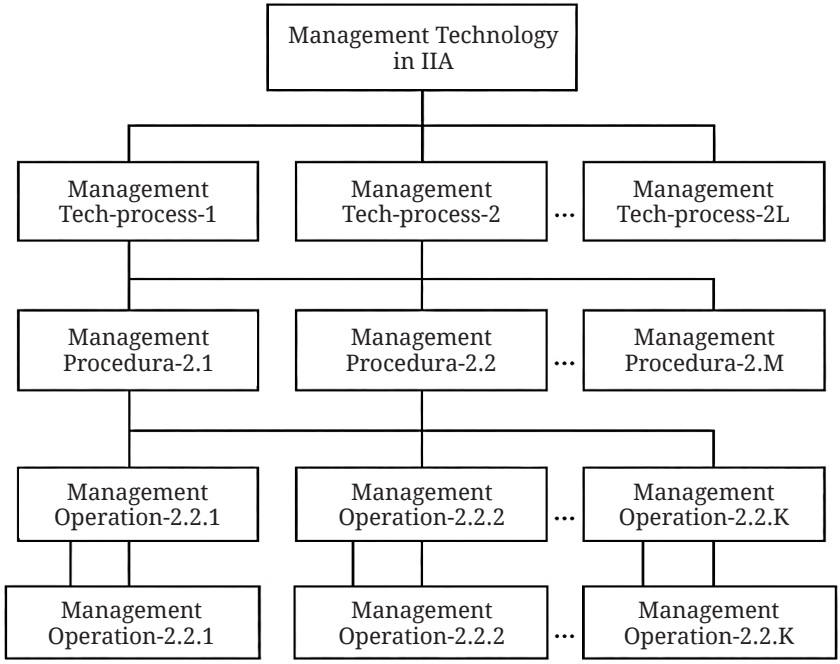

Fig. 1.4. Structure of Managerial Technology in IIA at an Enterprise

input, formal and informal rules of execution, a defined group of executors, and a specified form and deadline for delivery of results. The character and content of a managerial procedure may vary significantly depending on the composition and combination of elements used within the procedure. For example, a managerial procedure may consist of instructional meetings and complex simulation calculations conducted on a computer to justify planning decisions; comprehensive iterative expert evaluations and the execution of accounting entries; review of production programs at a meeting of the Board of Directors of a joint-stock company; or interviews with young specialists applying for employment. Clearly, with such a broad interpretation of managerial procedures, more precise definitions can be elaborated only for certain homogeneous groups of procedures—which requires their preliminary classification according to specific criteria.

Under the term managerial operation we shall understand an indivisible component of a managerial procedure, performed under defined conditions, typically by a single executor.

The three-level structure of managerial technology can be applied both at the macro- and micro-levels. For example, the technoprocess "control of executive discipline" (at the macro-level) may include such procedures as "planning tasks for the executor," "accounting for the performance of assigned tasks," and "analysis of task performance progress." Under a different approach, these very procedures may themselves be considered technoprocesses (technologies). For example, "planning tasks for the executor" may itself be a specific technoprocess. Its procedures would then include: "definition of objectives," "information gathering," "development of plan alternatives," etc.

When designing managerial procedures in documentary form, we propose proceeding from the assumption that the management system and management technology, while differing in functional sense, are structurally identical. Thus, any managerial technoprocess and any managerial procedure in the general (expanded) case include the following five elements:

a) personnel;
b) technical equipment (computers, communication tools, etc.);
c) information (input, regulatory/reference, output);
d) instructions for personnel;
e) computer programs (see Fig. 1.5).

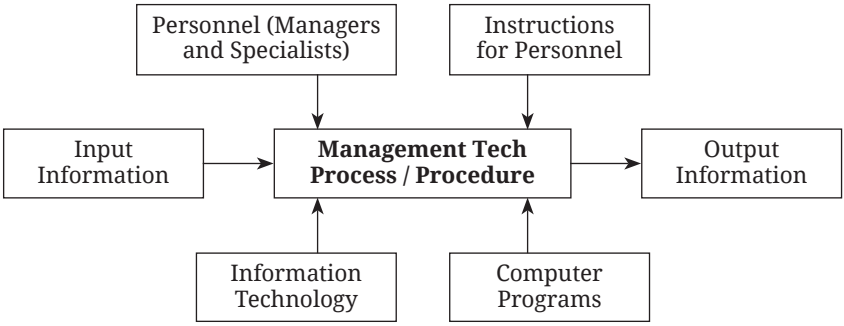

Fig. 1.5. Composition of Elements of the Managerial Technological Process in IIA

Accordingly, during the design of each procedure, it is necessary to develop the composition, sequence, and methodology or algorithm for performing procedures (tasks). It is necessary to specify the source, composition, timing, and format of incoming information. Instructions must be created for each executor, including the technical tools applied and any relevant software. Deadlines, format, composition, and recipients of outgoing information must also be defined.

The degree of detail in the documentary description of technoprocesses depends on the nature of the tasks solved in IIA. For standard, regularly recurring processes—particularly in those areas of management where theoretical understanding is more advanced—technoprocesses may be developed down to the level of detailed step-by-step programs with a view toward their eventual automation. For such technoprocesses, it is worthwhile to invest more effort in designing and optimizing the execution schemes of managerial procedures, since their frequent repetition offsets the significant initial costs. Practice shows that frequently repeated

technoprocesses—such as airline ticket reservation, inventory accounting in warehouses, weighing or measuring finished products, employee registration at the entry gate, etc.—by virtue of their mass nature justify the creation and use of special technical means to automate personnel work.

To address relatively new, forward-looking, or original managerial problems in IID, it is often advisable to construct technoprocesses in the form of a set of abstract procedures—i.e., to establish a methodological sequence of steps for solving a problem without predetermining the essence and content of specific managerial operations. In this case, it is productive to use certain basic (more abstract) technologies, which can later be specified as experience accumulates, and as a "package" of standardized techniques or solution methods is developed. It should be noted, however, that in such cases, R&D management technologies tend to transform increasingly into methodologies of research, planning, accounting, and analysis, since they lose their technological characteristics (such as the ability to standardize procedure duration, to assign specific managerial tasks to designated performers, etc.).

In the general case, theory, methodology, and technology of IIA management exist in the following relationship. Management theory defines general laws and regularities, new scientific ideas, and the major directions of scientific and technological progress in the sphere of IIA. Methodology translates theoretical principles into recommendations for carrying out specific managerial functions at a sufficiently general level, typically without reference to the characteristics of an individual enterprise. Specific methods determine the composition and sequence of planning, accounting, and analysis stages for various types of production and managerial activities. Technology provides an even more concrete description of managerial work in the form of prescriptions requiring unambiguous execution of particular technoprocesses, procedures, and operations.

There is also reverse influence from technology to methodology and theory. The repeated manifestation of certain properties or aspects of IIA provides the factual basis for systematizing

observations and establishing patterns or laws that enrich enterprise management theory. Successful organizational, technical, or methodological managerial practices, once generalized in methodology, spread to various enterprises. Moreover, technology serves as the practical domain on which technical innovations are tested. For example, the introduction of corporate computer networks has given rise to paperless management technology. This illustrates how technology may dominate the form, in this case the format for presenting decisions. The implications and consequences of paperless management technology still require scientific understanding and systematization in the form of new properties and regularities of managerial activity. The use of the Internet or mobile communication tools by managers (even giving rise to new terms such as "telework" and "teleconference") significantly changes the character of managerial work.

IIA technologies are created by people and for people. Therefore, the relationship between creative and routine components in technology is of great importance. Our view is that technology forms a framework intended to regulate the actions of a manager (executor) in two dimensions: normative-legal and socio-economic—while not restricting the creative component of planning, accounting, analytical, or other managerial activities. Under this approach, the technologization of IIA cannot hinder creative problem-solving, just as well-defined musical forms (such as the sonata, symphony, march, or waltz) do not hinder the creative activity of a composer.

In general, the introduction of formal stages for performing any work, the establishment of requirements for intermediate results, and the testing of the final managerial "product" impose discipline on executors and increase labor productivity. This pattern has been observed in another, analogous domain—namely, computer software development. Before the emergence of clear technologies organizing the work of programmers, it was widely claimed that programming was a creative process and could not be regulated. Practice proved that regulation does not hinder creativity; rather, the synchronization of actions (and the standardization of results)

among many participants in the development of complex software systems increased the productivity of these specialists by a factor of 3 to 6 or more. Similar examples exist in other creative fields: film production, literary work, and musical performance. A striking example is the technologization of activities in the military. The strict technological regulations in the form of statutes, instructions, and manuals do not inhibit the creativity of talented commanders, while simultaneously saving considerable time on management by reducing uncertainty in the behavior of all participants in the process and by establishing reliable chains of actions in various situations.

1.3. TYPES OF INNOVATIVE MANAGERIAL TECHNOLOGIES

The classification of managerial technologies in IIA essentially represents a classification of managerial activity (or management itself). Therefore, developing such a classification is very difficult. As the authors of the book The Seven Notes of Management note: "There exist different classifications of management reflecting the views of various schools, and none of them coincide. Moreover, each of them at first glance appears incomplete and therefore vulnerable to criticism. It is impossible to divide management into components in such a way that the components are independent and do not overlap with one another." The authors of this book believe that the classification of types of managerial activity should be established at each enterprise based on considerations of expediency and formalized in the internal standard of the enterprise. In particular, the following components of management are distinguished:

1. Strategic Management—a system for managing key aspects of enterprise activity based on planning and implementing a long-term development concept that defines the enterprise's overall goals, resource and investment priorities, and competitive advantages.

2. Organizational Management—a system of organizing activities within the enterprise, implemented through defining functional areas, mechanisms of interaction among them, and levels of management.

3. Personnel Management—a system for managing employees within the organization, aimed at developing human capital and achieving the desired production behavior through recruitment, motivation, and organization of personnel work.

4. Logistics—a set of tools, methods, and activities ensuring the planning, control, and cost-effective management of flows of raw materials, semi-finished and finished products, as well as the corresponding information from the point of origin to the point of consumption, including storage, with the purpose of meeting customer requirements.

5. Finance—a system of tools, methods, and activities ensuring the adoption and implementation of financial decisions. Instruments of financial management include budgeting, financial analysis, raising borrowed capital, placement of free funds, investment planning, issuance, leasing, factoring, risk insurance, and others.

6. Economics—a system of tools, methods, and activities that ensures planning of material and labor resource expenditures, as well as analyzing and regulating the efficiency of their use. (Economics is the science of the efficient use of limited resources.)

7. Marketing—a system of tools, methods, and activities ensuring maximum orientation of production, commercial, and sales activities toward satisfying customer needs. It includes market research, identification of unmet or unknown customer demands, product concept development, organization of promotion and sales, pricing policy, etc.

8. Quality Management—a set of elements of organizational structure, methods, processes, and resources required to establish, apply, and support the overall quality management of the organization's products. The requirements of quality systems are formalized in the international ISO 9000 standards, Standards for General Quality Management and Quality Assurance.

In the works of T. Peters, another classification of managerial activity is proposed—the well-known McKinsey "7S" model (Fig. 1.6). It reflects seven independent variables characterizing corporate management organization. These aspects of organization and management were studied by T. Peters and R. Waterman while diagnosing problems and solutions typical of the best U.S. companies. In other words, the examined components were: (1) structure; (2) strategy; (3) people; (4) management style; (5) systems and procedures; (6) guiding principles and shared values (culture); (7) existing and desired corporate capabilities or skills.

For ease of perception and memorization, the authors gave these aspects names beginning with the same letter "S."

Most of the well-known classifications cannot be used to classify managerial technologies in IIA, because such technologies differ

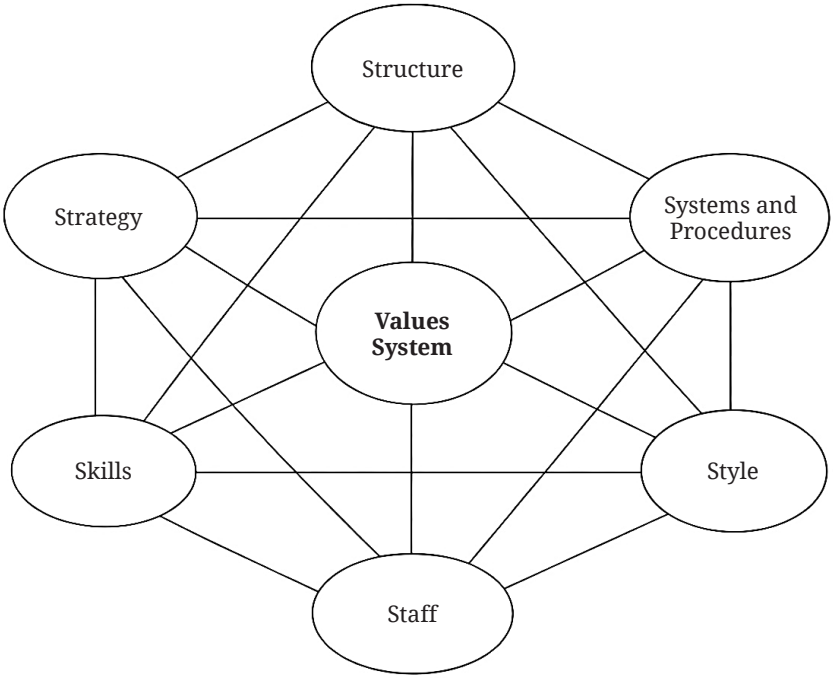

Fig. 1.6. Model "7S" McKinsey

not so much by the sphere of managerial activity as by the specific features of how procedures are performed. Specialists in managerial technologies understand this. Therefore, they make attempts to develop an alternative classification (Table 1.6).

Table 1.6

Components of enterprise-level management

Management Component	Comments
1. Structure	The essence of improving an enterprise's organizational structure lies in modifying the set of functions performed by the enterprise, in the corresponding reallocation of available resources (material, financial, human), and in creating such a configuration of departments, services, and management bodies that ensures the effective implementation of the new set of functions.
2. Strategy	Forecasting the prospects of enterprise development under changing external conditions and regulating current activities accordingly, so that over the long term the enterprise develops dynamically, efficiently, and sustainably.
3. Finance	Optimization of the enterprise's financial flows and improvement of financial and economic performance management based on budgeting.
4. Marketing	Regular study of sales markets and, on this basis, formation of: (1) production and sales assortment plans; (2) a flexible pricing system; (3) an efficient distribution network ensuring maximum profit for the enterprise; (4) brand creation, advertising campaigns, etc.
5. Personnel	Building such a system of personnel management in which the human being becomes the principal factor of enterprise efficiency.
6. Investments	Creating at the enterprise a system for generating, substantiating, and introducing into practice business ideas that generate profit and ensure dynamic enterprise development.

Managerial technologies in IIA may be considered to have a two-tier structure: target-oriented management technologies and process-oriented management technologies. Target-oriented management technologies (TMTs) determine the set of process-oriented technologies (PMTs). Thus, a manager must first select

a specific target-oriented technology and then use the corresponding set of process-oriented technologies as the operational toolkit. TMTs are technologies based on the priority of goals over situations. They orient managerial activity toward achieving the goal: the decision should be aimed at transforming the situation rather than eliminating disturbing influences. The set of TMTs includes initiative-target technology, program-target technology, and regulatory technology. The set of PMTs includes six management technologies: (1) management by results; (2) management based on needs and interests; (3) management through constant inspections and instructions; (4) management in exceptional cases; (5) management based on artificial intelligence; and (6) management based on activation of personnel activity. Figure 1.7 presents the scheme of technology sets applied within target-oriented management. Let us consider these technologies in more detail.

I. Initiative-target technology is based on assigning tasks without specifying the means and methods of their execution, and is intended for proactive and professionally competent performers. Under this approach, the manager develops only the final goal for the employee, group, or process, along with the deadline, without specifying the mechanism for achieving it. The goal may be achieved within the prescribed timeframe or earlier, or it may fail to be achieved for various reasons; the goal may also be achieved after the established deadline. The technology does not guarantee goal attainment. Initiative-target technology provides significant freedom for initiative-based decisions by subordinates.

II. Program-target technology is the most widely used in organizations. It involves assigning tasks (goals and objectives) to performers with clear specification of the means, methods, and deadlines for their execution. It provides for either external or internal monitoring of intermediate states during execution. The professionalism of task implementation is determined primarily by the qualification of the manager issuing the assignment, while the qualification of the performer plays a secondary role. Program-target technology typically ensures

goal attainment and is based on modern knowledge, economic-mathematical methods, and information technologies.

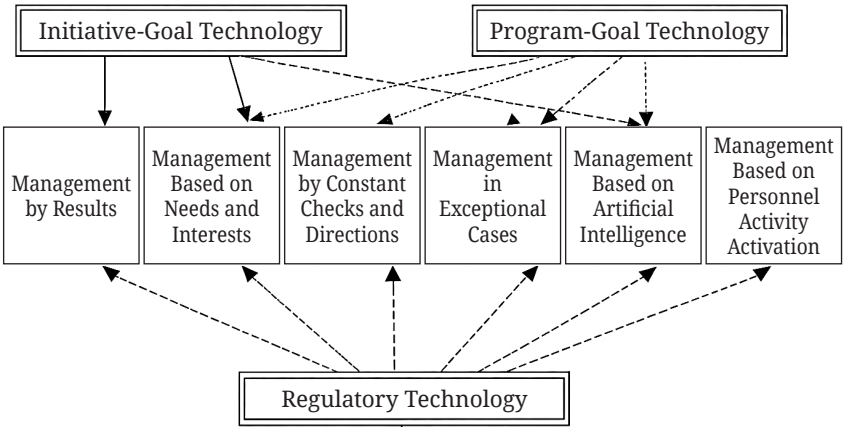

Fig. 1.7. Technologies for Goal-Based Enterprise Management

III. Regulatory technology consists in assigning tasks (goals, objectives) for execution with an indication of possible means and methods of their implementation; informing performers about potential resource constraints and the approximate time required for completion; and exercising strict control to ensure unconditional movement toward the goal.

IV. Management-by-results technology is based on the priority of final results over planning and forecasting. The primary function performed by managers is the coordination of actions depending on the results obtained. The foundation of this technology is the business plan and the methods developed for managerial decision-making under conditions of uncertainty.

V. Management based on needs and interests is founded on the priority of interpersonal relations over other means and methods of forming interaction among employees involved in achieving a common goal. Interaction between a manager and a subordinate within this technology can arise only if the managerial influence affects the needs and interests of both the manager and the subordinate.

VI. Management through constant inspections and instructions is based on the priority of control and strict personnel supervision over other means and methods of organizing interaction among employees involved in goal implementation.

VII. Management in exceptional cases is based on the priority of the professionalism of performers or on a well-established and thoroughly executable production technology over other means and methods for successfully completing assigned or selected tasks. An exceptional case represents a stable set of circumstances that prevents the performer from executing the assigned task properly and on time. Within this technology, the manager:

— formulates the organization's core mission and its component goals, coordinating deadlines for their achievement with performers;
— instructs performers to strictly follow the recommended technology;
— in the event of an exceptional case, assumes direct control or delegates it to other qualified performers;
— creates a database of employee professionalism, exceptional cases, and methods for resolving them.

VIII. Management based on artificial intelligence relies on the priority of established practices, statistical data, and modern economic-mathematical methods implemented in knowledge bases or databases within contemporary information and computer technologies, over other means and methods for successfully completing assigned or selected tasks. Artificial intelligence is understood as a system of modern information technologies that model certain aspects of human cognitive activity in the development and implementation of decisions.

IX. Management based on activation of personnel activity relies on the priority of incentives and rewards for employees over other means and methods of ensuring successful task execution. Activation combines two concepts: stimulation (moral and material incentives) and mobilization. Moral stimulation includes trust, acknowledgments, awards, promotions, etc. Material stimulation includes monetary and in-kind payments. Mobilization means

the formation, in employees, of new driving forces for achieving established goals, based on patriotism and moral values. Methods of mobilization include slogans, appeals, directives, the personal example of the manager or colleagues, and a worker's own awareness of the importance of the assigned task.

It appears that any classification fails to capture many essential characteristics of managerial technologies. Moreover, the composition and structure of the types of managerial technologies identified for IIA seem incomplete to us.

Let us pose the question: what is the purpose of classifying management technologies? In our view, such classification is needed, first, for analyzing the technologies functioning within an enterprise in order to improve them. Second, classification is necessary for the development (design) and implementation of new management technologies. In this case, it becomes reasonable to distinguish two groups of managerial technologies: (1) regular; and (2) non-regular.

If these categories are further detailed, the entire set of possible types of management technologies for IIA can be represented in the form of the classification scheme shown in Fig. 1.8.

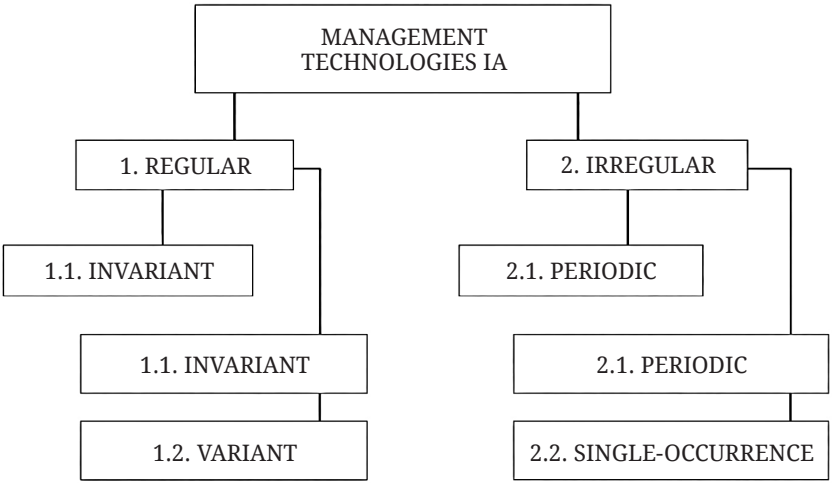

Fig. 1.8. Classification of managerial technologies for IIA

Any managerial technology from the first group represents a set of cyclically recurring procedures. Such a technology was once designed and put into operation. In the course of its functioning, it may, of course, require periodic "maintenance" (adjustments to the content, sequence, or deadlines of procedures). However, overall, such technologies do not require interventions from top-level management. This group includes, in particular, technologies that implement management functions (planning, accounting, control, analysis, regulation) across specific areas of enterprise activity (marketing, R&D, production, supply).

Regular managerial technologies may be conditionally divided into two subgroups: (1.1) non-variant; and (1.2) variant.

The first subgroup includes such managerial technologies as accounting, tax accounting, statistical reporting, personnel recordkeeping, and similar processes (a long list may be compiled). The rules for performing managerial procedures within these technologies are frequently revised. For example, not long ago all enterprises were obligated to maintain tax accounting according to strictly defined rules and algorithms—alongside financial accounting. This is a typical managerial technology imposed on enterprises by fiscal authorities. Such a technology is introduced administratively: personnel of the relevant departments, after studying official instructions (and sometimes after mandatory training), begin to carry out a predefined set of accounting operations. And accounting (including tax accounting) is, by definition, a management function. Thus, the enterprise is compelled—regardless of its own intentions—to adopt non-variant managerial technologies.

In other cases, regulatory managerial technologies are variant in nature. For instance, each enterprise is required at the beginning of the year to prepare a document called the "Accounting Policy" for purposes of financial accounting. This document allows variability in certain accounting rules and procedures. For example, it may permit different methods of allocating material costs to production costs, different approaches to expensing low-value items, different depreciation methods, different rules for forming reserves,

or various approaches to valuing work-in-progress or finished goods. Implementing variant managerial technologies requires a degree of creativity, ingenuity, and inventiveness. At the same time, their implementation can be supported by existing examples, analogues, and methodological recommendations. Such technologies are not radical and do not require large investments or major organizational changes.

Non-regular managerial technologies may be divided into two groups: (2.1) periodic; and (2.2) one-off (single-use).

Periodic managerial technologies are not cyclical; they are applied not at predetermined intervals but as the need arises. Periodic technologies are used, for example, in the implementation of major managerial innovations such as:

— structural transformations of the enterprise;
— implementation of a new remuneration system;
— brand development;
— entry into new markets;
— placement of enterprise shares on the stock market;
— large borrowings in the financial market;
— introduction of new products into production, etc.

These managerial innovations are developed and implemented according to specific technologies, each with its own set of procedures and operations. At the same time, over the lifetime of an enterprise such "reforms" may be carried out multiple times, which makes it reasonable to classify these technologies as "periodic."

When implementing such technologies, the enterprise may rely on previous experience—this distinguishes them from one-off managerial technologies. One-off technologies are applied to introduce unique managerial innovations, such as:

— development and implementation of a quality management system;
— design and implementation of an information system;
— building corporate culture;
— execution of merger or acquisition procedures;
— establishing the marketing function within the enterprise;
— development and implementation of a budgeting system, etc.

Naturally, in such cases the enterprise lacks its own experience in implementing the specific managerial project. Therefore, only a general framework technology can be used—drawing on existing experience in the development of large-scale managerial innovations. In many cases, this situation resembles what is known in industry as "technological preparation of production." That is, these are managerial technologies through which new managerial technologies (e.g., a quality management system, a budgeting system) are created. In this case it is appropriate to speak of designing managerial technologies (by analogy with the design of production technologies). Moreover, one may argue that one-off managerial technologies in IIA always take the form of a project. Let us examine this in more detail.

New managerial technologies and systems (managerial innovations) in IIA are artificial systems—artificial in the sense that they do not arise spontaneously according to natural laws (as plants, organisms, rivers, lakes, minerals, etc. do), but are constructed and created by people. They are the product of purposeful human activity. Consequently, the creation and implementation of new managerial technologies in IIA must be carried out on the basis of a project.

It should be noted that any type of design activity (architectural, construction, mechanical engineering, radio engineering, technological, etc.) involves the development of project, design, technological, and other documentation intended for the construction of an object or the creation of new types of products, technologies, or systems. In the design process, technical and economic calculations, diagrams, schedules, explanatory notes, mock-ups, specifications, budgets, cost estimates, and descriptions are prepared. As a result of the design process, an operational documentation package is also produced (instructions, regulations, rules). A project is always a collection of such documents in a defined structure. Similarly, the product of designing a new managerial technology or system is also a set of documents. Let us clarify this point.

As a result of organizational design, managerial innovations (new management systems and technologies) are created. In turn,

any managerial system represents a collective of people pursuing a specific goal and acting according to defined rules. Therefore, in designing a new managerial technology, it is necessary to:

1) determine the composition and structure of the team of executors;
2) formulate the goal of this team's activity;
3) describe the rules governing the work of individuals and departments;
4) train personnel in these rules.

Formally, the result of organizational design is a set of textual documents: regulations, instructions, and rules. The term organizational design appears in many publications. However, in these sources each author interprets the content and sequence of organizational design in their own way. There is not a single book or article in which the stages, phases, and tasks of designing managerial systems and technologies are definitively defined. This confirms our thesis that the composition of stages and documents for organizational design must be established locally—that is, defined in relation to the development of a specific managerial technology or system in the process of IID.

At the same time, it is possible to define a general methodological sequence of tasks that reflects the logic of constructing and implementing a new managerial technology [25, pp. 139–148].

For example, one can begin designing a budgeting system for an enterprise by implementing three stages (Table 1.7, see p. 53), with the conventional names: "Project Specification" (PS stage), "Project" (PR stage), "Implementation" (IM stage).

At each stage, a certain set of documents is generated. This approach may be taken as a basis when developing specific technologies for designing managerial innovations (as noted above, such technologies are always unique in nature in our view).

The foundation of the technology for designing managerial innovations lies in selecting the principal design decisions for the given innovation. Design decisions constitute the set of chosen options for implementing each component of the innovation. Pragmatically, these may represent, for example, selected responses

Table 1.7

Composition of stages and documents of the project "Development and Implementation of a Budgeting System" in the IIA process

Stage	Project or Operational Document	
	Title	**Content**
PS	Explanatory note	Analytical material (results of studies of the enterprise's functions) and justification of the requirements for the budgeting system from the standpoint of the enterprise's goals and functions.
	Project specification	A concise description of the requirements for the budgeting system, the functional structure of this system (list of budgets and reports to be developed), general decisions regarding staffing, instructional, informational, and technical support of the system, as well as the procedure and timeline for designing and implementing the system.
PR	Regulation on the Enterprise Budgeting System	Regulations for preparing, reviewing, coordinating, adjusting, and approving budgets and reports. Methods for preparing and analyzing budgets, methods for conducting plan-fact control and analysis, and methods for preparing and analyzing budget execution reports.
	Package of Instructions and Regulations	Job descriptions and departmental regulations.
	Package of Technological Instructions	Reference books, classifiers, codifiers, computer programs, technological instructions.
IM	Action Plan for Preparing the Enterprise for the Implementation of the Budgeting System	A plan of measures related to: (a) training the personnel involved in budgeting; (b) developing regulations and instructions; (c) equipping the system with computing tools, communication tools, and reproduction facilities; (d) issuing directive documents for launching the system into operation.
	Test Program for Project Decisions	A list of project decisions to be tested, the methodology for testing them, the rules for documenting test results, and the format of the test results report.

to a previously developed questionnaire. Thus, for a budgeting system, design decisions include:

— the proposed set of budgets and reports (the list of budget forms);
— the list of responsibility centers for which it is appropriate to prepare budgets;
— the composition of functional departments and management bodies involved in budgeting;
— the scheme of budget administration; and others.

An important stage of project technology is the stage at which the development, expert review, coordination, and approval of the operational documentation package for the managerial innovation under design are carried out. Here, operational documentation refers to a set of regulations on the implemented managerial technology, regulations on departments, job-related technological instructions, rules, and other documents that determine the functioning mode of the system (managerial technology) being created.

It is clear that the composition of the operational documentation depends on the nature of the managerial technology being designed. For example, when creating a budgeting technology at an enterprise, three groups of documents are developed:

1) a regulation on the enterprise budgeting system or the enterprise's budgeting code;
2) a set of departmental regulations and job descriptions;
3) a set of technological instructions.

The managerial technologies and systems created in IIA vary greatly. Therefore, the methods for their design and implementation may also differ significantly. Adapting a known computer-based accounting system to the conditions of an enterprise is one task; "cultivating" corporate culture within an enterprise is quite another. For some categories of managerial technologies, there exists a large number of formalized development methodologies. More than twenty technologies of managerial-technology design (engineering) and several hundred computer tools intended to automate this activity are available. For the development of information

technologies, standard automated-management-system (ACS) design methods can be applied. Some innovations can be created by adopting best practices (benchmarking methods). Finally, there exist managerial technologies for which original scientific research and development are required.

As shown by several authors [4; 8; 13; 18; 32; 38; 41], the universal method for constructing and implementing managerial technologies should be considered the method of organizational design. This method most effectively accounts for an enterprise's specific features and traditions, allows the use of existing management standards and the knowledge of specialists, and makes it possible to integrate all other design methods (benchmarking, business-process engineering, business-plan methodologies). The method of organizational design, naturally, requires an individual approach to the development and implementation of each specific managerial technology. This is both its strength and its challenge.

As shown in the previous section, the rational sequence, complexity, and system-based implementation of procedures within an IIA managerial technology constitute a source of management efficiency in innovative enterprise development. The systematized factors of managerial-technology efficiency are presented in Table 1.5. After performing the classification of managerial technologies (Fig. 1.4), it became possible to evaluate the role of management technologization in improving enterprise performance across individual factors and types of managerial technologies.

To obtain these evaluations, a questionnaire survey of enterprise directors in southern Ukraine was conducted. The questionnaire was based on the format of Table 1.5, with an added column titled "assessment of factor significance." In this column, respondents were asked to rate the significance of each factor of managerial-technology efficiency using the following scale:

0—no manifestation of the factor;
1—minimal manifestation of the factor;
2—average manifestation of the factor;
3—full manifestation of the factor.

Before completing the questionnaires, participants of a meeting of enterprise directors were given the opportunity to express their views on the significance of each efficiency factor (for each type of managerial technology) during a special discussion organized in the format of a round table. Various informational materials on the development, implementation, and use of managerial technologies at enterprises were provided to the participants. In addition, a preparatory presentation on this topic was delivered to the respondents.

The averaged results of the survey are summarized in Table 1.8. In our opinion, the data presented in this table may serve as a useful guideline for decision-making regarding the technologization of management at specific enterprises.

Table 1.8

The role of management technologization in improving enterprise performance efficiency

Efficiency Factor of Managerial Technologies	Degree of Factor Manifestation Depending on the Type of Managerial Technology			
	Regular Technologies		Non-regular Technologies	
	Non-variant	Variant	Periodic	One-off
1. Rationalization and Specialization of Managerial Labor	Minimal manifestation of the factor	Full manifestation of the factor	Full manifestation of the factor	Average manifestation of the factor
2. Step-by-Step Control and Deviation	Average manifestation of the factor	Full manifestation of the factor	Full manifestation of the factor	Average manifestation of the factor
3. Separation of Routine and Creative Procedures	Zero manifestation of the factor	Average manifestation of the factor	Full manifestation of the factor	Full manifestation of the factor
4. Replication of Best Practices	Zero manifestation of the factor	Full manifestation of the factor	Average manifestation of the factor	Full manifestation of the factor
5. Adaptation of Scientific Methods and Management Tools	Zero manifestation of the factor	Average manifestation of the factor	Average manifestation of the factor	Full manifestation of the factor

2

MANAGEMENT TECHNOLOGIES IN INNOVATION AND INVESTMENT MANAGEMENT

2.1. Problems of Implementing Managerial Technologies of Personal Planning

The activities of managers and specialists of an innovative enterprise represent a continuous process involving the performance of numerous tasks. Each such task will hereafter be referred to as a "work item." Examples of work items include receiving assignments from a superior, making managerial decisions, formalizing decisions in the form of orders and directives, communicating decisions to executors, monitoring the implementation of decisions, conducting meetings, collecting information, performing calculations, analyzing situations, developing plans, conducting negotiations, and preparing documentation, among others.

The number of such work items is considerable, and their diversity—in terms of importance, complexity, labor intensity, and duration—is significant. Therefore, managing the work performed by managers and specialists of an enterprise constitutes a non-trivial task. One possible approach to addressing this task is presented below.

The essence of personal planning and accounting (PPA) for managers and specialists of an enterprise lies in the periodic preparation of plans for their work activities and in maintaining records of the execution of these activities at the individual level. In a simplified form, the PPA plan of a manager or specialist can be understood as a list of work items that must be completed by a particular individual within a defined planning period. Accordingly, the accounting function involves preparing a report on the actual execution of the individual work plan for the completed period.

Thus, within the planning technology of PPA for managers and specialists of an enterprise, the fundamental planning and accounting unit is the work item. In this context, a planning and accounting unit refers to the primary unit for which a planned task is assigned and the status of its implementation is monitored. From a formal standpoint, each work item is characterized by its duration, the start and completion dates, and the resources required for its execution. In other words, temporal parameters constitute the most important characteristic of any work item.

The relationship between work items and the calendar explains why the planning of managerial and specialist activities at an enterprise is often referred to as calendar planning. The most common form of calendar planning at the enterprise level is the plan of activities and tasks, which contains a list of work items to be performed, specifying the responsible executor, the duration (in days), and the planned start and completion dates for each work item.

Within the frameworks of network planning and management models, two key concepts are employed: "work" and "event." A work item is represented in a network diagram by an arc (an arrow or a directed edge) and is characterized by a specific duration (for example, in working days). An event is represented in the network diagram by a node (a circle) and denotes the fact of either the beginning (initial event) or the completion (final event) of a work item.

The result of calculating a network schedule is a calendar plan, that is, a list of work items specifying the planned start and completion dates for each activity.

Taking these considerations into account, it can be clarified that the essence of personal planning and accounting of the activities of managers and specialists of an enterprise lies in the regular preparation of individual calendar work plans and in the systematic recording and monitoring of their implementation with respect to designated personnel.

The introduction of personal planning technologies for enterprise managers and specialists represents a highly relevant managerial task. In the absence of such technologies—or when they are

inadequately developed—many enterprises operate inefficiently for the following reasons:

a) unproductive losses of working time among managers and specialists often reach 40–60% or more, which hinders labor productivity growth and leads to an increase in the number of personnel (resulting in unjustified staff expansion);
b) in the daily activities of managers and specialists, corporate priorities are frequently not clearly defined or consistently followed. Strategic intentions of top management are not adequately communicated to line or functional managers and specialists—or are communicated in a distorted form—while top executives do not receive reliable information on the progress of priority tasks;
c) the goals of the enterprise and the goals of employees often come into conflict; in other words, there is no systematic transmission and alignment of organizational objectives across all levels of management;
d) the synchronization and coordination of activities performed by different managers and specialists are disrupted: some employees become overloaded, others underutilized; some move ahead while others fall behind. As a result, tasks tend to be completed at the pace of the slowest participant;
e) important managerial decisions are often made hastily or under severe time pressure. According to research conducted at certain enterprises, up to 70% of decisions taken under such conditions prove to be erroneous or suboptimal;
f) enterprise management is conducted in a reactive rather than proactive mode. Managers are forced to address urgent issues arising from day-to-day circumstances instead of systematically implementing the adopted strategic course of development;
g) there is a lack of factual accounting data that would allow a quantitative assessment of the activities performed

by managers and specialists. Consequently, there is no objective basis for establishing an effective system for motivating them toward productive work;

h) deadlines for plans, schedules, and contractual obligations are often missed due to managerial or specialist failures, resulting in reduced revenues and profits and damaging the enterprise's reputation.

The managerial deficiencies listed above, caused by the absence of an effective technology of personal planning within the enterprise management system, can ultimately be reduced to two major shortcomings:

1. Time losses incurred by managers and specialists, resulting from the inability to properly develop and implement personal work plans.
2. Inefficient functioning of the administrative apparatus.

These two fundamental shortcomings of managing an innovative enterprise will be examined in greater detail below.

2.1.1. Time Losses

Studies conducted by the internet companies AOL and Salary.com have shown that the average American office employee spends more than two hours per day exchanging messages via ICQ and using the Internet for personal purposes. At many enterprises in our economic environment, however, losses of working time are significantly greater.

The imitation of work represents an inconspicuous but almost chronic problem affecting the majority of modern enterprises, from large monopolistic corporations to small firms. The same pattern can be observed everywhere: a manager discussing weekend plans via ICQ during working hours; a secretary using the office telephone to resolve personal matters with a friend; or a young specialist composing a personal message on an office computer. These situations share one common feature—each of the individuals involved appears to be extremely busy.

Indeed, if a supervisor were to enter unexpectedly and inquire about their current activities, it would most likely be revealed that the working day of each employee is scheduled almost minute by minute. At the same time, the actual outcome of such activity often amounts to what may figuratively be described as "futile labor," producing no tangible value for the employer.

Significant losses of working time and its inefficient use are also characteristic of conscientious managers and specialists within an enterprise. Such losses are typically caused by the absence of adequate skills in planning, recording, and analyzing the time spent on performing work tasks. In particular, time losses occur because many managers and specialists perform tasks in the order in which they arise rather than in accordance with a structured plan.

Inefficient use of time may also occur when a manager or specialist, for various reasons:

a) does not perform the most complex and important tasks during the most productive period of the working day;
b) switches too frequently from one task to another, since each transition requires additional time to regain concentration and re-enter the context of the work;
c) fails to effectively utilize short intervals of available time (for example, time spent traveling or waiting in queues);
d) does not maintain an optimal balance between work and rest, performing important tasks while experiencing significant fatigue;
e) lacks the ability to delegate tasks and authority to other executors.

As a result, even under conditions of high formal workload, the overall effectiveness of managerial and specialist labor may remain substantially below its potential level.

2.1.2. Inefficient Functioning of the Management System

If personal losses of working time are primarily the result of insufficient competence of managers and specialists in the field commonly referred to as time management (i.e., the inability to develop and implement personal work plans), the inefficient functioning of the administrative apparatus is largely caused by the absence of a centralized technology for planning and accounting the activities of managers and specialists within the enterprise. Only within the framework of a centralized system for planning and accounting managerial work does it become possible to:

- communicate corporate goals and priorities to all managers and specialists of the enterprise;
- make managerial decisions at all hierarchical levels based on reliable information obtained from reports of employees within the administrative apparatus;
- ensure synchronization and coordination of tasks performed by different managers and specialists;
- allocate sufficient time for making important decisions in a proactive rather than reactive mode;
- reward or sanction executors on the basis of objective information concerning completed tasks;
- fulfill the enterprise's contractual and operational obligations within the established deadlines.

In simplified form, the technology of centralized comprehensive planning and accounting of the activities of managers and specialists can be represented as follows. At regular intervals (for example, once per month), two key documents are prepared:

1. A consolidated calendar plan-report of enterprise activities for the given period.
2. Individual calendar plans–reports for each manager and specialist of the enterprise for the same period.

The consolidated plan-report contains a list of all tasks performed within the enterprise during the given period. For each task, the responsible executor, duration, planned completion date,

and actual completion date are indicated. The individual plan-report represents an extract from the consolidated plan-report and specifies the tasks assigned to a particular executor. For each task, its duration as well as the planned and actual completion dates are recorded.

Based on the information contained in these documents, it becomes possible to analyze the progress of work and to make the managerial decisions necessary for effective enterprise management. However, the practical implementation of such a managerial technology is associated with numerous difficulties and challenges.

A fundamental problem concerns the alignment of the enterprise plan with the individual plans of executors. In the centralized calendar planning scheme described above, it is implicitly assumed that the enterprise management can accurately determine the composition of planned tasks and their execution deadlines for all employees of the administrative apparatus (managers and specialists). Within this framework, the employee is assigned a passive role—the role of a "component" within a large organizational mechanism. The head of the enterprise is assumed to know in advance what each manager and specialist must do and when, assigning tasks for the planning period and subsequently monitoring their implementation.

Such a management approach resembles the operational style of centralized planning systems characteristic of state planning bodies in the past, with all the associated shortcomings. The principal deficiency of such systems was the inability to effectively reconcile the interests of enterprises with broader systemic objectives. Conflicts between organizational and external priorities frequently arose and were often attributed to planning deficiencies or to the perceived lack of responsibility or discipline among economic actors.

On the other hand, if the responsibility for personal planning of managerial and specialist activities is entirely delegated to the executors themselves, there is a risk that their actions will become insufficiently coordinated, which may ultimately prevent the enterprise from achieving its strategic goals and priorities.

Consequently, when developing a technology of personal planning for managers and specialists, it is essential to establish procedures for aligning the goals and priorities of the enterprise with the goals and priorities of the employees of the administrative apparatus. This problem does not appear to have a universal solution.

At relatively small innovative enterprises operating under stable conditions, the director may be able to maintain direct oversight over the activities of all managers and specialists, planning and monitoring their tasks personally. At large enterprises or those operating in dynamic and rapidly changing environments, enterprise-level plans must be disaggregated to the level of organizational units, which can subsequently be detailed into individual plans. In addition, procedures for the joint preparation of plans by supervisors and executors are likely to be necessary. Such procedures require mechanisms for coordinating global and local objectives, for which appropriate principles and methodological approaches must be developed.

Existing methods of personal planning for managers and specialists can generally be divided into two broad categories:

1. Methods of personal self-management (individual planning and accounting of tasks).

2. Corporate methods of personal planning, accounting, and control implemented at the organizational level.

The historical development of personal self-management tools dates back to 1870, when a flip-style calendar was introduced in Germany, allowing users to record daily plans and business appointments. In 1925, the first modern daily planner was developed. In addition to a calendar section, it included an informational block designed to structure recorded information. These planners later evolved into what became known as organizers.

Various types of organizers exist. A classic planner may cover a week or a month, dividing objectives, expenses, and projects into structured sections that facilitate the achievement of planned goals. However, such planning tools also have certain disadvantages. For example, it may sometimes be difficult to locate previously recorded information, as it may require reviewing numerous pages to identify the relevant entry.

Some planners divide the day into hourly intervals, allowing tasks to be recorded directly within the appropriate time slots. When tasks arise unpredictably and cannot be scheduled in advance (for example, unplanned phone calls or meetings), undated planners may be used. In such planners, tasks are recorded as they arise, and the user can easily review recent pages to respond quickly to outstanding notes and reminders.

When a manager or specialist has a relatively small number of tasks, weekly planners may be particularly convenient, as they provide an overview of the entire week on a single spread. Tasks may also be grouped into larger functional blocks, such as telephone communications, meetings, or work with correspondence. Some organizers begin with sections devoted to addresses and telephone numbers, followed by a notebook for recording additional information.

In modern practice, many professionals also make effective use of personal computers, laptops, and smartphones for planning and organizing their work activities. Among widely used software tools for this purpose are Microsoft Outlookand Microsoft Project.

A separate and influential approach is the concept of time management known as "Time Manager." In the 1970s, the Danish specialist Claus Møller developed this concept into a comprehensive personal technology for managing individual time resources. The company Time Manager International founded by C. Møller introduced in 1975 the first results-oriented planning instrument that, in addition to calendar and informational sections, included a structured basis for decision-making. This instrument became known as Time Manager.

Due to the effectiveness of the underlying concepts, the Time Manager system rapidly gained global popularity and became a benchmark in the field of planning tools. Today, more than five million business professionals worldwide use this approach, while Time Manager International has developed into one of the largest international consulting and training organizations, operating in more than thirty-five countries [29; 35; 39].

It should be noted that Claus Møller was not the first scholar to address the issues of planning and accounting for personal time.

A number of researchers had previously devoted considerable attention to these questions in their works. In particular, the founder of modern management science and the author of the theory of management, Peter Drucker, in addition to his numerous publications, wrote the book The Effective Executive (2001), in which a significant place is devoted to the problem of planning and monitoring a manager's personal time. Another specialist in time-management issues, Alan Lakein, substantially expanded and improved the methodology of planning and accounting for personal tasks. In his book How to Get Control of Your Time and Your Life (1996), extensive practical experience in planning and time accounting by real managers is summarized [16].

It should also be noted that the term "time management" has introduced a certain conceptual distortion into the understanding of personal planning and accounting for the activities of managers and specialists. In essence, a cognitive shift occurs: it may appear that the object of management is time itself rather than human activity. However, it is obvious that a person cannot manage time. Therefore, the term "time management," or "organization of time," is largely conditional. What is actually meant by time management is the management of one's own activities, the organization of task execution, and the allocation of available resources. The term "management of personal time" is justified by the fact that time represents the most valuable of all resources, as it is completely non-renewable and strictly limited. Consequently, time provides the most convenient analytical perspective for examining the entire management process. Modern time management is not merely a collection of techniques such as "how to meet deadlines" or "how to conduct meetings efficiently." Rather, it represents a comprehensive system of self-management and activity management.

The purposeful formation of a team consisting of individuals who share common values and attitudes is widely practiced in many spheres of human activity. For example, similar approaches can be observed in the formation of sports teams—such as football teams, where different traditions exist (for instance, the Brazilian style based on individual star players and the German style emphasizing

highly coordinated team interaction)—as well as in theatrical troupes or orchestras. Some enterprise directors deliberately refuse to hire specialists who do not demonstrate a propensity for planning and accounting for their personal activities within the framework of time-management practices (for example, individuals who do not maintain planners, diaries, or organizers). In essence, this approach represents a method for introducing corporate time management, understood as the aggregate of individual time-management practices within the organization.

It is evident, however, that the above approach to creating a technology of personal planning for managers and specialists cannot be regarded as universal. First, any workforce includes not only disciplined and highly organized individuals inclined toward self-management but also less organized personalities. Such employees may require organizational mechanisms that compel them to maintain personal work plans. Second, every enterprise must perform tasks whose necessity and strategic importance can only be fully understood at the highest level of management. Such tasks must therefore be planned and monitored within the framework of a centralized corporate management technology.

Planning, accounting, and controlling the activities of managers and specialists cannot rely solely on written plans and reports. Effective leadership always involves a combination of formal and informal methods. At any enterprise, written orders, directives, and regulations coexist with oral instructions, assignments, and even informal requests, sometimes of a confidential nature [6, pp. 178–179]. The balance between these two forms of management is a delicate issue. Informal methods rely on direct interpersonal communication between the manager and the executor, which fosters trust and often generates enthusiasm, especially when the manager possesses charisma or is recognized as an authoritative leader by subordinates. Written assignments, on the other hand, provide documented responsibility for the executor, thereby strengthening discipline and minimizing the risks associated with excessively informal relationships within the "manager–executor" pair.

When determining the optimal balance between formal and informal management methods, it is also necessary to take into account that it is impossible to foresee the entire diversity of real managerial work through written instructions alone. This circumstance explains the phenomenon known as the "Italian strike," in which employees perform their duties strictly according to formal instructions. From a formal perspective, no claims can be made against them; however, productivity under such conditions may fall to only 30–40% of normal performance.

At the same time, for an executor it is often important to know that a particular assignment is under the personal supervision of the director. This fact automatically elevates the significance of the task and assigns it the highest priority. For this reason, the phrase "Take this task under personal control" is frequently encountered in managerial practice and carries a clear and universally understood meaning. The practice of placing a task under personal supervision therefore serves as an effective instrument of operational management.

In large enterprises with multi-level management hierarchies, the director often becomes informationally dependent on managers at the middle and lower levels of the hierarchy. A typical situation arises when the director requests reports from departments or production units concerning the status of specific issues. Each line or functional manager may attempt to present the situation in a more favorable light, reflecting a well-known psychological tendency of individuals to maximize the appearance of their success in the eyes of respected superiors. As a result, information becomes progressively distorted as it moves through hierarchical levels. First, the situation may be "improved" by the lowest-level supervisor, such as a team leader. Next, it may be further "improved" by the second-level manager, for example, a workshop foreman. Finally, the highest manager within the chain, such as the head of the production department, may also contribute to this process. Consequently, by the time the information reaches the director, it often represents a distorted picture of the actual situation within the enterprise.

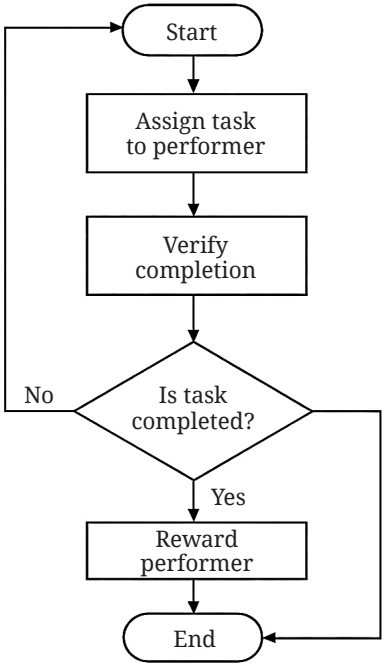

Fig. 2.1. Formal Scheme for the Implementation of the Management Procedure at an Enterprise

Striving to eliminate this deficiency, some directors implement the principle of "information independence", which implies obtaining information directly from workplaces on the basis of documented and verified data. For example, at JSC Odeskabel an automated system for registering employees' arrival and departure times was installed at the entrance checkpoint. This system enabled the director of the enterprise to obtain reliable information—independently of line and functional managers—about the actual number of hours worked by each category of employees across the enterprise's divisions and services.

This "information independence" of the director from managers and specialists fundamentally changed the nature of managerial meetings. When allocating resources and tasks among departments,

the director began to operate with precise data on the actual working hours of each category of employees within particular divisions and services. Previously, the advantage at such meetings often belonged to the more "resourceful" manager, who would obtain fewer assignments while securing greater resources. Under the new conditions, however, the director was able to make such decisions more fairly and objectively.

Immediately after the introduction of the automated time-registration system, a situation emerged in which the director possessed more information about employees' time budgets than their immediate supervisors. This circumstance placed such supervisors in an uncomfortable position during meetings with the director. Dissatisfaction arose among line and functional managers, to which the director responded: "Nothing prevents you, before attending the meeting, from requesting a report from the enterprise's information center regarding the actual working time of your employees." Subsequently, the principle of "information independence" was supplemented with the concept of "information equality." The conflict was resolved, and the manageability of the workforce improved.

In general, the problem of "the principal authority" inevitably arises when implementing a technology of centralized personal planning of managerial and specialist activities. Statements such as "We are being monitored," "Every step we take is known at the top," or "Working under constant supervision is unbearable" often become widespread among employees of the administrative apparatus. Indeed, every employee should possess a personal reserve of resources for unforeseen circumstances (for example, spare tools or parts kept in a desk drawer in the case of workers). When a director attempts to withdraw all such reserves from subordinates and prescribes in detail what and how they must do during every minute of working time, conflicts within the workforce become inevitable. Working without reserves is psychologically uncomfortable. Therefore, when designing and implementing technologies of centralized personal planning for managers and specialists, it is necessary to provide time reserves that allow

performers a certain degree of independent maneuver. Compromises in the interests of effective work are unavoidable.

Another problem associated with this technology concerns the threat of bureaucratization and formalism in the process of personal planning and accounting. This threat is characteristic of many managerial technologies. As an illustration, one may consider the practice of detailed production planning, where, in solving the task of assembling a large product, each worker receives a computer-generated daily shift assignment. When this system was designed, it was assumed that every worker would perform tasks strictly according to this written assignment. In practice, however, the process often unfolded differently. At the beginning of the shift, the workshop foreman would simply place these assignments in his pocket. At the end of the shift, he would mark them as completed and submit the reporting stubs to the enterprise's information center. In other words, the assignments never actually reached the workers. Based on their experience and qualifications, workers already knew what and how they should perform during the shift. Thus, the system functioned purely formally. Similar examples can be found in the implementation of brigade contracting systems, various incentive schemes, and other managerial instruments.

Avoiding the threat of bureaucratization and formalism in implementing personal planning technologies is possible only if managers and specialists consciously perform the procedures for completing planning and reporting forms, and if the planning process itself becomes an internal professional need for them. Developing such a need is a difficult but solvable task. Several approaches to addressing this issue will be discussed below.

Centralized personal planning of managers' and specialists' activities at many enterprises is implemented in the form of the technology known as "Control over the Execution of Assignments." This technology may form part of ISO-based management systems (more precisely, Quality Management Systems) and may be formalized as an internal enterprise standard. In some organizations such technologies are referred to as "Control

over the Execution of Orders," "Control of Executive Discipline," or "Control of Document Execution."

The essence of these technologies lies in the fact that all assignments issued by the director to managers and specialists are placed under control, which is typically carried out by a designated employee—for example, the director's secretary or assistant. An assignment refers to directives contained in resolutions of governing bodies, orders, instructions, minutes of meetings, letters, and other documents. In some cases, verbal instructions from the director are also treated as assignments. For each assignment a control card is created containing the essence of the task, the responsible executor, the deadline for completion, and fields for recording relevant notes. Often, the technology of assignment control also includes procedures for reminding executors about approaching deadlines. Completed assignments are registered in the control card, and periodic reports on the progress of assignment execution are prepared.

As can be seen from the above description, technologies for controlling the execution of assignments do not contain procedures for planning the activities of managers and specialists. The number of assignments and their labor intensity are not correlated with the number of personnel available. In other words, the technology of assignment execution control does not, as a rule, regulate the flow of tasks, assignments, and work activities. Under such circumstances, some performers may become overloaded while others remain underutilized.

This problem can be partially mitigated if the enterprise practices procedures for coordinating deadlines and labor intensity of assignments within the "manager-executor" relationship. In our opinion, such coordination at the planning stage is absolutely necessary, since executors differ, assignments differ, and circumstances differ. Employees of the administrative apparatus are not machines with fixed productivity levels. Therefore, attempting to formally balance the labor intensity of tasks (for example, in standard hours) with the available time budget of executors (for example, in man-hours) appears unrealistic. Dialogue-based coordination of deadlines and workloads is therefore preferable.

Thus, it must be acknowledged that comprehensive technologies for personal planning of managerial and specialist activities are currently lacking. What exists are either procedures of self-management (such as time management techniques) or procedures for monitoring the execution of assignments, but not integrated planning technologies. The following section attempts to develop possible variants of personal planning technologies for managers and specialists on the basis of these existing approaches.

2.2. Management Technology for Personal Planning of Innovation and Investment Activities at the Enterprise

We propose distinguishing three possible formats for implementing the technology of personal planning (TPP) for enterprise managers and specialists:

1) primary format of TPP;
2) necessary format of TPP;
3) efficient format of TPP.

The term "Primary format of TPP" refers to the technology of personal planning of innovation and investment activities (IIA) of enterprise managers and specialists implemented in the mode of self-management, using the methods of the "Time Manager" system. In other words, within this technology each manager and specialist of the enterprise independently plans and records his or her activities by using organizers, business notebooks, work diaries, or computer software.

Time management should be regarded as a fundamental skill of an educated manager, comparable to the ability to conduct meetings, issue instructions, brief employees, conduct negotiations, make phone calls, or prepare documents [29; 35; 39]. Therefore, in this context the term "self-management" implies that all managers of the enterprise have mastered (possibly through mandatory

training) the methods and technical techniques for planning and recording their personal time according to the Time Manager methodology, and apply them in practice.

Employees who do not apply the Time Manager methodology are subject to dismissal. The director of the enterprise ensures that all managers and specialists possess the competencies associated with time-management methods. This circumstance allows the system to be regarded as a corporate technology of personal planning of innovation and investment activities (IIA) for managers and specialists. In some cases, such a system of self-management is referred to as "Corporate Time Management."

This format may be applied autonomously or in combination with other formats of the TPP technology (Fig. 2.2). Self-management can thus be considered a mandatory and universal technology for the personal planning of innovation and investment activities of enterprise managers and specialists. The application of this format does not depend on the size of the enterprise. Its implementation

Primary format of the TRR	The required format of the TRR	An effective format of the TRR
		A centralized personal planning technology under the IIA framework for enterprise executives and specialists
	A technology for monitoring the execution of assignments within the IIA framework	A technology for controlling and tracking assignment execution under the IIA framework
A personal self-management framework grounded in the 'Time Manager' method	A personal self-management framework grounded in the 'Time Manager' method	A personal self-management framework grounded in the 'Time Manager' method

Fig. 2.2. The structure and interrelation of the primary, necessary, and effective TRR formats under the IIA framework

represents the initial stage in the development of more advanced technologies of personal planning of innovation and investment activities within the enterprise.

Time management makes it possible to align the individual plans of employees with the plans of the enterprise, thereby integrating personal and collective goals or priorities.

In practical management, a considerable proportion of activities is carried out through non-documentary, informal management (not only in small enterprises). In such cases, supervisors assign tasks to executors in the form of oral decisions, instructions, or assignments. Much like a student recording a teacher's assignment in a school diary, employees record such instructions from their supervisors in their personal planners or organizers.

This constitutes a normal—and often effective—procedure for managing a team of executors. First, it avoids an increase in the number of formal documents, thereby reducing bureaucratic procedures and supervisory layers. Second, it enhances managerial responsiveness, since tasks are communicated to executors immediately at the moment decisions are made. Third, the assignment of tasks involves direct interpersonal interaction between the supervisor and the executor, making it possible to comment on the assignment, clarify the conditions of its implementation, and motivate the executor.

It is clear that non-documentary, informal management is possible only when the primary format of TPP has been implemented within the enterprise. The term "non-documentary management" is somewhat conditional in this context. If personal organizers are maintained by employees according to a unified enterprise format and supervisors have the right to verify the recorded assignments, such organizers effectively function as planning and accounting documents.

Under the term "Required TRR Format", we shall understand a technology of personal planning and activity accounting for enterprise managers and specialists in which, alongside self-management procedures, centralized Assignment Execution Control procedures (the AEC procedures, see Fig. 2.2) are applied. Within

this framework, all tasks and work items placed under centralized control are obligatorily included in the personal organizers of the performers; that is, at the individual level, the execution of corporate tasks and work is planned and recorded using Time Management methods. This circumstance allows us to consider that, in this case, a corporate personal planning technology is employed: (a) at the upper level, the execution of enterprise-level tasks is controlled; (b) at the lower level, the activities of managers and specialists are planned and accounted for.

Within the AEC procedure, it is possible to determine the level of executive discipline of personnel, based on which employees may be rewarded or penalized (Fig. 2.1).

The discussed scheme for implementing the TRR technology makes it possible to translate corporate tasks to the personnel level, which is highly important (and necessary) for the enterprise. For this reason, we have designated this scheme with the term "Required TRR Format." A characteristic feature of this format's implementation is that, within the AEC procedure, tasks and assignments are typically "assigned" to heads of structural units, who, in turn, communicate them to specialists—i.e., to the actual personnel (Table 2.1, see p. 77).

A drawback of the discussed TRR technology format is the absence of technological operations for centralized planning of the activities of managers and specialists (Table 2.1). Essentially, the enterprise's calendar work plan in this case is represented by the assignment file (registry) formed within the AEC procedure. This file is created from an unordered flow of tasks, assignments, external obligations, director's instructions, decisions of governing bodies, and so forth. By definition, it cannot be balanced against the total time budget of the enterprise's managers and specialists. Moreover, the distribution of assignments among performers—performed according to the well-known AEC procedures—cannot ensure an optimal workload distribution.

The discussed shortcoming is compensated for by the skillful work of a talented director. Indeed, the tasks and assignments arising within the enterprise may essentially be regarded as the director's personal organizer list. One may say that

Table 2.1

The high-level composition of procedures and operations within the required format of the TPP technology

Technological Procedure	Technological Operation
1. Planning of Personnel Activities	1.1. Formation of a corporate register of assignments.
	1.2. Communication of assignments to the heads of the enterprise's structural units.
	1.3. Periodic reminders to managers regarding the deadlines for the execution of assignments.
	1.4. Detailed decomposition of assignments within departments to the level of specific tasks (assignments to specialists).
	1.5. Inclusion of corporate assignments in the personal work plans of specialists (in personal organizers) alongside personal tasks and activities within the framework of Time Management practices.
	1.6. Periodic review of the actual progress of work at meetings chaired by the head of the department and adjustment of personal assignments.
	1.7. Execution of personal assignments and work activities by specialists.
2. Accounting of Personnel Activities	2.1. Determination by specialists of the actual completion dates of tasks within the Time Management framework.
	2.2. Submission of completed work by specialists to the head of the department.
	2.3. Preparation by the head of the department of a report on the execution of assignments.
	2.4. Submission by the head of the department of the assignment execution report to the director.
3. Analysis of Personnel Activities	3.1. Plan-actual analysis of work performed by specialists and decision-making by the head of the department regarding incentives or sanctions (Fig. 2.1).
	3.2. Plan-actual analysis of assignment execution by department heads and decision-making by the director regarding incentives or sanctions (Fig. 2.1).

the director plans the activities of the entire team by means of his or her personal Time Management system. Consequently, the director is capable of setting goals, identifying priorities, formulating top-priority actions, and effectively filtering the incoming flow of current tasks and assignments.

Thus, the implementation of the "Required TRR Format" implicitly assumes that strategic management processes are well-established within the enterprise, and that the mission, philosophy, and key objectives of the organization have been defined and remain constantly within the focus of the director and the heads of structural units. Under these conditions, the risk of imbalance between the assignment registry (generated within the AEC procedure) and the available time resources of managers is significantly reduced. However, a complete resolution of this issue becomes possible only when the Effective TRR Format is implemented.

By the term "Effective TRR Format", we shall understand such a technology of personal planning within the IIA system for managers and specialists of the enterprise in which, alongside self-management procedures and AEC procedures, centralized planning procedures for managerial activities are also applied (Fig. 2.2). Within this format, the enterprise's key objectives are periodically identified. These objectives are then detailed down to the level of activities and tasks compatible with the calendar (that is, they are assigned directive deadlines, possibly based on network-schedule calculations). These activities and tasks are forcibly entered into the personal organizers of executors and placed under the AEC system's control. Consequently, the term "Effective TRR Format" denotes not only the accounting and control of activities and tasks but also their centralized planning.

At regular meetings, the director reviews the progress of tasks, activities, and work items. Based on the outcomes of these meetings, decisions are made to reward or penalize executors. A technical support group for the TRR technology is established within the enterprise; this group identifies key objectives, details them to the level of activities and tasks, performs calendar-planning

calculations, monitors the execution of these tasks, and prepares analytical reports for the director.

This represents the most general characterization of the Effective TRR Format. A detailed description of such a technology would require clarifying several of its parameters:

- the composition of TRR participants within the enterprise (i.e., which managers and specialists have their activities planned, recorded, and controlled within this technology);
- the nature of the administrative body, unit, or official responsible for ensuring the functioning of TRR (development and maintenance of technological instructions, preparation and distribution of document forms, compilation of reports and reviews, preparation of director's meetings on issues of personal planning and accounting, and other support activities for TRR);
- the feasibility and necessity of standardizing activities and tasks implemented within TRR;
- the organizational form for decision-making on issues of planning, accounting, and analyzing the work of managers and specialists (director's meetings, board sessions, etc., along with their periodicity, authority, and rules of procedure);
- the feasibility and necessity of standardizing the duration of activities and tasks within TRR;
- the methods and forms of incentives (rewards and penalties) applied within TRR;
- the integration of TRR with other technologies, systems, and management tools (including modern communication tools, computers, and information technologies);
- other aspects and elements of TPP.

It appears that no universal solutions exist for all of the above parameters. These parameters should be refined during system design, taking into account the specific "local conditions." Therefore, to present a coherent and sufficiently detailed understanding of the Effective TRR Format, the following section provides a prototype description of the TRR technology.

2.2.1. Purpose of the TRR Technology

A. Under the term "TRR Technology", we shall understand the set of procedures for planning within the IIA system for managers and specialists of a notional enterprise. Within this technology, weekly-daily planning, accounting, control, and analysis of current tasks and work performed by managers, specialists, and structural units of the enterprise are carried out. The planning-and-accounting indicators in this technology are time expenditures (planned and actual) and the deadlines for completing tasks and work. Personal planning, accounting, control, and analysis of task execution are performed in the "week-day" format. The plant's divisions carry out weekly planning, accounting, control, and analysis of task execution.

B. The purpose of the TRR Technology is to synchronize in time and harmonize within the enterprise workforce the process of performing tasks and work that constitute the essence of the enterprise's IIA, and, on this basis, to sharply increase the labor productivity of its managers and specialists.

2.2.2. Objectives of the TRR Technology

To improve the labor productivity of managers and specialists, the TRR Technology pursues the following main objectives:

1. Improve the use of working time by managers and specialists by:
   a) reducing time losses;
   b) performing creative tasks during the most productive period of the workday;
   c) reducing the number of switches from one task to another;
   d) utilizing previously unproductive time;
   e) maintaining an optimal work-rest schedule.
2. Help managers and specialists to focus on the most important tasks by correctly prioritizing tasks and work from the standpoint of the enterprise's strategic goals. This objective is achieved due to the fact that, in the TRR Technology, the enterprise's goals and

priorities are consistently transmitted from the level of the general director to each manager and specialist.

3. Deepen the division of labor (through the development of intra-plant specialization and cooperation) by delegating authority.

4. Increase motivation of managers and specialists for productive work by applying incentives based on documented planned and actual time expenditures.

5. Improve production culture and the level of scientific organization of labor, as well as enhance the style and methods of management through the use of a unified plant standard for planning and accounting of time expenditures for performing current tasks and work.

6. Strengthen the educational and training function of managers through regular contact with performers when communicating planned assignments and approving reports. As a result of such regular interactions, subordinate employees develop skills and competencies and receive experience and knowledge from their managers. In addition to the main objectives, the TRR Technology also pursues the following further goals.

7. Accumulate statistics and build an informational basis for the development of labor standards that will increase the reliability and accuracy of future IID planning.

8. Create an informational and methodological foundation for the algorithmization of the intellectual labor of managers and specialists, ultimately enabling extensive use of computers, communication tools, automation, and the application of AI in management procedures.

9. Increase the organizational discipline of managers and specialists, which should contribute to personnel development, growth of professionalism, and greater responsibility.

2.2.3. Principles for the Design and Operation of the TPP Technology

The principal design solutions underlying the technology of personal planning (TPP) are based on several fundamental principles.

1. Principle of continuity.

The implementation of the principle of continuity implies that, at the stage of introducing the TPP technology, it incorporates many procedures for planning the innovation and investment activities (IIA) of managers, specialists, and organizational units that have already developed within the enterprise.

For example, at a hypothetical enterprise, daily operational meetings are held with the General Director and his deputies. In addition, the head of each structural unit communicates current planned tasks to the executors and monitors their implementation. In different units this work may be organized differently: in some cases planned tasks are communicated in written form, in others in digital format, and in others orally. The periodicity of planning, accounting, and analysis also varies. Many managers and specialists maintain personal diaries in which they plan and record the tasks to be performed and the deadlines for their completion.

Thus, it can be said that a certain system of time planning and accounting has developed at the enterprise. However, this system is not standardized: time expenditures are neither planned nor recorded (only task deadlines are indicated), and there is no linkage between plans at different hierarchical levels.

In accordance with the principle of continuity, within the TPP technology the tasks and activities planned for managers, specialists, and units are established in the same manner as before. With the introduction of TPP, therefore, planned and controlled tasks, activities, and assignments are not centrally classified or standardized. A superior manager assigns plans to a subordinate unit or executor and formulates tasks and activities as he considers appropriate, just as was done prior to the introduction of the TPP technology.

In the future, as experience accumulates, the tasks and activities planned and monitored within the TPP technology, as well as the corresponding time norms, may be typified and systematized.

2. Principle of clarity (visualization).

The TPP technology includes three planning and accounting forms. These forms are developed according to a unified template and contain a minimal set of requisites. Such a design solution ensures the comparability of plans and simplifies their perception, thereby enhancing transparency. According to the developers of the prototype TPP technology, this approach should facilitate its implementation at all levels of the managerial hierarchy.

Documentation of long-term activities also complies with the principle of clarity: all essential data required for long-term planning are placed on a single reference sheet.

3. Principle of universality.

Within the TPP technology only two planning subjects are defined:

1) the supervisor;
2) the executor.

If a plan is issued by the head of a higher-level unit to the head of a lower-level unit, the former acts as the supervisor and the latter as the executor. This constitutes the essence of the principle of universality. Owing to this principle, the formally two-subject structure of the TPP technology covers the entire hierarchical organizational structure of the enterprise.

At the lowest level of management, the executor is an individual employee, while the supervisor is the manager of the primary structural unit in which the employee works.

4. Principle of agreement.

Each planning and accounting form within the TPP technology contains four planning parameters:

1) the list of tasks / activities;
2) priority;
3) time expenditures (in hours) for each task or activity;
4) the deadline for completion.

These parameters constitute the subject of agreement between the supervisor and the executor. It is assumed that, at present,

it is impossible to determine scientifically substantiated time standards for many tasks and activities performed by enterprise managers and specialists.

5. Principle of time limitation.

The time allocated to each executor for performing planned tasks during a working day cannot amount to the full eight hours. This is because a portion of the working day is inevitably spent on hygienic breaks, professional development activities, and other related matters. Therefore, the daily time limit considered in planning is determined through agreement between the supervisor and the executor.

6. Principle of deferred material incentives.

At the initial stage of the technology's operation, material incentives are not applied, due to the absence of official time standards and the significant role of negotiated agreements regarding the composition of tasks and their planned labor intensity.

As experience in planning and time accounting accumulates, the system of material incentives may subsequently be developed.

7. Principle of documentation.

At the initial stage of TPP implementation, strict documentation of plans and reports is required. All planning and accounting forms are prepared in paper format. In the future, the transition to electronic documentation may be implemented.

8. Principle of continuous development.

The TPP technology is expected to develop in several directions, including:

a) the application of computers, modern communication systems, and other information technologies, including artificial intelligence;
b) the creation of an official database of standardized tasks and activities, along with corresponding time norms required for their execution;
c) integration of the technology with various material and non-material incentive systems;
d) refinement of the periodicity of plan preparation and reporting, as well as the organizational schemes governing interaction between supervisors and executors;

e) further specification of the document forms used within the system.

Modifications to the TPP technology will be introduced through version updates. As well-founded proposals for improving procedures and implementation schemes accumulate, new versions of the technology will be developed and introduced.

9. Principle of monitoring.

Monitoring the functioning of the TPP technology is carried out by a System Administrator appointed by order of the General Director. According to a defined plan, the System Administrator:

1) collects proposals from participants in planning and production accounting regarding improvements to the procedures and implementation schemes of the TPP technology;
2) conducts audits and other inspections related to compliance with the rules and procedures of planning, accounting, control, and analysis defined by the TPP technology;
3) studies literature on time management and participates in training programs and courses;
4) maintains a logbook documenting observations of the functioning of the technology;
5) organizes training for new employees and professional development programs on time management issues;
6) compiles a collection of regulatory, scientific-methodological, and other literature on time management and periodically disseminates these materials among enterprise employees.

10. Principle of training.

All participants involved in the TPP technology must undergo training (in the form of workshops or training sessions) in time management.

For training senior managers (the director and his deputies) and middle-level managers (heads of structural units), external consultants and trainers are engaged. Training for lower-level managers and specialists is conducted by their immediate supervisors based on materials prepared by external trainers.

2.2.4. Functional Structure of the TPP Technology

1. The functioning of the TPP technology at the enterprise implies the regular preparation and execution of the following documents:

1) Form 1–TPP: *Department Weekly Work Plan*;
2) Form 2–TPP: *Personal Weekly Work Plan*;
3) Form 3–TPP: *Personal Daily Work Plan*.

2. Samples of these forms should be developed at the enterprise with the assistance of external consulting specialists. The forms *"Overview of Long-Term Departmental Activities"* and *"Overview of Personal Long-Term Activities"* may be prepared in a free format. The sequence of operations involved in completing and implementing the document forms may be represented in a documentogram.

3. For the purposes of long-term planning of departmental and individual activities, the forms *"Overview of Long-Term Departmental Activities"* and *"Overview of Personal Long-Term Activities"* are used. These forms are prepared in an arbitrary format in accordance with the following principles:

1) directionality—the long-term overview should contain the main provisions that define the general direction of activities. These may include the mission, functional responsibilities, long-term objectives, criteria for prioritization, and performance indicators of the enterprise;
2) clarity—all activities with a planning horizon exceeding one week are presented in the overview in the form of a two-dimensional schedule;
3) accessibility—the overview includes all important dates and events that must be taken into account during weekly planning, such as the launch of a new product, the signing of a contract, preparation of reports, organization of exhibitions, and similar activities.

2.3. Regulatory Policy and Personal Self-Management at an Innovative Enterprise

Problems with planning working time arise for most people because real time is much more limited than the virtual time people assume they have. An experiment was conducted in which participants were asked to prepare a daily schedule specifying the time allocated for each activity. The results showed that the total amount of time assigned to tasks was twice the length of a 24-hour day. This confirms that most people lack a realistic sense of time. People constantly fail to complete planned tasks because they subconsciously behave as if a day contains 48 hours instead of 24.

Complaints about the lack of time have become one of the defining characteristics of modern life. Everyone claims to lack time—even those who are objectively idle. Even individuals who spend hours looking at their smartphones claim that they have no time. At the same time, almost no one seriously records or analyzes the use of their time.

For example, most people can state their annual income from the previous year with precision down to the last hryvnia. However, very few can answer the following questions:

1. How many hours in the past year were devoted to meaningful work?
2. How much time was spent reading?
3. How many hours were lost and for what reasons?
4. How much time was spent using a smartphone?
5. How much time was spent commuting?

Unfortunately, in many cases individuals do not have a structured life plan, whether long-term (five-year horizon) or even short-term plans for the year or month.

At the same time, there exist technical methods and practical techniques that allow individuals to achieve greater productivity within the limited time available. In other words, within the fixed time resource that each person possesses, it is possible to obtain greater results, more effective use of personal capabilities,

and improved relationships with colleagues and others in both professional and personal contexts.

Issues related to planning and accounting for personal time have been addressed in the works of well-known management scholars such as:

1. Peter Drucker.
2. Alan Lakein.
3. Klaus Møller.

In the further discussion, the ideas and approaches developed by these specialists will be utilized. In addition, the analysis incorporates the authors' own developments in the field of management technologies and the concept of "regulatory policy".

The generalized structure of procedures and operations involved in the technology of personal self-management is presented in Table 2.2 (see p. 89). This technology assumes that each manager and specialist at the enterprise carries out personal planning of innovation and investment activities (IIA) on a weekly and daily basis.

Key features of this approach include:

1. Weekly planning and reporting are coordinated with the weekly plans and reports of the organizational units.

2. Daily planning and accounting are performed in the mode of personal self-management.

3. When preparing weekly personal plans, a manager also prepares or updates an overview of long-term activitiescovering broader time horizons such as a month, quarter, or year.

At the initial stage of implementing the self-management technology in innovation and investment activities, the manager develops a personal regulatory policy, which serves as the basis for organizing personal time, defining priorities, and ensuring consistency between individual work plans and the strategic objectives of the enterprise.

The term "policy" is widely used in both public administration and economic practice. In academic literature, legislative acts, and regulatory documents, this term is frequently applied at the state level, for example in expressions such as industrial policy, customs

policy, or innovation policy. At the same time, the term is also widely used at the enterprise level, where one encounters concepts such as accounting policy, innovation policy, personnel policy, sales policy, and pricing policy.

An attempt to clarify the meaning of the term policy through the analysis of the expressions listed above does not lead to a single unambiguous interpretation. In some cases, the term refers to the goals and objectives of an organization that implements a particular policy (for example, technological policy, personnel policy, or sales policy). In other cases, it refers to decisions adopted

Table 2.2

Composition of Procedures and Operations of the Technology of Personal Self-Management in Innovation-Investment Activity (IIA)

Technological Procedure	Technological Operation
1. Development of Personal Regulatory Policy	1.1. Preparation of a personal life map, identifying key life domains or types of activity.
	1.2. Formulation of life and professional goals.
	1.3. Conducting a personal SWOT analysis.
	1.4. Formulation of principles and rules of personal self-management.
2. Compilation of a Task Overview and Determination of Priorities	2.1. Study of departmental work plans and reports, results of one's own work for the previous period, regulatory documentation, and other relevant information.
	2.2. Compilation of a list of tasks.
	2.3. Determination of task priorities.
3. Preparation and Implementation of Personal Work Plans for the Week and the Day	3.1. Preparation of a weekly list of work activities in relation to tasks.
	3.2. Determination of labor intensity (in hours) and deadlines for each activity.
	3.3. Execution of personal tasks and work activities.
4. Monitoring the Implementation of Personal Plans	4.1. Determination of the actual completion dates of tasks.
	4.2. Submission of completed tasks to the head of the department.
	4.3. Analysis of the implementation of personal work plans.

by an enterprise among several possible alternatives, as in the case of an enterprise's accounting policy. In a third interpretation, the term denotes schemes or algorithms for addressing particular managerial issues, such as pricing policy.

In reference works and encyclopedias, the term policy is most often associated with the activities of the state or large public institutions. In this context, definitions such as the following can be found:

- the art of governing the state;
- the doctrine of methods for achieving state objectives;
- "the science of state governance—its forms, intentions, and objectives, as well as the manner of its actions" (according to Vladimir Dal);
- the directions and methods of activity of political parties and the state;
- the activities of governmental bodies and public institutions determined by their interests and objectives.

A more general interpretation of the term policy, found in both domestic and international dictionaries, is expressed through definitions such as:

- a course of action aimed at achieving a particular objective;
- goals and the means of achieving them;
- a planned course of action;
- a plan of action adopted by a person or organization;
- a line of action regarding a specific issue;
- a line of conduct adopted in response to given circumstances.

An analysis of these formulations allows the following generalized definition to be proposed:

Policy is a set of principles and rules whose implementation enables an organization or an individual to achieve defined objectives.

In this context, the term principle refers to a fundamental premise or a basic, stable rule of activity. In turn, the term ruledenotes a provision that establishes a prescribed procedure for action or requires the fulfillment of certain conditions or decisions.

Taking these definitions into account, the concept of personal regulatory policy may be defined as a system of goals, principles, and rules of personal self-management whose implementation increases the effectiveness of personal planning and accounting of the activities of a particular manager or specialist in the process of innovation and investment activity (IIA). This system of goals, principles, and rules effectively represents an ideological or conceptual framework for personal self-management in the near-term perspective, for example over the course of a year.

The key concept here is "regulation" (reglament). In dictionaries of foreign terms, regulation is interpreted as a set of rules governing the procedure of a particular activity. In the present context, regulation forms a kind of infrastructure within which a manager or specialist performs their activities. This infrastructure can be compared metaphorically to a system of roads, power lines, water supply networks, sewage systems, communication lines, oil pipelines, and gas pipelines. When such infrastructure exists within a territory, it becomes possible to organize effective economic activity there. Similarly, when the goals, principles, and rules of personal self-management are clearly defined, a manager or specialist can significantly improve the effectiveness of their innovation and investment activities.

As follows from the data presented in Table 2.2, it is proposed that the development of personal regulatory policy for innovation and investment activities should begin with the preparation of an individual life framework. This life framework may include such domains as family, health, home, household management, education, professional activity, personal development, and recreation.

The greatest sense of satisfaction and well-being can be achieved when an individual realizes their potential across all major areas of life and achieves goals in each of them, rather than concentrating exclusively on a single sphere. Accordingly, the proposed technology of personal self-management recommends establishing goals in all principal areas of life.

Alan Lakein recommends preparing a document titled "Declaration of Personal Life Goals." According to Lakein:

"Such a declaration will give your life a purposeful direction. It will help you feel that you are the master of your own destiny. It will provide you with a tool that will allow you to evaluate different alternatives and better balance the various aspects of your life. It will also help minimize unnecessary contradictions that arise in the use of time."

Lakein further emphasizes that people often think about their life goals throughout their lives, whether consciously or unconsciously. However, thinking about goals and recording them in writing are fundamentally different processes. Goals that are not written down frequently remain vague and utopian aspirations, such as "it would be nice to travel" or "it would be nice to become a millionaire." When such thoughts are documented, they become concrete and clearly formulated, which makes it possible to analyze them more deeply and understand the true motivations underlying long-standing aspirations.

Table 2.3 presents an algorithm for implementing the technological procedure "Identification of Personal Life Goals."

Table 2.3

Algorithm for Implementing the Technological Procedure "Identification of Personal Life Goals"

Stages of the Technological Procedure	Content of the Stage
1. Compilation of Goal List No. 1 through an internal brainstorming process	Brainstorming is conducted in accordance with three rules: (1) all ideas are recorded, even the most unusual or unrealistic ones; (2) emphasis is placed on the quantity rather than the quality of ideas; (3) ideas are not ranked or evaluated in terms of their feasibility.
2. Compilation of Goal List No. 2	The list contains answers to the question: "How would I like to spend the next three years?"
3. Compilation of Goal List No. 3	The list contains answers to the question: "What would I do if I knew with certainty that I had only six months left to live?"
4. Compilation of the final list of life goals	Ranking of the goals from Lists 1–3. Assessment of the labor intensity (effort required) of each goal. Elimination of goals that exceed the individual's personal time constraints.

At the first stage of this procedure, it is necessary to compile the most comprehensive possible list of goals across all spheres of personal, family, social, professional, material, and spiritual life.

At this stage, individuals should not feel constrained by the assumption that their entire life will have to be subordinated to the achievement of these goals. Therefore, List No. 1 should include everything that comes to mind. It is important not to hesitate to include goals that may appear distant from everyday reality, such as:

— renting a car and making a journey around the world;
— purchasing a summer house in Karolino-Buhaz;
— taking a full year of leave;
— losing ten kilograms through running or other physical activity.

The list may also include broad conceptual aspirations, such as happiness, success, wealth, love, or defending a doctoral dissertation.

At the second stage, the same exercise is repeated, but under a specific constraint formulated as the question: "How would I like to spend the next three years?" This limitation encourages the individual to focus on goals that are realistically relevant within a medium-term planning horizon.

At the third stage, life goals are reconsidered from a fundamentally different perspective. List No. 3 is compiled under the hypothetical assumption that only six months remain to live (for example, assuming that all residents of the city will perish in a catastrophic hurricane in six months). The purpose of introducing such a constraint is to identify those aspects of life that are truly important but currently neglected in practice.

After the completion of the third stage, three separate lists of goals are obtained. However, it is often the case that the number of tasks required to achieve all of these goals far exceeds the available time resources. The scarcity of time inevitably generates conflicts among goals. This conflict is resolved through the following procedure.

First, a consolidated list of goals is compiled. This list is then ranked according to priority. Each goal is assigned an approximate

labor intensity expressed in person-hours. The final list includes only those goals that can realistically be accomplished within the available time limit (see Table 2.3) over the next three years (or, in some cases, within a one-year planning horizon).

The formulation of goals must comply with the criteria commonly known in the English-language management literature as the SMART criteria:

Specific—clearly defined and unambiguous;

Measurable—expressed through indicators that allow the degree of achievement to be assessed;

Achievable—attainable under the existing conditions and available resources;

Realistic—consistent with the individual's capabilities and external constraints;

Time-bound—associated with a clearly defined timeframe.

For a SMART goal, it is necessary to specify both the timeframe (reflecting achievability, realism, and time constraints) and the expected result (reflecting specificity and measurability). The result may be described through a set of measurable indicators. For example, instead of the vague objective "to lose weight," a SMART goal would be formulated as "to reduce body weight by 5 kilograms."

The next technological step in the development of personal regulatory policy involves conducting a personal SWOT analysis (see Table 2.3). This method is based on the well-known SWOT analysis matrix, where the acronym SWOT derives from the English terms Strengths, Weaknesses, Opportunities, and Threats.

The essence of this method lies in a simplified structural classification of factors affecting an individual's activities. First, the entire environment is divided into two principal domains:

1. The external environment.
2. The individual (the person) themselves.

Subsequently, events and conditions within each of these domains are classified as either favorable or unfavorable. As a result, four analytical categories are formed:

Strengths—favorable internal characteristics of the individual;

Weaknesses—unfavorable internal characteristics;

Opportunities—favorable factors of the external environment;

Threats—unfavorable factors of the external environment.

This analytical framework allows managers and specialists to systematically evaluate their personal capabilities, limitations, and environmental conditions, thereby forming a more realistic and strategically grounded personal regulatory policy for self-management and innovation-related activities.

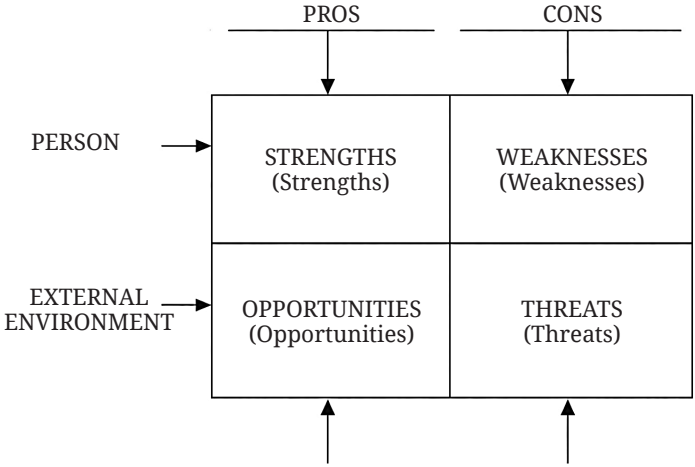

Fig. 2.3. SWOT Analysis Matrix

After conducting an analysis for each of the four sections of the SWOT matrix, appropriate action plans can be developed. For example, a plan may be formulated for utilizing personal strengths and existing favorable opportunities, as well as a plan for neutralizing personal weaknesses and avoiding external threats. Based on this analysis, the goals of IID (Innovation and Investment Activity) may be clarified or reformulated.

The following two-step algorithm can be proposed for implementing this technological operation.

1. Four lists are compiled (each list should contain 5–9 statements):

List No. 1—Opportunities in the external environment;

List No. 2—Threats in the external environment;

List No. 3—Personal strengths;

List No. 4—Personal weaknesses.

2. Life goals are then compared with the results of the SWOT analysis according to the format presented in Table 2.4. The analysis verifies how the implementation of the goals contributes to neutralizing personal weaknesses and mitigating external threats, while simultaneously enabling the most effective use of personal competitive advantages and favorable opportunities in the external environment.

Table 2.4

Impact of Personal Goals on Internal and External Factors (SWOT Factors)

Personal Goals	Implementation of Goals Addresses the Following Issues			
	Personal Factors		External Environment	
	Strengthen Competitive Advantages (S)	Reduce Weaknesses (W)	Utilize Opportunities (O)	Mitigate Threats (T)
1.				
2.				
…				
5.				

The development of a "Personal Regulatory Policy" is completed through the formulation of principles and rules of personal self-management (Table 2.2). Within the framework of this technological procedure, it is necessary to determine one's position within the coordinates of "personality and time." This is important because, as noted earlier, time is a personalistic category. The subjective perception of the passage of time differs significantly from one individual to another. Therefore, when formulating principles and rules, it is necessary to recognize one's personal characteristics related to the perception and use of time, as well as one's style and patterns of organizing activities.

A "personal regulatory policy" (albeit without explicitly using the term "policy") is applied by virtually all specialists in the field of self-management. In essence, the following principles may be adopted:

— the presence of a meaningful life goal;
— systematic documentation and accounting of all time expenditures;
— categorization of time, where the criterion is the individual's meaningful life goal and the task of personal development;
— the principle of increasing the share of time allocated to the primary category of activities at the expense of other categories;
— balance and rhythm in workloads: performing the most difficult tasks in the morning, alternating between light and demanding tasks, and avoiding urgent assignments;
— management of the diversity of activities;
— planning combined with feedback through self-reporting;
— reducing dependence on external pressures, including the rejection of high administrative positions or excessive managerial responsibilities;
— the principle of maintaining a non-deficit energy state, i.e., beginning each new work-rest cycle without accumulated fatigue;
— quality management of work activities, including the transition toward higher-level objectives.

These principles may also be formulated in a more concise form:

1. I do not accept obligatory assignments.
2. I do not accept urgent assignments (i.e., tasks with strictly imposed deadlines).
3. If fatigue arises, I immediately stop working and take a rest.
4. I ensure a sufficiently long sleep (approximately ten hours).
5. I combine demanding activities with pleasant ones.

Within this framework, two types of productivity can be distinguished. The first is the ability to complete a specific task in the minimum possible time. The second is the ability to accomplish the maximum volume of work within a fixed time period—a day, month, or year. The objective is to achieve the highest possible productivity of the second type, where the relevant time horizon is the entire lifespan. Achieving this objective should occur gradually.

To this end, three lists of workload categories may be compiled. The first list, "core activities," includes those forms of activity that contribute to the search for or attainment of a meaningful life goal and for which it is desirable to increase time allocation. The second list, "imposed activities," consists of activities dictated by external or internal circumstances and whose time share should preferably be reduced. Finally, the third list, "neutral activities," includes those activities whose time allocation should remain unchanged. For example, reading periodicals may be classified within this category.

The most important means of achieving one's goals is to reduce the share of imposed activities and correspondingly increase the time devoted to core activities. It is advisable not to increase the average daily workload, and especially not the maximum single-day workload, even if additional energy appears to remain. Fatigue accumulates gradually and may not manifest immediately.

Two types of fatigue can be distinguished: short-term fatigue and long-term fatigue. Short-term fatigue accumulates over a relatively short period—from minutes to several days—and is easily perceived; eliminating it usually requires a period of rest comparable to the time during which it accumulated. Long-term fatigue, however, may accumulate imperceptibly over months and manifest itself in various forms, such as rapid exhaustion, sudden weakness, fluctuations in blood pressure, or neurotic conditions. Eliminating long-term fatigue may require several months.

Klaus Møller, the founder of the Time Manager methodology, authored several books, one of which is entitled My Life Tree. In this work, he describes the philosophy of time management (which, in our terminology, corresponds to a personal regulatory policy) through the metaphor of a tree, an idea inspired by nature:

1) a tree has a trunk that supports large branches;
2) the branches carry smaller twigs, on which needles grow.

In other words:

— the trunk represents the primary goals that a person sets in both personal and professional life;

— the major branches represent the key areas on which attention must be concentrated in order to achieve these goals;
— the twigs represent the tasks that must be carried out within each key area;
— the needles represent the practical activities and operations required to complete each task.

As can be seen from the above discussion, the works of different authors identify various principles and rules of self-management. However, these principles and rules require systematization, which is proposed in Table 2.5 (see p. 100).

The compilation of Table 2.5 completes the development of the document entitled "Personal Regulatory Policy." The preparation of this document is a one-time activity carried out relatively rarely, usually once a year. Based on this document, a regular (weekly) technological procedure is subsequently implemented—"Compilation of the task overview and determination of their priorities" (Table 2.2).

In this study, a three-level structure of managerial and specialist activities within an enterprise is adopted: "goals—tasks—works." We do not attach any special meaning to the term *task*. It is assumed that within their innovation-investment activity (IIA), each manager or specialist independently determines what should be considered a task and what should be considered a work operation. Moreover, the composition of IIA differs significantly among managers and specialists. The mentality of this category of employees also varies considerably: some prefer to detail their tasks down to the level of the smallest operations, while others plan their activities in terms of large actions.

Modern organizers contain special sections listing tasks for the year, month, and week. We do not consider such a division necessary. It seems more appropriate to compile and adjust a personal task overview on a weekly basis, including in it all tasks of the current year. Many tasks are transitional in nature, and their completion deadlines may extend beyond a single week. For the same reasons, it is recommended that the task overview be compiled in an arbitrary form.

As follows from the principles formulated above (Table 2.5), the number of large tasks simultaneously performed by a manager or specialist cannot be large. Managers at an enterprise are

Table 2.5

Group of Principles	Principles and Rules
1. Work Regime (Daily, Weekly, and Monthly Schedule)	1.1. Principle of assigning fixed hours and specific days of the week to particular categories of tasks. 1.2. Principle of performing creative tasks during periods of highest productivity (in the morning for "larks," in the evening for "owls"). 1.3. Principle of allocating large time blocks for the execution of complex projects and tasks. 1.4. Principle of synchronization (performing tasks exactly within the scheduled time). 1.5. Principle of alternating periods of work and rest. 1.6. Principle of rhythmicity in work activities. 1.7. Rule of gradual progression. 1.8. Rule of reserving time buffers.
2. Scientific Organization of Work	2.1. Principle of delegating complex tasks to specialists and routine tasks to assistants. 2.2. Principle of breaking down "elephant tasks" (large-scale tasks) into smaller components. 2.3. Principle of minimizing switching between tasks and avoiding distractions. 2.4. Principle of balancing operational and strategic activities. 2.5. Principle of prioritizing tasks that enhance personal productivity. 2.6. Principle of classifying tasks according to the ABC rule. 2.7. Principle of eliminating tasks for which there will never be sufficient time (the ability to say "no"). 2.8. Principle of planning "from major tasks to minor tasks." 2.9. Principle of utilizing "waste" time effectively. 2.10. Rule of continuity. 2.11. Rule of documentation. 2.12. Rule of the "leading task." 2.13. Rule of the "lucky seven." 2.14. Rule of "ascending the ladder" (step-by-step advancement). 2.15. Rule of preparing a successor. 2.16. Rule of preparing an "alternative option" (a backup plan).

simultaneously engaged in operational work and strategic issues. It is generally accepted that top managers should devote at least 15% of their time to solving strategic (large-scale) tasks. This means that with a six-day working week, a manager should devote approximately one day (for example, Saturday) to addressing major strategic tasks.

The principle of balancing current and strategic activities can be maintained if a manager simultaneously solves no more than seven major tasks. This follows from the "magical number seven" rule, also known as G. Miller's rule. This rule is associated with significant differences among individuals in their ability to perceive and process new information. Miller's rule (7±2)—with adjustments for individual abilities—implies the following:

1) in education, by limiting incoming information to the lower bound of the scale (i.e., five units), the instructor can avoid overloading the audience, although this may cause impatience among the most capable listeners;
2) when forming a working group, its total size (including the leader) should be 5, 7, or 9 people, which ensures maximum effectiveness;
3) in management, the number of direct subordinates with whom a manager maintains primary contact should be 6±2 (7±2 including the manager); the exact number depends on the personal qualities of the manager. For example, Dwight D. Eisenhower, commander of the Allied forces during World War II, had only four direct subordinates, which historians often cite as one factor explaining his effectiveness in managing military operations;
4) for organizational change to begin, it is necessary to create a "critical mass" of employees who support the change (through retraining, motivation, and value transformation). The size of this critical mass is approximately 1/(7±2) of the total number of employees in the organization;
5) a well-prepared document, such as a methodological guideline, should contain 7±2 key provisions or sections;

6) the activity or process carried out by a single employee should ideally contain 7±2 stages or technological operations, including preparatory and concluding stages.

Of course, other applications of this important empirical rule are also possible. In general, the rule can be formulated as follows: in practice, everything related to communication between people or information processing by an individual should be divided into 7±2 components. If such a division is not planned deliberately, it may occur spontaneously. Moreover, the greater the complexity of communication or information processing, the closer the number of components should be to the lower limit of this range.

The tasks contained in the overview must have priorities. No task list can be considered complete unless it reflects the order of importance. To designate priorities, it is recommended to use the first three letters of the Latin alphabet. The letter "A" denotes the most important tasks, "B" denotes tasks of medium importance, and "C" denotes tasks of lower importance. Within each group, tasks may be further specified as A1, A2, A3, etc. The distribution of tasks among ABC categories is partly conditional; however, it represents a conscious managerial choice and may always be revised. If three tasks are identified in each category, the total list will contain nine tasks, which corresponds to Miller's rule.

After compiling a ranked task overview, the next technological procedure begins—"Preparation and execution of personal work plans for the week and the day." This constitutes the regular component of the technology of personal planning of innovation-investment activity (IIA) for managers and specialists. In full accordance with classical management theory, planning is the most important operation within this technology.

It is recommended to begin planning with fixed commitments and external assignments. These effectively reduce the available time limit and structure the work schedule. In accordance with the adopted regulatory policy (Table 2.5), planning should begin with major tasks. In other words, complex and large-scale issues requiring full concentration in the conscious mode should be scheduled

first—that is, tasks that require attention to only one problem at a time without distractions.

Distractions typically result in incomplete task resolution, headaches, fatigue, and stress. Therefore, it is recommended to alternate work performed in the conscious mode with work performed in the pre-conscious mode, where simpler and routine issues can be addressed (it is known that up to nine tasks can be processed simultaneously in the pre-conscious mode). Alternating tasks allows for some workload relief during the day.

Finally, it is advisable to maintain a reserve of small tasks in the daily plan that can fill unexpected time gaps. For example, a scheduled meeting may be cancelled or postponed. Such time can then be used to resolve backup tasks.

Summarizing the technique of personal time planning, the following steps in developing a work plan can be identified.

1. Priority to new tasks.

First of all, it is recommended to structure the incoming flow of tasks by asking several key questions:

1) Why should this task be done?
2) Why should I perform it personally? Perhaps it can be delegated to another employee whose time is less costly for the enterprise or who has greater expertise in the subject.
3) Can the task be postponed?
4) Why must it be performed in this specific form? Perhaps it does not need to be written and can be communicated orally; perhaps it is unnecessary to travel and a phone call would suffice.

In this way, the list of tasks can often be significantly reduced.

2. Flexible planning.

In practice, a prioritized task overview ("to-do list") represents a flexible plan. Tasks are not rigidly tied to specific time slots, which is especially important under conditions of uncertainty, but the plan determines the order in which tasks should be completed. Even if not all tasks are completed, the most important ones will be addressed.

Truly important and urgent tasks are those directly related to the achievement of goals. Often, important but non-urgent

tasks—typically strategic in nature—are postponed. It is therefore advisable to reserve time to analyze progress toward goals and determine necessary adjustments.

For prioritization, the 80/20 principle (Pareto principle) may be applied: from the entire list of tasks, retain only the 20% that produce the greatest results, while eliminating the rest.

Planning remains necessary even if plans cannot always be fully implemented in practice. When a plan exists, the process becomes conscious and manageable. Without a plan, it becomes impossible to distinguish truly important tasks from secondary ones, and strategic orientation may be lost.

In an unstable environment, plans should not be static. They must change as circumstances evolve. A plan is not a dogma but a flexible hypothesis about future actions.

3. Time reserves.

Classical time-management approaches recommend planning only 60% of working time, leaving the remaining 40% as a reserve:

1) 20% for unforeseen events (force majeure);
2) 20% for spontaneous activities (creativity or initiative).

4. Combating time losses.

Interruptions represent a serious obstacle to effective planning. Managers often spend considerable time responding to calls, unscheduled meetings, and other minor issues. Research shows that a manager works continuously for only about eight minutes on average before being interrupted. Consequently, a task that could be completed in thirty uninterrupted minutes may require several hours.

5. Grouping similar tasks.

Constant switching between different types of activities consumes time. Therefore, it is recommended to group similar tasks together. For example, preparing several contracts or making multiple phone calls should be performed consecutively within a dedicated time block.

6. Clearing problem backlogs.

Maintaining complete order is unrealistic, but it is important to ensure that the level of disorder remains manageable. Regularly

clearing accumulated documents, messages, and tasks helps maintain control over the workflow.

7. Considering personal characteristics.

People differ significantly in their approach to time management. Some prefer highly structured plans, while others work more effectively in spontaneous modes. Therefore, the chosen tools and techniques of personal self-management should correspond to individual psychological characteristics.

8. Personal motivation.

Working with personal weaknesses is difficult; therefore, self-motivation mechanisms are necessary. Some authors recommend beginning with simple tasks in order to build momentum before addressing more complex ones.

9. Important and urgent tasks.

The concepts of importance and urgency are relative (Fig. 2.4). Tasks tend to change their level of urgency and importance over time, but at any given moment these indicators can be approximately determined for practical planning purposes.

	Important	Not important
Urgent	Execute personally	Delegate to others
Not urgent	Schedule in the work plan	Eliminate / discard

Fig. 2.4. Importance-Urgency Matrix

Important and urgent tasks should be addressed immediately and handled personally. These situations resemble "firefighting." Ideally, however, such situations should be prevented from arising so frequently. Successful individuals tend to deal with these issues at an earlier stage—when they are already important but not yet urgent—thus enabling the use of assistance from others, proper time planning, and rational allocation of resources.

Tasks that are neither important nor urgent can safely be discarded, although in practice they often consume a significant portion of time and may even provide temporary satisfaction.

Experience demonstrates that neglecting such tasks typically has no serious consequences.

Tasks that are important but not urgent must nevertheless be performed, although they are precisely the tasks for which time is most often lacking. In order to complete them, they should be planned in advance; otherwise, they will eventually become both urgent and important. For example, if a car's fuel tank has just been filled, the next refueling is neither urgent nor important. However, as the vehicle continues to operate and the fuel level declines, refueling eventually becomes both urgent and important. Ignoring this task may lead to a situation where the car stops in traffic and the driver must leave it in order to obtain fuel. It should be noted that such tasks typically provide the greatest long-term returns in terms of career development and success.

Tasks that are urgent but not important should be delegated, reduced, or eliminated whenever possible.

10. The "Saw Principle".

A decline in productivity caused by constant interruptions—the so-called "saw effect"—poses a serious threat, particularly for employees who have limited control over external disturbances, such as customer service managers.

Consider the following example. You arrive at work in the morning intending to write a report. Initially, it takes some time to "warm up" and become fully engaged in the task. As productivity gradually rises toward its peak, a phone call interrupts you; then a colleague arrives with a question; afterwards you go to lunch; following lunch you respond to emails. What happens to your productivity and to the progress of the report? Productivity declines. Although it may appear that productivity repeatedly returns to its maximum level, in reality efficiency gradually decreases as interruptions accumulate.

As a result, you may spend the entire day working on the report but produce only a small portion of the required content. Suppose that the deadline for submitting the report is the following morning. In such circumstances, you may decide to stay late at the office or arrive very early the next day. However, another important factor often overlooked is human biological rhythms.

Numerous statistical studies based on detailed time measurements and productivity assessments have demonstrated how human efficiency varies throughout the day. Apart from the well-known distinction between "larks" and "owls," most individuals who begin their working day well rested experience a gradual increase in productivity until lunchtime, when performance typically reaches its peak.

After lunch, productivity declines, then rises slightly again toward a secondary peak, and subsequently decreases steadily. By the end of a standard working day, productivity is on average approximately half of its pre-lunch level and continues to decline thereafter. Consequently, a task that could be completed in one hour during a period of high energy may require two or three hours when performed during a period when efficiency has fallen to approximately 30%.

If one works until two o'clock in the morning and returns to work at eight o'clock, the quality of work performed under such conditions inevitably deteriorates. A common misconception suggests that working under extreme time pressure stimulates creativity and unlocks hidden reserves of talent. In reality, this assumption rarely proves valid, and many individuals are unable to perform effectively under the constant threat of urgent deadlines.

Comparing two similar tasks—one completed in a calm and carefully planned manner and another executed hastily under severe time pressure—usually demonstrates that the former is of significantly higher quality. Well-planned and thoroughly considered work generally produces superior results compared with work performed spontaneously in response to urgency.

Therefore, it is essential to maintain an optimal balance between work and rest in order to avoid excessive strain. An examination of the schedules of highly successful individuals reveals that they often group similar tasks into blocks of activity. Although the saw effect cannot be completely eliminated, grouping tasks into larger blocks allows individuals to switch to another type of activity afterward, which effectively provides a form of cognitive rest.

When colleagues frequently interrupt work, one practical solution is to designate specific time blocks during which communication is permitted, while limiting interactions during other periods. Over time, colleagues adapt to such arrangements.

Another method of mitigating the saw effect is learning to enter a "state of high productivity" or what is sometimes described as a "state of genius," in which tasks are performed with exceptional efficiency. Some individuals require considerable time to reach this state; however, by training oneself to enter a productive state quickly—almost instantaneously—significant savings in time, effort, and psychological resources can be achieved.

According to Parkinson's Law, work expands to fill the time allocated for its completion. For example, if an entire morning is allocated for writing a report, it is unlikely that the task will be completed within thirty minutes. Conversely, if only thirty minutes are allocated, it may be possible to complete the task in approximately forty minutes. Failure to recognize Parkinson's Law often leads to the gradual postponement of goals into an indefinite future.

Finally, the last technological procedure of personal self-management (Table 2.6) involves monitoring the implementation of personal plans. This raises the question: *Is such monitoring worthwhile?* The correct answer is unequivocally affirmative.

Recording time expenditures requires approximately 15–20 minutes per day. The use of computer-based time-tracking programs can reduce this requirement to 2–5 minutes per day. The benefits, however, are substantial. Empirical evidence indicates that systematic monitoring of time expenditures by managers enables the identification of time reserves amounting to approximately 1.5–2.5 hours per day.

The question then arises: which specific types of time expenditures produce such a significant effect?

CONCLUSION

1. The monograph presents a study of the problems of personal planning of innovative-investment activity (IIA) of managers and specialists of industrial enterprises. An analysis of the challenges associated with the technologization of innovative-investment development (IID) management is carried out. The essence of the technology of personal planning (TPP) is identified with a clarification of the concept of "time" in a technological context. Scientific instruments and methods for designing and implementing the TPP technology have been developed, followed by its practical application based on the design and deployment of TPP technology at a specific enterprise.

2. The study clarifies the essence of managerial technologies and their role in the management system of IIA at an industrial enterprise. It is shown that any technology decomposes the management process into stages and phases, which makes it possible to develop algorithms for executing technological procedures and operations and, on this basis, to ensure the replication of contemporary scientific tools and managerial methods. A typified structure of managerial technology is defined, including: executors of technological procedures and operations, input and output information, methods and algorithms for working with this information, and technical means for implementing procedures and operations within the IID process.

3. The monograph develops a classification of managerial technology types within IIA and identifies their properties by type. It is demonstrated that both regular (variant and invariant) and irregular (periodic and one-time) managerial technologies exist. The study examines how efficiency factors of managerial technologies manifest across these types, including:

a) rationalization and specialization of managerial labor;
b) phased control and deviation detection;
c) separation of routine and creative procedures;
d) replication of best practices;
e) adaptation of scientific management tools and methods to enterprise-specific conditions.

4. The work examines the problems of personal planning of IIA for enterprise managers and specialists. It is shown that:

a) non-productive losses of working time among managers and specialists often reach 40–60% or more, hindering productivity growth and stimulating an increase in personnel numbers (resulting in unjustified staffing expansion);
b) in day-to-day operations, corporate priorities are not defined or not respected, the intentions of top management are not communicated to line or functional managers and specialists (or are distorted along the way), and top executives do not receive reliable information on the progress of priority tasks;
c) the goals of the enterprise and those of individual employees frequently come into conflict, meaning that systematic goal translation across management levels is not ensured;
d) synchronization and harmonization of work performed by different managers and specialists is disrupted (some are overloaded, others underloaded; some advance ahead of schedule, others fall behind), resulting in tasks being completed at the pace of the slowest link of the innovation production chain;
e) important managerial decisions are made hastily or under time pressure (studies show that, for this reason, up to 70% of decisions made at some enterprises are erroneous or suboptimal);
f) enterprise management is carried out in a reactive rather than proactive mode; managers are forced to deal with "urgent" tasks continuously generated by IID instead of purposefully implementing the adopted strategy;
g) factual accounting data enabling quantitative assessment of the work performed by managers and specialists is missing, making it impossible to build an effective motivation system based on objective productivity indicators.

5. The study refines the essence of the technology of personal planning of activities of enterprise managers and specialists. A classification of implementation formats for this technology is developed. Specifically, the following formats are identified:

1) the primary format of TPP technology (self-management using Time Management methods);

2) the necessary format of TPP technology (when the self-management technology is supplemented by a technology for monitoring assignment execution);

3) the effective format of TPP technology (involving centralized planning and accounting of work performed at the enterprise).

6. The monograph proposes a methodology for self-management of enterprise managers and specialists based on the principles of Time Management. The concept of "time" is clarified in the context of management technology. Properties characterizing the "person-time" dyad are identified. Self-management tools are proposed. Principles and rules of personal planning and accounting in a self-management mode are introduced.

7. A methodology for designing and implementing the technology of personal planning of IIA for managers and specialists is developed using the concept of the "Regulatory Policy" and prototype-based design.

8. Using the case of the industrial enterprise JSC Odeskabel in southern Ukraine, the monograph demonstrates the effectiveness and practical applicability of the proposed methodology for designing and implementing the TPP technology.

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