Interreg - IPA CBC
CCI 2014TC16I5CB006

YOUR BUSINESS GUIDE TO NON-TECHNOLOGICAL INNOVATIONS IN SMALL AND MEDIUM ENTERPRISES

Project "Improving the competitiveness of SMEs of the CB region by fostering and promotion of non-technological innovations" is funded by the European Union through the Interreg-IPA CBC Bulgaria-the former Yugoslav Republic of Macedonia Programme 2014-2020. The contents of this publication are the sole responsibility of Association Business Information and Consulting Center - Sandanski and can in no way be taken to reflect the views of the European Union or the Managing Authority of the Programme.

Innofoster

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Project: Improving the competitiveness of SMEs of the CB region by
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InnoFoster, Ref. No: CB006.1.31.019

YOUR BUSINESS GUIDE
NON-TECHNOLOGICAL INNOVATIONS IN SMALL AND MEDIUM ENTERPRISES

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About the project

Project "Improving the competitiveness of SMEs of the CB region by fostering and promotion of non-technological innovations" is a joint initiative of Association Business Information and Consulting Center – Sandanski and Center for Development and Promotion "Promo Idea" of Strumitsa, Macedonia. The funded by the European Union through the Interreg-IPA CBC Bulgaria-the former Yugoslav Republic of Macedonia Programme 2014-2020.

Project InnoFoster is aimed at improving the competitiveness of SMEs of the cross-border region by fostering and promoting the adoption of non-technological innovations. The action will work to strengthen cross-border links between SMEs and business support organizations from the region of Blagoevgrad, Bulgaria and the South-eastern planning region of the Republic of Macedonia.

The implementation of the project will facilitate the access to new and innovative practices and processes, thereby helping to increase the business growth prospects and economic potential of the region. The project envisages the implementation of the following activities:

- **Carrying out a detailed needs analysis on the current state of the innovation environment** in the targeted cross-border region in terms of needs, innovation potential and technological development of SMEs of Bulgaria and Macedonia.
- **Development and regular update of a web portal** with a wide range of online tools to promote non-technological innovations among businesses on both sides of the border.
- **Printing and distributing of a Business Manual** for the introduction of non-technological innovations in small and medium-sized enterprises.
- **Organizing two-day training seminars in Bulgaria and Macedonia** to promote non-technological innovation in SMEs from the cross-border region;
- **Developing a Virtual Learning Academy for Non-technological Innovations.**
- **Establishment of an information and advice desk for promotion and support for the introduction and development of non-technological innovations** in companies from the region of Strumitsa, Macedonia.
- **Development of innovative Internet-based software for organizing virtual exhibitions and fairs (E-FAIR)** and organizing a pilot online exhibition of companies from the cross-border region.
- **Organizing a Discussion Forum** "Non-technological innovation in SMEs - exchange of experience and good practices" in Macedonia.
- **Organizing an International conference** on "Innovation in Small and Medium Enterprises - Prerequisite for Enhancing the Economic Potential of the Cross-Border Region" in Bulgaria;
- **Establishment of a Cross-Border Business Network f**or the promotion and development of non-technological innovation in SMEs in the cross-border region.

The project has been implemented in the period from 18.10.2016 to 17.01.2018 and the total budget of the funding for both partners is 113.827,22 Euros. More information on the project can be found at www.innofoster.eu

Introduction

Lately, the term 'innovation' has gained vast popularity due to the rapidly developing technologies and the new policy of the European Commission which is focusing on the support for the development of small and medium-sized enterprises. In general, innovation is perceived as the process of introducing various inventions and scientific excellence in order to receive a more advanced product or optimized production costs. However, the term holds a deeper meaning that covers not only products and production tools (technologies), but also methods, the organization of the process and people themselves as the results are expected to be seen not only in the improved product but also in the enhanced efficiency of the organization.

Historically, innovations date back to ancient times. Innovations are a product of human psychology and in particular of problem-oriented thinking. Innovations are always specific. They find a solution for a particular problem and are related to overcoming obstacles on the road to accomplishing goals. Actually, the choice of primitive people to use sticks and stones to fight wild beasts was considered as an innovation. The invention of the wheel in analogy to the stones that were rolling down the hill was also innovative. Innovation is the transfer of mechanisms by which the world is built for specific causes in a direct, easy, and fast way.

Rockefeller had to come up with a relevant solution for transporting its oil after its argument with the railway monopolist Carnegie. That led to the first pipelines for transfer of oil from the oil wells to oil refineries. This is what innovation is truly like. Innovations are not only the invention of something but also the realization of it. Innovation is implementing something that someone else had already invented. The founder of 'General electric' Thomas Edison was such an inventor. Actually, another person, a partner of his, invented the first light bulb, but Edison was the one who made it light longer. He was also the person who sold the first bulb. It is not even necessary to manufacture a product – you only need to market it and make it more popular.

Afterwards, market demand led to another well-known innovation e. In the early 20th century the demand for automobiles was higher than the existing supply while their production remained complicated and expensive. In general, the production process of a single car took a lot of time. In his effort to make cars the most preferred choice of transportation, Henry Ford invented the conveyer belt as a way to shorten the time and minimize expenses for the production of cars.

Nowadays, companies like Google, Apple, Facebook and Tesla are considered as innovative since they rely on high and complicated technology. As a matter of a fact, what they did was to establish the appropriate structure and organization which was able to produce and develop a certain technology or a product. Those companies are built upon the culture and creative thinking of their founders, i.e. thinking beyond boundaries, prejudices and clichés - a problem-oriented thinking.

Non-technological innovations are specifically aimed at optimizing the structure and functions of the organization – not only the processes that are closely related to the production of goods and

services but also the interactions and function of the organization itself, the hierarchy and productivity. A considerable disproportion between introduced technological and non-technological innovations occurs with technological ones leading. This phenomenon is due to the rapid development of information technologies and mass digitalization. At the same time, it is getting more and more difficult for organizations to navigate in the dynamically changing business environment and adapt their activities to the new economic and social realities. It takes a lot of time, efforts and resources for an organization to learn how to adapt to new technologies. This is partly a result of the relatively old methods of training and acquiring key job-related skills. All of this outlines the need of the introduction of new business models which are oriented towards creating appropriate organizational structure that would be able to respond fast and flexible enough to the challenges of the current dynamic business environment. Overcoming the social and cultural differences, attitudes and stereotypes that have been built-up throughout the period before the informational 'revolution' represents one of the major obstacle. The educational system is unable to adapt to the needs of the business and it can not produce the qualified staff that is adaptable, highly productive and motivated.

Meanwhile, technological and informational revolution have changed and reshaped the social context of consumers who are now adapting fast to new products fast and have higher demands and requirements to producers and service suppliers. This results to an increased competitiveness pressure over organizations which have to improve quality and decrease prices. The market is getting global, users are becoming more and more demanding and have easier access to any kind of products or services – anything, everywhere with a single click of a button. This leads to the development and introduction of novel and more efficient methods and means for entering and surviving on certain markets. Nowadays, it is not enough only to have a good product on a good price – you need to “grab the attention” of the user and offer him “an experience”. Products and services leave the boundaries of their initial purpose, they receive a whole new dimension – they turn into means for interaction between suppliers and users and induce emotional engagement. Lately, this trend has been observed more and more clearly in the advertisements of companies as they include verbal and figurative expressions related to emotional experiences (joy, euphoria), sharing (in different communities), and a “call to action” (often beyond the context and purpose of the products or services themselves).

The development of technologies inspired the spread out of the so-called social networks which relocated the social system form the streets into the homes of people. You no longer have to stand face-to-face with your friends to communicate with them – you only need to be 'online'. This changed the behaviour of people radically and they started to share everything online. Information is everywhere. Thus, access to information is easy and fast. On the other hand, this hides huge risks. Organizations are forced to seek new ways of generating and controlling information as they need to be extremely precise in choosing the contents and context of their communication and messages that would like to express. Information both external and internal is easily accessed. The internal information, including know-how and knowledge, is very hard to remain hidden inside a particylar company because it is carried by people who are constantly 'online', even in their workplaces.

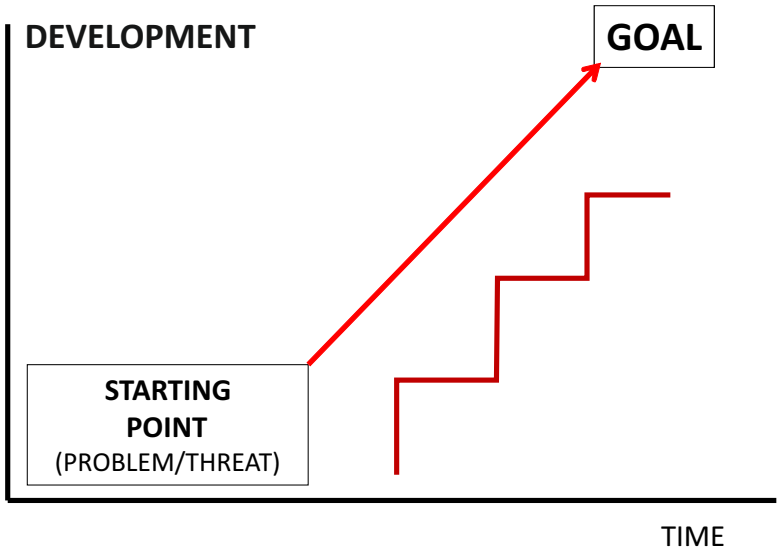
PART ONE

ORGANIZATIONAL INNOVATIONS

Chapter 1. The essence of innovations. Innovation process. Characteristics and types of non-technological innovations.

Any organization registered under the Commercial Law aims at making a profit from its economic activity. Consequently, companies look for the most efficient way to accomplish their goals – to gain maximum results (profit) with minimum efforts and investments (labour, materials and energy). Introducing innovations in the overall commercial activity of the company are an efficient way of achieving goals when considering the production of goods and services and their realization in the market. Achieving company's goals may happen in two ways – evolutionally (slowly and with a lot of problems) or revolutionarily (with high speed and jumps ahead of time) (figure 1).

Figure 1. Achieving the goal of the company.



Each company throughout its existence remains at a stand-by mode, a starting point, at the moment a decision for using another more efficient method and a way for accomplishing the goal is being taken. A starting (initiating) event for taking such a decision may be any shock in the market or any other circumstance which represents a threat for the existence or a restriction to the market presence of the company (for instance, the appearance of another strong competitor). The innovative decision of Rockefeller to find a way for overcoming the restrictions and dependence on the railway transport that we mentioned above, was such an event. Therefore, the stages and technological steps related to processing and transporting of the oil from its origin to a processing plant are reduced. (figure 2).

With the introduction of pipelines, Rockefeller cut in half the stages of the overall process of transportation as entire separate productions and infrastructure elements were expelled, respectively the need for personnel. Oil no longer had to be poured into barrels. Previously, it was necessary in order to load it on trains. It no longer needed to be moved to railway stations for

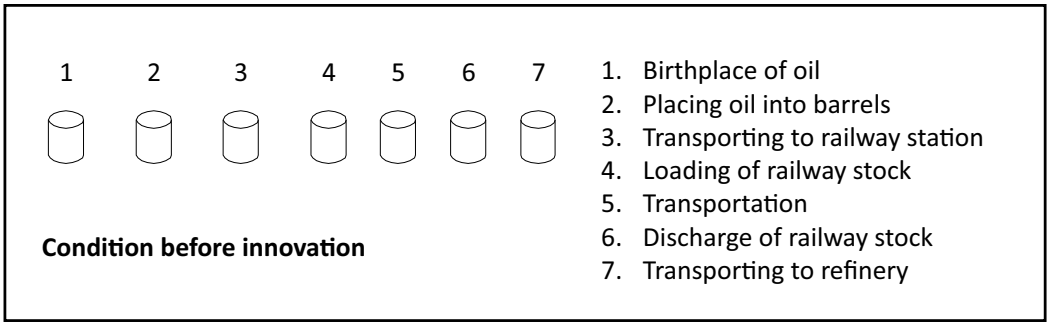
loading and unloading and delivering to refineries. As a result of the changes he made, Rockefeller managed to achieve a revolution in the process of extraction, processing and transportation of oil and oil products. Thus, he accomplished his main goal – bringing the light into every home and gaining huge profits.

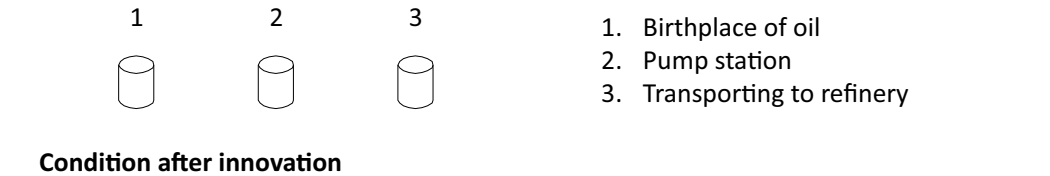
Innovation is the introduction of a new or significantly improved product (a good or a service) or a production process, new marketing method or new organizational model in commercial practice, organization of workplaces or external relations, **which leads to a significant improvement of the current state.**

Innovation is the process of development and introduction of a new or improved product (a good or a service) or a production process, new marketing method or new organizational model in commercial practice, organization of workplaces or external relations, **which leads to considerable decrease in the time and resources necessary for the realization of company's goals.**

One of the basic criteria for a product, production process, or marketing method to be classified as innovative is that it is new (or notably improved) for a certain company or an organization. Hence, as innovative could be considered products, production processes, or methods that the company has created by itself, or has borrowed from another company or organization.

Figure 2. Cutting down the stages of Rockefeller's oil transport innovation

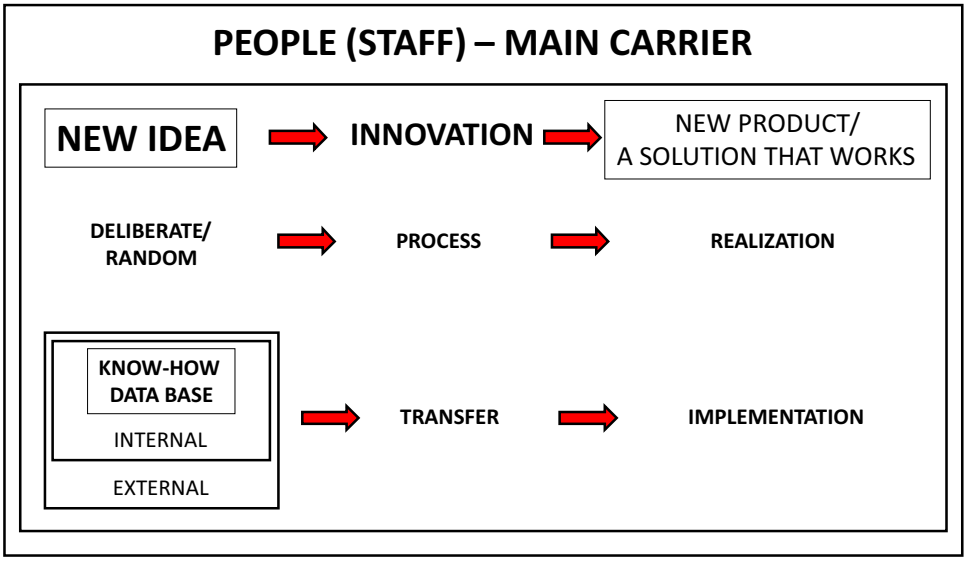




Innovation represents the process of applying scientific, technological, organizational, financial, and commercial activities which are closely related to the realization of innovations, or which are designed for that purpose. Some types of innovations are innovative enough on their own, others do not carry such characteristics but are still essential for the realization of a change. Innovation activity also includes research and development activities which could not necessarily be directly related to the development of the innovation itself.

The innovation process represents the introduction of a variety of changes in the organizational structure or the main activities of a company which left alone are not considered as an innovation but could still generate a cumulative effect (sharp increase in efficiency). The main driver of innovation processes in an organization or a company are the people. (figure 3).

Figure 3: People are the main carrier of innovation



People give birth to ideas and implement them. The process of introducing innovations does not always need to be related to significant scientific or other inventions, or company specific novelties. They can be associated with the transfer of outside experience or know-how, or even may represent attraction of external experts which bring innovative ideas and experience.

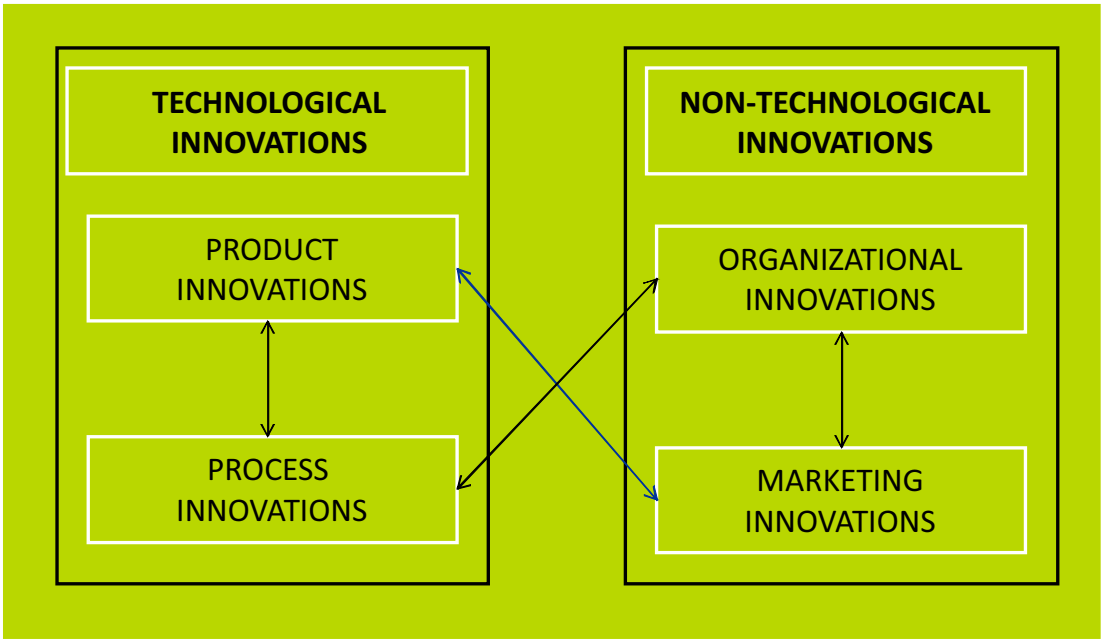
A common characteristic of the innovation is that it must be introduced. A new or an improved product is considered introduced when it is positioned in the market. The new production, marketing or organizational methods are considered introduced when they are actually used for the activities of the company and make it grow fast.

The nature of innovation processes in various companies is different and depends on the activity, goals, and context of the environment. Some enterprises deal with innovation projects that are clearly expressed – including development and inclusion of a new product while others focus on just improving their production, production processes, and operations. Both types of companies are claimed innovative as long as innovation comprises of the realization of a single major change or numerous less important changes which eventually form a significant improvement. According to the purpose that it serves, innovations may be divided on **product, production, marketing, and organizational innovations.**

The main purpose of the current business guide is to promote and better explain organizational and marketing innovations in small and medium-sized enterprises. Product and process innovations will be only briefly explained because they are interrelated. In most cases, an innovation could not possibly be only organizational or productional.

Any organization represents a single system with a lot of interacting elements as the change in one of them causes a change in the rest (both structural and functional elements). Product and process innovations are classified as technological innovations and organizational and marketing – as non-technological ones. (figure 4). Classifying innovations upon functional feature is relatively conditional because they consist of a particular logical construct which is based on a set of information about the process and its practical realization as well as all the existing obstacles that need to be mastered. Often, while an innovation is being introduced the necessity of considerable changes in a variety of accompanying processes and points may occur.

Figure 4. Types of innovations and the way they are related.



Product innovation is the introduction of a good or a service which is improved notably when considering its properties and ways of usage. This includes great changes for the better in goods and services' technical characteristics, in their components and materials, in built-in software, in the degree of convenience when using it, or in other user-friendly functional characteristics. For instance, the arrival of the first mobile phone – in the 1980s no one experienced the necessity of such a product because no one ever thought that it could be invented. The first appearance of a new product is product innovation but it is a result of an innovative production process because other numerous micro-innovations may be integrated into it.

Production innovation is the introduction of a new or remarkably ameliorated method of production or delivery of the product. This includes great upgrades in technologies, production equipment and/ or software. According to the type of production and the characteristics of the product, there may be various ways and methods of achieving the same result including technologies and production tools that already exist. On many occasions, production innovations are combined with organizational ones especially when only the way and order of operations are amended without new production tools and lines being integrated.

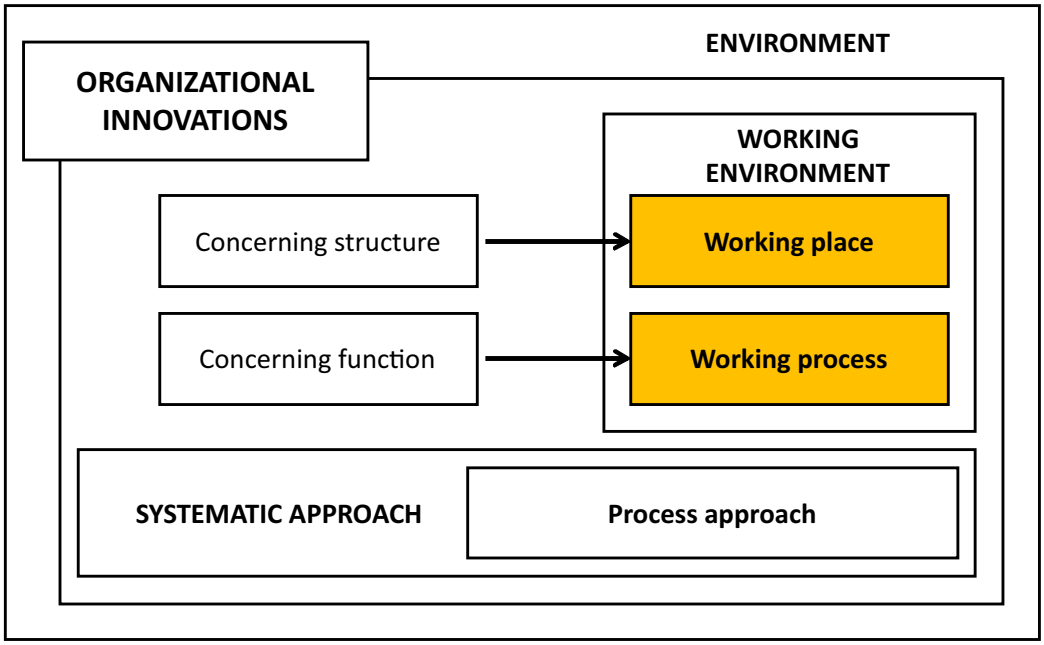
Marketing innovation is the introduction of a new marketing method including a substantial change in the design and package of the product, its storage, market advertisement, or pricing. Marketing innovations are oriented towards faster satisfaction of the needs of users, entering new markets, or retaining possession of new positions for the production of the company in its own market so as to maximize the volume of sales. This includes new methods and ways for carrying down the products to consumers in the shortest way possible especially in the context of a society that is extremely informed and utilizes a large number of social networks and online platforms. It is not enough just to offer and sell a product to a client – it needs to be delivered to his door at optimum price and conditions.

A distinctive feature of organizational innovations which differentiates them from other organizational modifications in a company is the introduction of an organizational method which has not been used previously by the enterprise and it is a result from the implementation of strategic managing decisions.

Organizational innovation is the introduction of a new organizational method in the commercial practice of the company, organization of workplaces or external relations. Organizational innovations may also relate to the structure and function of the organization. (figure 5.). The workplace and work process are the two main elements in the organizational context which will be further explored in the present Business Guide.
Organizational innovations may be directed towards the increase of the productivity in order to reduce administrative or organizational costs; enhancing employees' satisfaction with the work conditions (consequently improving productivity); expanding access to intangible assets (for example, knowledge from external sources); or simply reducing supply costs.

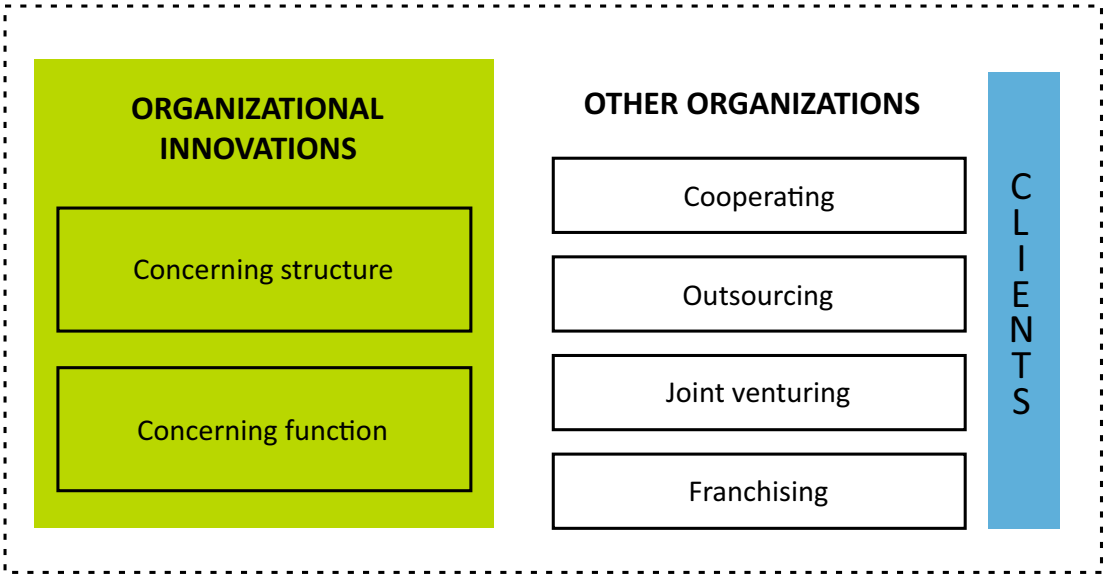
Organizational innovations in the commercial practice include the implementation of new methods in the organization of everyday activities and the order of execution of various work assignments. For instance, this includes the introduction of new methods for improving staff training and transfer of knowledge inside the company. Such an example may be the introduction of knowledge codification, or organization of database for advanced work techniques. The selection of an appropriate information carrier, as well as the introduction of mentors with the theoretical knowledge and practical skills within the company, could be also considered as organizational innovations.

Figure 5. Structure of the organizational innovations



Innovations in the organization of workplaces include the introduction of new methods for allocation of responsibilities and delegation of responsibilities for decision-making amongst those who work within the company and different work departments. In addition, the introduction of new methods for distribution, outsourcing and merging of different activities within the company are to be also considered as a type of an organizational innovation. The first introduction of an organizational method which gives the staff of the company greater independence in decision-making process and encourages them to take part in proposing and implementing new ideas could be described as an example of innovation in workplaces. This can be accomplished by decentralization of activities, staff and administrative control or by creating formal and informal working teams whose members are given relatively more obligations and responsibilities. In addition, organizational innovations could be introduced by centralization and enhancing accountability in decision-making process as well. The first introduction of a quality management system in order to shorten the time or combining engineering and research and development with production is an example of organizational innovation the commercial activities of a company.

Figure 6. Structure of organizational innovations in the context of interaction with other organizations



The most significant organizational innovations are related to rearrangements in the organizational structure of the company or amendment of main processes for developing new products or services. Such organizational innovations may be the closure of whole departments or units due to activity optimizations (transfer of a part of the activities to other units or complete removal of a unit through outsourcing) or exchange of particular processes done by people with specialized software.
New organizational methods in the external relations of the company include the implementation of new methods of organizing the relationship with other companies or state organizations (figure 6), such as: executing new forms of cooperative R&D; new methods of integration with suppliers, using results from external R&D (outsourcing); introduction of subcontractors in production, assignment, distribution, staff selection, and auxiliary services. **Such methods could also include:**

Cooperation with other companies with similar activities whose products are compatible and complementary, or when the companies produce different components of the same product.

Establishment of new organizational structures via merging in a holding structure in order to optimize the costs of realizing a product, its production, and higher specialization.

The creation of territorial or branch clusters is another kind of innovation, in case it provides an improvement and brings added value to its members.

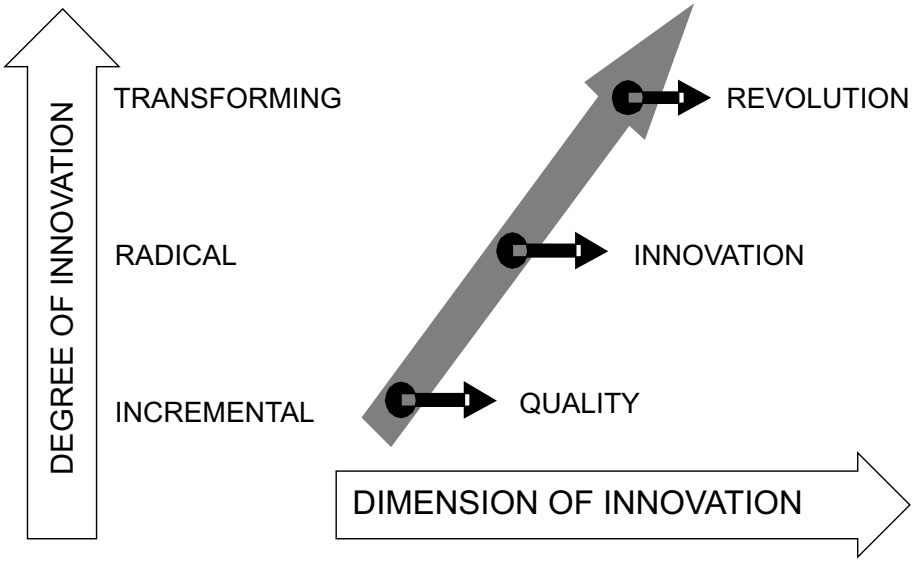
Modifications in commercial practices, an organization of workplaces or external relations, which rest upon organizational methods, which have already been used by the company, are not organizational innovations. Similarly, the articulation of managing strategies is not innovative itself but may be a part of a more complex innovation process. In addition, organizational changes that apply a new managing strategy are innovative if only they are used for the first time in the company as a new organizational method in its commercial practice, the organization of workplaces, or external relations.

Merging with or acquisition of other companies are not regarded as organizational innovations even if they happen for the very first time. Nonetheless, merger and acquisition may still include organizational innovations if meanwhile the company has created or acquired new methods of organization. In other words, innovations may originate from many other processes and activities of the company.

According to traditional management, innovation is considered a stage of the development of the company which is possible on a higher level of operation. The integration of innovation in company development is shown in figure 7.

In other words, innovations are something like reaching a higher level in the organizational development of the company. Usually, incremental innovations are not exactly innovations because they rest upon a revolutionary principle for partial changes in the structure of the organization. While radical innovations implicate changes of entire business models and the operation of the organization – like shifting to a higher gear.

Figure 7. *Structure and development of the business*



On an organization aspect, such an innovation is related with the transformation of processes which lead to the elimination of whole structural units or the creation of prerequisites for the exclusion of a certain type of functions due to a change in the essence of a product or a service. Such changes are the transfer of an entire unit to an external contractor (outsourcing) or the introduction of a software or a technical mean with similar function to replace the existing unit.
Similarly, the transfer of functions **from one structure to another** could be executed, including technological structures. Another way to come up with the same effect is finding ways to use a particular structure beyond its initial purpose regardless of the fact that it is a social or technical system.

For example, the participation of the staff in the creation of strategic company documents that address the improvement of productivity when using the knowledge gathered in the company is not innovation itself. Innovation occurs if this strategy is realized as the utilization of new software and new ways of documenting information for facilitating and fostering the exchange of knowledge amongst different departments of the company.

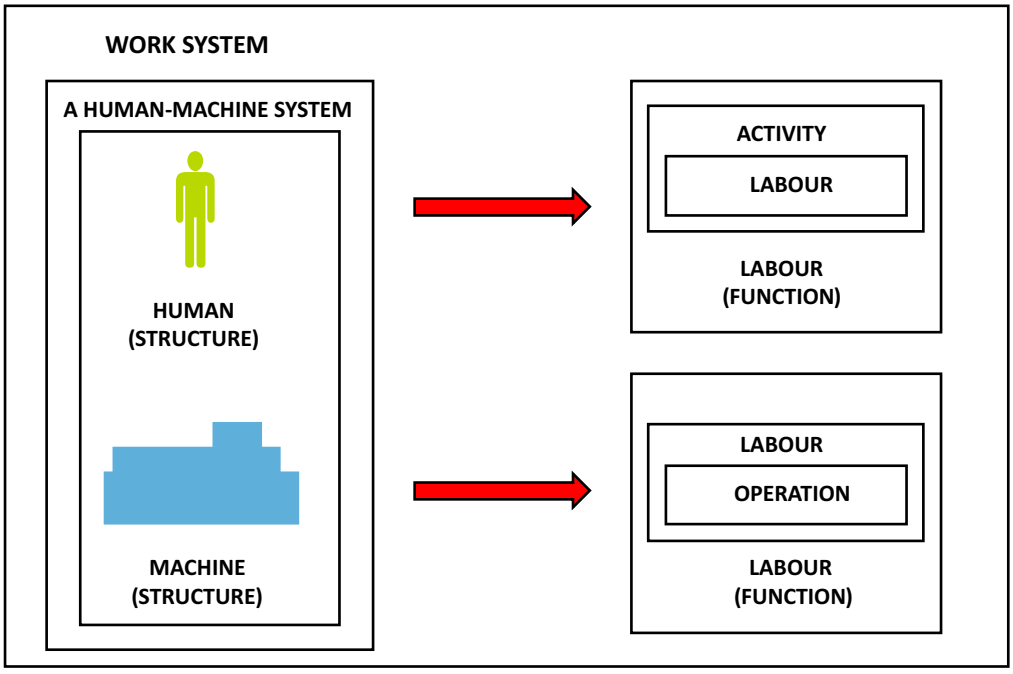
In order to introduce such innovative solutions, a company or an organization needs to be able to filter only the necessary and important information of various areas of knowledge and integrate and utilize it for the purposes of the organization itself. This cannot happen by an accident as opposed to the variety of inventions which can be used later for the basis of the innovation process. On the other hand, not every scientific invention could be commercialized.
For example, the light conductivity of glass was discovered more than a century ago, but it was not until 15-20 years ago when the optical fibres started to be mass produced for satisfying the needs of certain technological sectors.

Chapter 2. Structure and function of the organization. A systematic approach to exploring the organization. Basic elements of a work system.

In order to introduce various organizational innovations, the structure and function of the organization have to be studied in details. The widespread systematic approach which is believed to be the most accurate and secure basis for the establishment and management of complicated and interrelating activities is used for better understanding the interaction of various elements within the organization. This approach makes it possible to identify and analyze the components of a system as well as their interrelations. All systems for quality control, modern business models, and the introduction of a great number of scientific developments and innovations are based on it. The systematic approach provides two ways for research and management of organizations as it presents them as a system in which all the elements and the internal and external relations affecting its existence are determined, as the goals of each element are formed according to the common purpose of the system. Every organization is a system where each element has its own separate purpose and objective.

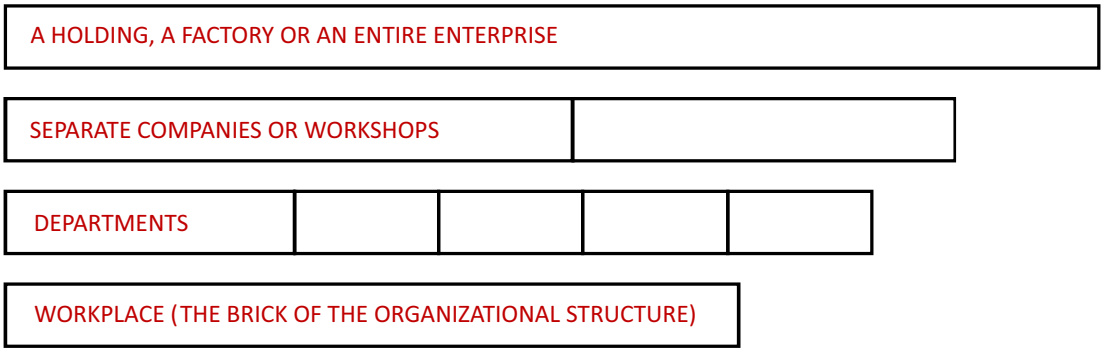
The approach is based on the process of decomposition (dismantling) of the system to its basic components – structural or functional elements according to their purpose.
When introducing organizational innovations, it is crucial that the goals and expected results are defined and according to that the organization (as a work system) is decomposed to elements that are suitable for operation. Meanwhile, it is necessary to distinguish between the structural elements of a system and their functions (figure 8). This is closely related to the focus on innovation integration – they can be focused simply on structural changes, but also can be directed to functional amendments. Generally, any structural change leads inevitably to a change in functional capacity and function because the structure defines the function. In this case, the function is presented as a sustainable aggregate of homogenous specialized works (actions, operations) whose realization is in the capacity of the organization, and the structure is the composition and relations between components. Human and the machine with their specificity are structures with certain qualities aimed at executing specific working tasks through their main function – useful work. The structure of the machine is strictly profiled and consistent with the intended job assignment while the human is a complicated system himself which can undertake various actions one of which is useful for the organization – labour.

Figure 8. *Structure of the work system - differentiating structure from function*



The smallest structural element that a system can be decomposed to is called a black box. The black box is that microelement of the system whose internal structure is not related to the set goal when decomposing – only the input and output elements of the box are important. The decomposition of the main (macro) system may end up with the single (micro) system – the workplace (figure 9). The workplace is the smallest structural unit in a work system.

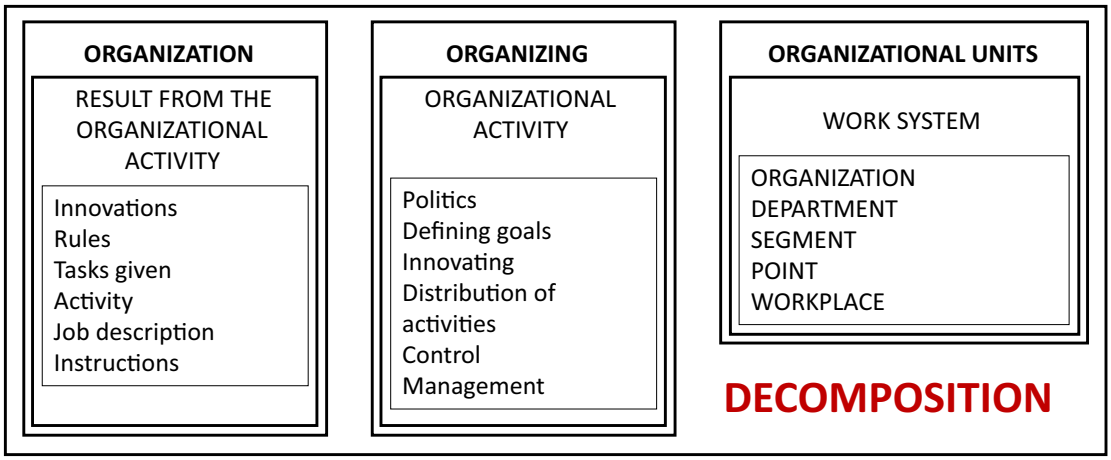
Figure 9. *Structural elements to which an organization can be divided by means of the systematic approach*



According to the particular tasks that are performed in a **workplace it can have a different configuration, elements, and organization – a machine (as the main production tool), a working surface (a table, benches), a working chair, supplementary tools (a telephone, a notepad, etc.).** Meanwhile, the workplace can be shared by more than one person. It could be also stationary or mobile.

As an integral part of the work system, the organization may be defined as a process and as a result from the organizational activity **(figure 10),** which can be applied at each and every element including the workplace. The application of the organizational activity may only be partial.

Figure 10. *Differentiating the organization as an activity from the organizational activity results*



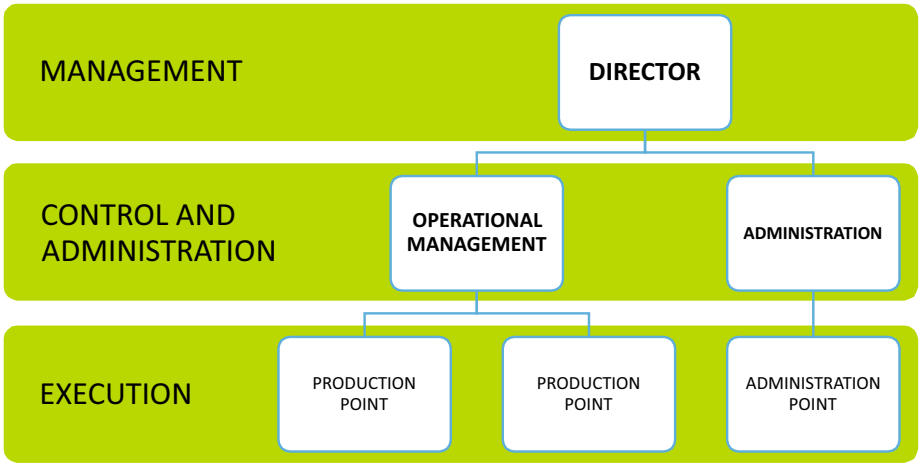
Organizational activities are considered as a planned and cyclical process that is related with the management of the systems for the achievement of a specific purpose. It includes all key business processes such as policy making, goal definition, planning, innovation, a division of functions between departments, and realization of feedback (control). The results from the organizational activity are the elements at the exit of the system – innovations, rules, tasks, job descriptions, rules, instructions, etc.

Both the process and the results of the organizational process could be related to each of the individual units / parts of the system and the organization as a whole.

At the structural level of the organization, the process of decomposition may include different hierarchical levels and units as the smallest organizational unit will be the job position. A model of the simple organizational structure is illustrated in figure 11.

The classical pyramidal model of the organizational structure consists of three basic hierarchical levels of management - management, administration and execution. Human variations of that model may occur, including adding extra levels. This creates an additional barrier and a distance between the decision making and the execution units. However, this makes the process very heavy and inflexible as the feedback is hindered.

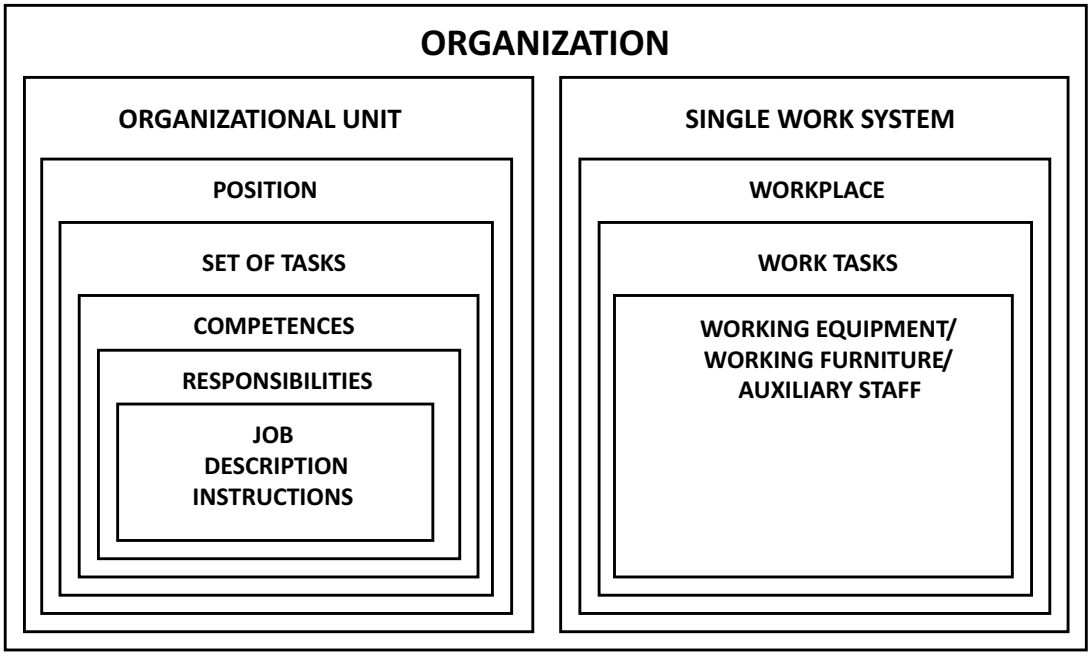
Figure 11. *A systematic model of the classical organizational structure*



Nowadays, there has been a trend for reduction in hierarchical levels which optimizes the process and makes the organization more flexible. Reducing the distance to the decision-making body induces a need for higher autonomy and preparation of the different operational units and job positions for their inclusion and participation in the decision-making process.

What requires such a distinction? According to the goals of different activities and processes within a company, different approaches for the presentation of activities, processes, structures and interactions could be utilized to provide the necessary information in the most convenient way. In addition, various documents and handbooks that regulate activities within an organization provide different approaches that were adopted in the practice and are used outside the organizational context. Different labour code regulations define organizational units as the work position and all elements that are related to it, i.e. job description, work instructions, responsibilities, competencies, etc. On the other hand, quality management systems utilize other more classical terms to describe the various elements of the work position.

Figure 12. *Unity and differentiation of structural elements of the organization as a work system*

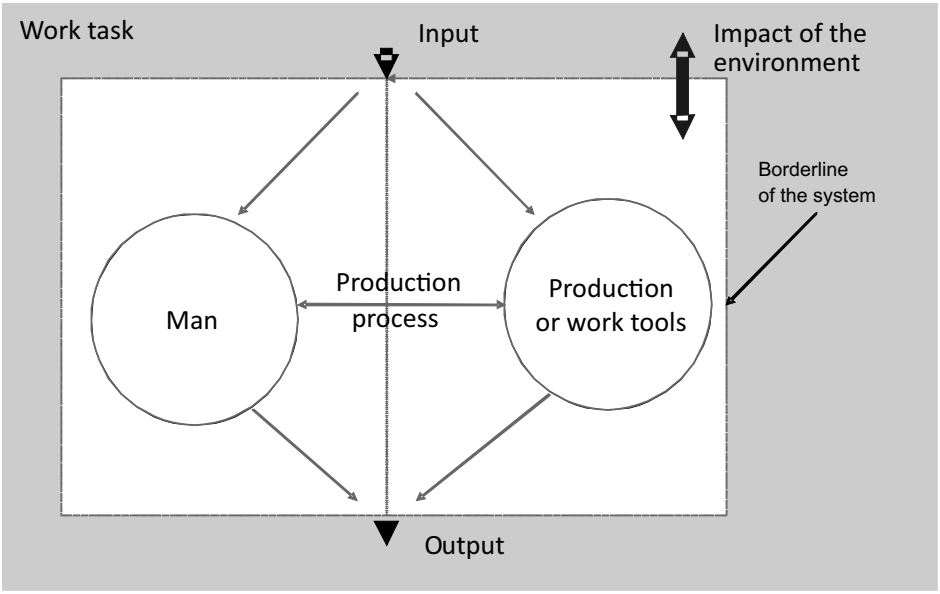


However, in reality, unification and differentiation may be illustrated **with the example of a single example of an operator of a metal-cutting machine in a manufacturing enterprise.** The operator may be appointed under a labour contract as 'an operator of a metal-cutting machine' but he may be just declared 'an operator' or 'a worker in production'. In a way, the formulation of the position suggests the main obligations of that person but not only – for instance, the worker may be given other tasks like technical service of the machine, or even certain locksmith activities. If the position is formulated right its content and scope as an activity will fit in the description 'workplace of an operator of a metal-cutting machine' which will include the machine itself (for example, a lathe), the working space around it, and all other elements. But if we talk about the position 'operator of a metal-cutting machine' that usually does not include the elements of the workplace and the machine, but the main responsibilities and working operations of the operator as well as the requirements he needs to meet in order to take the position. If it is about the work conditions, the working process and the quality of production of the position 'operator of a metal-cutting machine' it is understood the workplace with all the adjacent elements – the elements of the working environment will be a subject of research and evaluation of the risk and work conditions, the condition of the machine and its parameters will be of high importance when analyzing the quality of production or analyze the technological sequence of operations, we will be interested in its working position, influence quantities, distribution of tasks between the operator and the machine, etc.

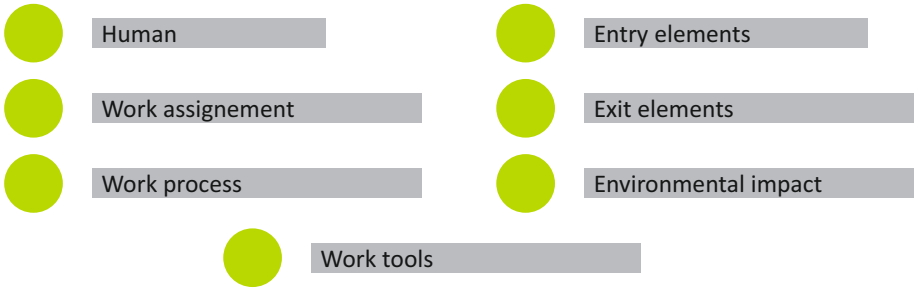
When it comes to introducing non-technological innovations within an enterprise, we need to keep in mind both models when decomposing the organization. However, defining the organization as a work system gives more opportunities both in the decomposition process and in exploring the interaction between the different subsystems. As already mentioned, for optimization and

innovation purposes of the organization, it is most convenient to deal with the main structural unit of the work system - the workplace, which is an independent work system itself. Examination of the work system as an entity in the workplace will allow to identify the specifics of all the processes that are performed in it and the state it is in, i. e. the specific data for different goals can be determined fast and easy (setting of productivity, technological time, etc.). When considering the work system its main elements may be specified (figure 13).

Figure 13. *Basic structure of the work system and its main elements*



A typical work system consists of the following main elements:



The work system is used for the execution of a particular work task. The work task is related to the implementation of a certain activity or activities by a human operator which leads to the accomplishment of a pre-set goal. The behaviour of the system in the execution of the task in order to achieve a certain goal, by taking into account the process of the action itself and its time, is called the course of the work process. When analyzing the work system so as to examine the possibilities and the need for changes and innovations, the following aspects are to be considered:

When analyzing the work system so as to examine the possibilities and the need for changes and innovations, the following aspects are to be considered:

- **Who will execute the work task?**
- **Where (in which department/ at which work position it will be executed)?**
- **When and in what sequence the assignment will be performed?**
- **What will be the working tools that will be utilized in the process of transforming the materials into articles in accordance with the assigned tasks?**

The human and the tools of production, respectively work tools, are the core elements of a work system. They define the capacity (the limits/boundaries) of the work system when interacting with the organization. At the same time, the work system may have other restrictions as well, which are regulated by law or technologies and are to be taken into account respectively.

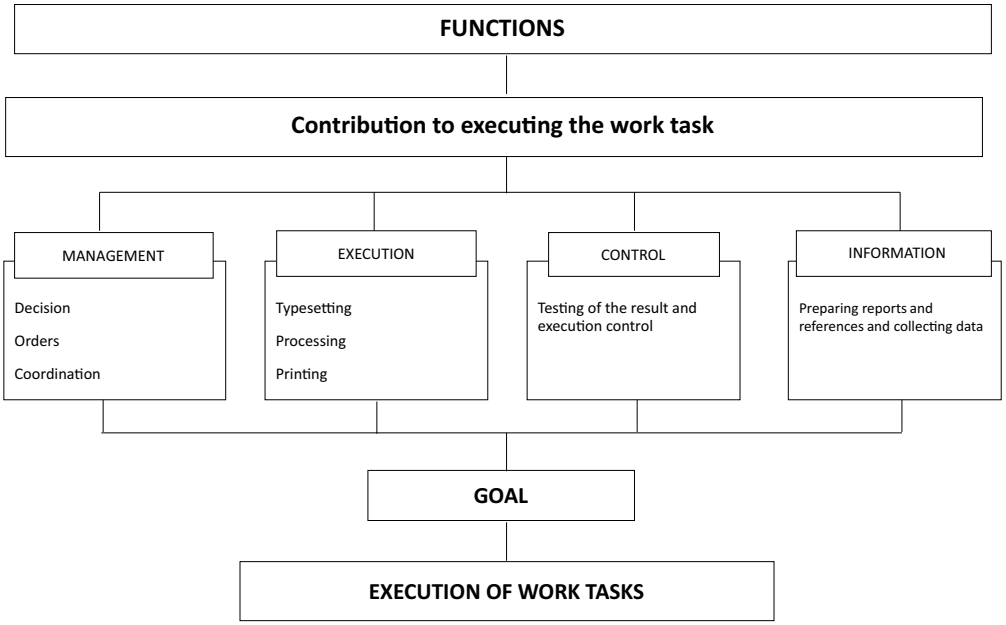
At the entrance of the work system, there are all the elements that need to be transformed or to be used in the course of the working process (materials, energy, information).
At the exit of the work system, the raw materials are transformed into production (which may be presented as an input element for another work system), which may not be intended for direct market realization.
Influential quantities comprise of all parameters of the working environment and other circumstances which may affect the course of the working process, including the conditions of a human and a machine.

All significant reverberations that result from the **working environment,** the working pose and the production tools which may influence the course of the working process are called working conditions. Working conditions are regulated in the legislation in terms of their specific properties (minimum admissible working conditions) and are considered as a necessary condition for carrying out a business activity of each company. They have a significant impact on the quality and quantity of the work done.

The course of the working process itself can be divided into parts (steps) of different length/period that are called phases. The phases of the working process may be a whole working process, working operations and elements of the working operations. A working operation is that phase of the working process which provides one unit of the working assignment. Each cycle of the working operation within the working assignment is called a working cycle. Those phases of the working process that cannot be dissected into smaller units in accordance with their characteristics or time are called elements of the working operation and appear in two types:

- ·Elements of the working activity which are typical for the human operator
- Elements of the process which are typical for the machine

Figure 13. *An illustration of the entire process of the task "preparing a text message"*



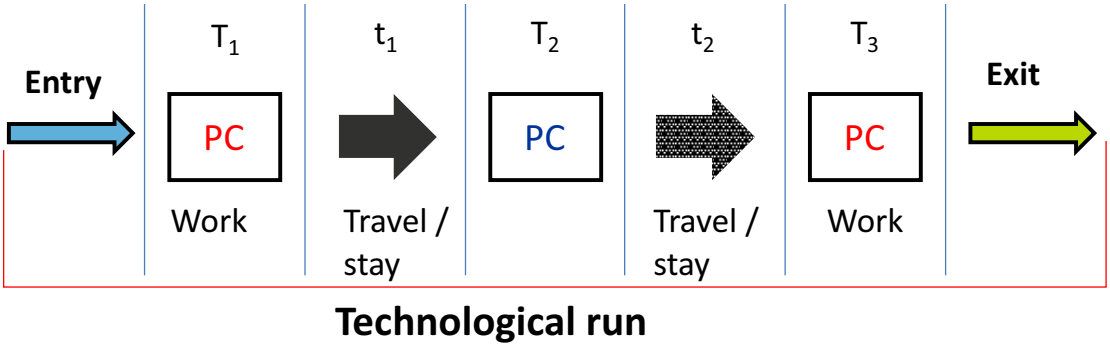
The managers have taken a decision. They have made the most appropriate orders and provided the necessary coordination. The executing unit, in the person of a technical assistant, has undertaken the execution of the tasks, and the rest of the units maintain the process of coordination, control, and information. Meanwhile, the task itself can comprise of its own phases – set-up, processing and printing, which are the real part of the process. However, there is a preliminary phase called preparatory phase. It starts before the accomplishment of another task - obtaining the task and specifying the details, turning on the computer, starting the relevant word processing program, and only then the actual job with its elements - set the text message, processing (font selection, layout, editing) and printing.

All these details are intended to illustrate the decomposition in practice. This can indicate the duration of each individual action (phase). For the optimization and discovery of hidden reserves, the process phases give us a very good opportunity to easily identify an operational time through a stopwatch. This is extremely important because some of the phases of a process may be elements of another process as well and with multiple timesheets, average values can be derived to be used as norms for performing certain, more complex assignments. By calculating the technological times of the separate operations and processes, the organization can plan optimally its activity and can answer adequately the questions of stakeholders for deadlines of execution, delivery, etc.

The technological run represents the time which is necessary for a product or a service to travel from the entry to the exit point of the work system. The main purpose of organizational innovations is to shorten the technological run and therefore decrease the cost related to it production or provision.

By being able to establish the individual and cumulative times of various processes, the company can estimate **a model time for each production unit form the entry to the exit.** This time, representing the course of the task through the separate subsystems, is called technological run (figure 14).

Figure 14. Technological run



The movement of the product from the entry to the exit is called material flow (figure 15). Generally speaking, all the times contained in the individual transitions and operations, including the intervals between the different workplaces (systems), are included in the technological run. Although it may be due to technological and other reasons, the time during which the input elements are in idle and not processed or transformed is called unproductive time. It must be reduced in any possible way, as this is one of the primary goals of optimization and implementation of organizational and process innovations – a reduction of all unproductive times.

Figure 15. Flow of the work task and materials

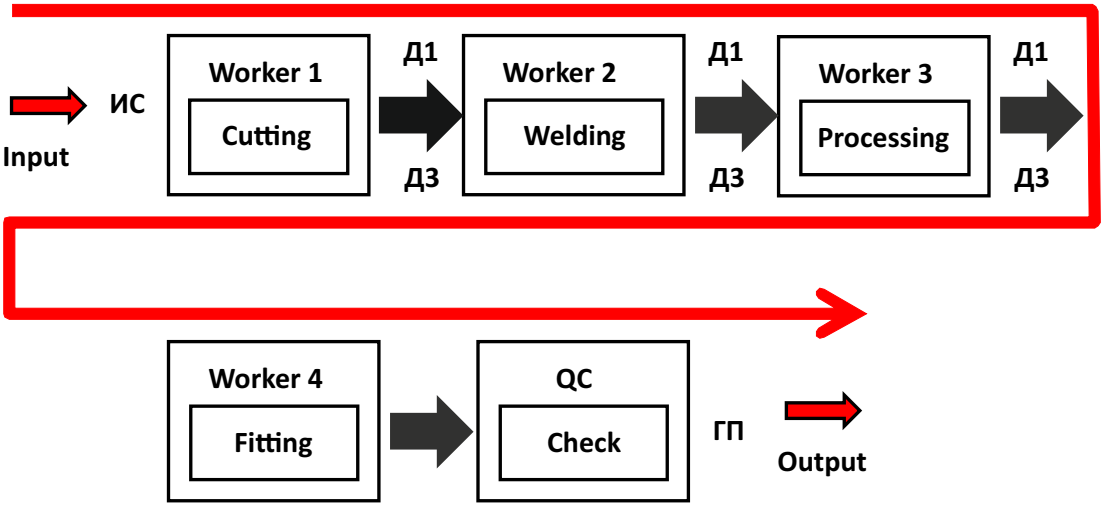
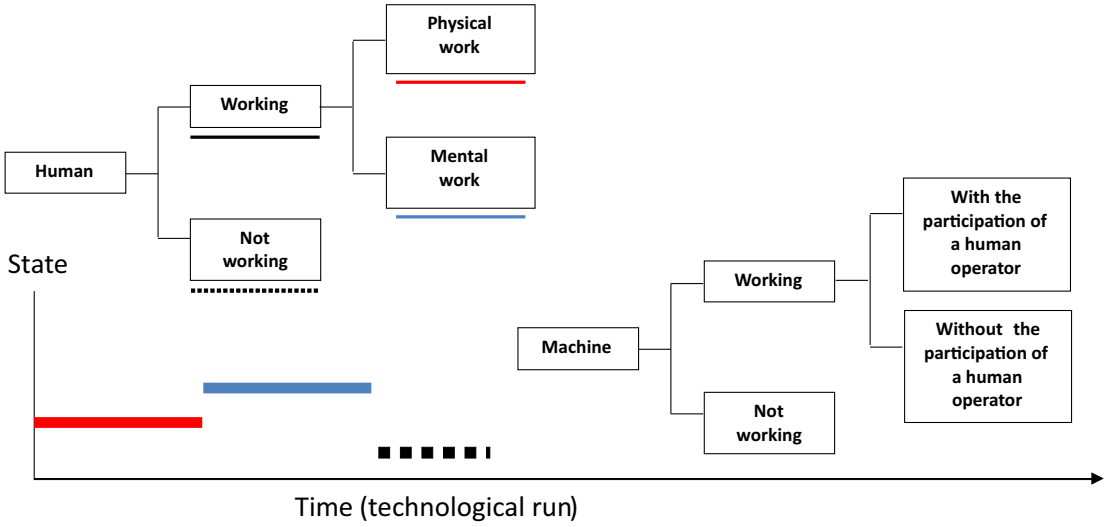


Figure 15 presents an example of a **work process with its transitions from the input of the system through the various workstations** (places) that are included in the manufacturing process of a two-part metalworking machinery element. At the input of the system, the source material is steel in the form of round sticks which are stock in size and are therefore cut out to the necessary number of workpieces which are going to be thermally processed at the next stage (quenched and tempered) in order to achieve the parameters of the assignment. After the thermal section, blanks are then sent for the rotary procession with scraping in a lathe department. **The number of separate details equals the number of workpieces which are transferred to the next transition.** In a locksmith, the next stage of the production process is performed. There the ready articles are packed with other details the so as to assemble the final product.
Before it is delivered, the product is quality-checked and according to its type and construction, it receives a certificate. Then the customer order is packed and dispatched under the agreed terms.
So far, we have been exploring the organization and its segmentation to individual and constituting elements which can be monitored and measured respectively according to two main parameters – **time and space**. The careful documentation and reporting of those two elements is important for the optimization of the work activity because it can provide an opportunity for monitoring and undertaking of corrective measures. The purpose of optimization and introduction of non-technological innovations in the production process is to shorten technological times and in particular unproductive times in which the product and the material flow of the relevant transitions, cannot be transformed.

Figure 16. *The state of the work system and its elements*



At the same time, **time and space quantifiers are in functional dependence of each other.** Logically, if the material flow is longer, the time of the technological run is higher. In contrast, the shorter the flow of the individual elements (workpieces) from one production unit to another, the less time it will be needed to manufacture the article or a product. Therefore, it is clear that many flaws in the overall activity of the organization and its separate processes could be easily identified.

In order for the separate times to be identified and measured properly, **it is necessary to analyze and measure the condition of the work system** (i. e. does it work or not in each and every moment). Apparently, there are two options – a system works or it does not work, **regardless of the possible reasons for both conditions (figure 16).**

For example, if we examine the **operator of the metal-cutting machine** who is engaged in turning the individual articles. The microsystem, in this case, consists of the operator and the machine and they interact with each other and transform the elements at the input (the workpieces) as they turn them into finished products. Depending on the characteristics of the machine (mechanical or CNC) the **following states could be identified – the operator is working and the machine is working; the operator is not working, but the machine is working**. In this case, if one of the main elements of the work system is working, the system is in an active state.

Each state of the work system can be easily tracked through a register which receives data from video surveillance. **With the accumulation of a certain amount of system status data and a comparison of the individual times, valuable conclusions could be drawn with the purpose to optimize the process by limiting the occurrence of idle time.** Different working states could be regarded as objective or subjective; operator depending or not. The operator may interrupt the operation of the system due to a need of a rest but also as a result of a failure to understand the specifics of the assignment.

These details should be accounted for and compared with data that was accumulated from other similar microsystems. Thus, it will be possible to obtain several basic parameters which to be used for various purposes like standardization of unproductive times. Meanwhile, besides the state of the system, and in particular the operator who can perform work outside the typical "human-machine" system (i. e. the workplace does not imply the existence of a machine as the main production tool, and vice - versa) the nature of the work should also be taken into account. **Usually, work can be categorized as physical and intellectual (mental).**

These two labour categories are radically different and relatively opposite in their content, but at the same time interrelated as a process due to the fact that there could be no physical work without brain activity and vice-versa.

Physical workload involves the musculoskeletal system of the human and it is associated with increased energy flows due to the numerous work movements that an operator performs.

Mental workload, on the other hand, involves processes like paying attention, thinking, imagination, and other mental constructs as the elements of the movement are not expelled totally from the process. These two types of workload determine the two main elements of labour – weigh (physical work) and complexity (mental work) **(figure 17).** As already mentioned, unproductive time may be a result of the need for a rest of the individual as a result of the workload that was experienced during the implementation of an activity or a task. Both labour and load may be described as physical and mental conditions.

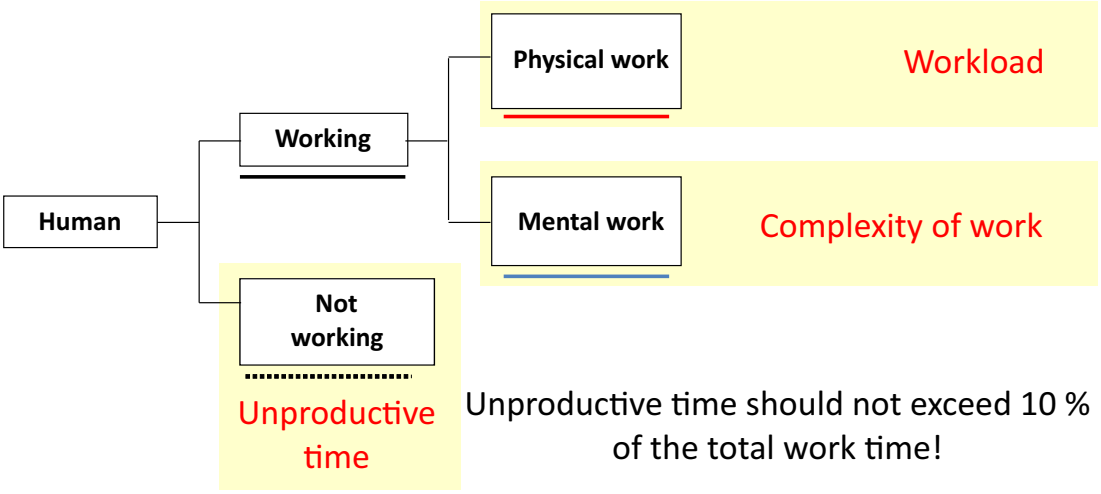
The degree of the load and the ratio between its components (weight and complexity) determine the condition of the person as an element of the system, but in qualitative terms (i. e. at some point the operator may actually do not work, but that does not mean that he or she is not under load). Consequently, a short break could be needed to restore and overcome the effects of fatigue.

Such conditions, caused by the nature of work and the effects of immense load, **will be examined more thoroughly in the following chapters.**
Re-engineering of the processes and the designing of a work system may be considered as the main innovative process of introduction of radical changes leading to considerable positive outcomes.

Innovation could extent over one or all organizational units or phases of the work process, as long as it will result in a drastic decrease of the technological run of the work system. The organizational re-engineering will occur when we implement changes in all units and process in the organization. The process of re-engineering is not innovative in its essence. However, it could rely and be organized upon different innovative processes and therefore it should be considered as an innovation process of itself.

These two instruments are identical but differ in their essence. Re-engineering is applied in already existing (working) organizations, processes, or activities. The designing of a work system is used mostly in the process of establishing a new company, an activity, a product, or a service. It may be necessary to re-design an already existing work system if the results of its operation are not satisfactory or a radical change is needed in some of its core elements. The process of re-engineering allows the improvement of already existing processes of a work system.

Figure 17.*Correlation between the states of the human as an element of the work system and the characteristics of labour*



Chapter 3. The human as the main element of the work system. Basics for the integration of non-technological innovations in the process of designing a working system

The efficient organization of the labour process represents an optimal ratio between the effort that was put and the results that were achieved in the work process. This is the main goal of the innovation process itself. **The work capacity of a human and a machine are two absolutely different aspects. The work capacity of the machine is constant, while the capacity of the human is directly related to time and the degree of the load.** Because of the great significance of that problem, all gathered research and methodological tools lead to the creation of a separate interdisciplinary science called ergonomics. At present, ergonomics relies on many scientific methods and tools, based on systematic approach, that supports the rational organization of work. The organization of the labour is seen as an element of the work system, which also includes the work environment, workplaces, resources and the subject of work, as well as the impact of these elements on the body and mind of employees.

The period of time when the work system does not work no matter the reason is called **unproductive or idle time**. One of the main objectives of the re-engineering process is to lower the period of unproductive time. Another important goal of the process is to alleviate the stress at the workplace which is resulted from the workload.

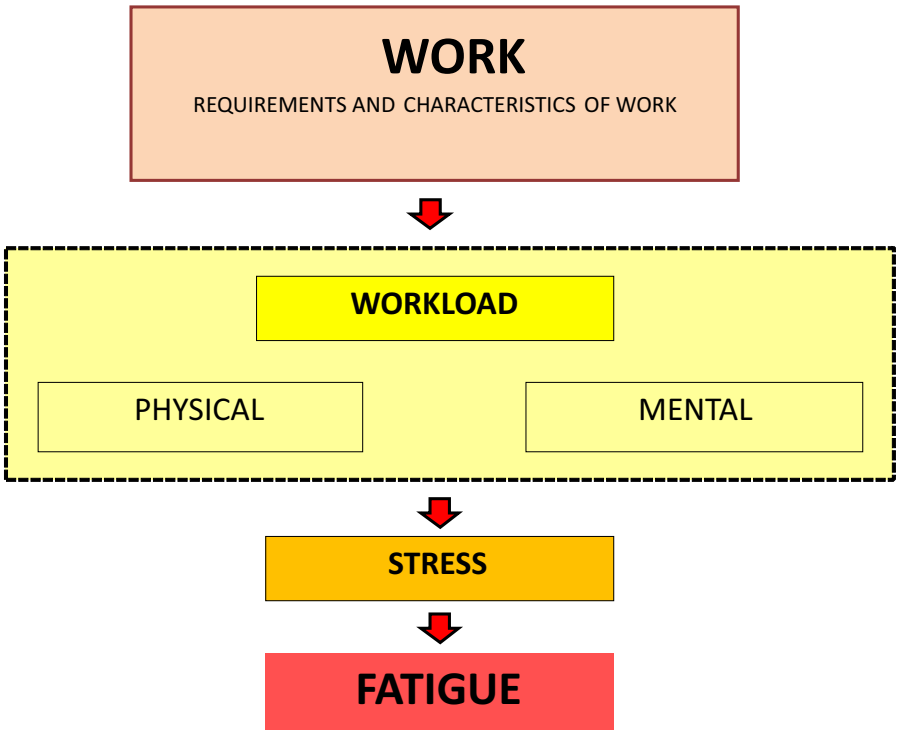
Nowadyas, the main focus is laid on the human as the main element of the work system (i.e. human-centred approach) to addressing issues related to the effective organization of work. They are defined as **"human technology system approach"** and place the human operator at the centre of the system and his / her physical and mental capabilities and limitations, which should take into account the other elements of the work system in the projection process. These are also the basics of the modern innovative methods in re-engineering and designing of a work system. The main obstacle here is the fact that all those aspects come from different scientific areas and uniting and organizing their problems appears to be a complicated task. Nonetheless, with the help of the ergonomics and the application of a systematic approach, things get a whole new dimension in terms of their applicability.

The organization of the work, as an element of the work system, should also be designed and implemented in accordance with the particularities of human constraints, especially when it comes to the characteristics of the work assignments and their requirements for employees (figure 18). The main principles of the design of work systems are formulated in the Bulgarian Quality Standard 6385:2004 "Ergonomic principles in the design of work systems" which is basically an international standard that was adopted in Bulgaria since the 6th November 2004.

In the process of desinging work systems, one should consider the human as the main element of the system, but also take into account the work process and work environment.

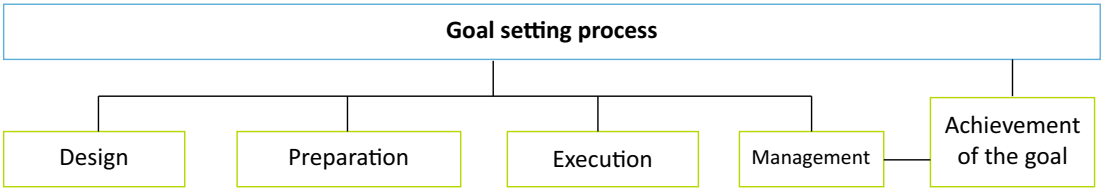
The ergonomic design of the work systems is aimed at optimizing workload, avoiding upsetting factors and enhancing work-related factors. Work pressure is something normal, a natural consequence of workload. Eventually, it leads to stress and tiredness. At the same time, uninterrupted work performance often increases efficiency and effectiveness of the system, thus contributing to another crucial goal of ergonomic projection of the work systems.

Figure 18. *Correlation between the characteristics of the work and the effects it brings*



Before undertaking changes whose purpose is to amend the function of the work system in order to achieve better and quicker achievement of goals, an analysis of the current situation should be carried out and the 'problem areas' **(areas for improvement)** should be identified. The next step should include the preparation for the amendment of the work-related documentation. The next step is related to the implementation and testing of changes. An assessment should be made on the extent to which the introduced changes have met the goals. **The process has the following general outlook:**

Figure 19. *Goal setting*



The achievement of the goal is a 'product' that we have at the exit of the work system as a result of the work process in accordance with the work task. The design process of the work system should take into account all elements of the work system that could affect the process and the time for execution.

Every element of the work system has to be analyzed and assessed. In the design process of the work system, the leading indicators (criteria) related to efficiency and effectiveness should be pre-set. Most often, these indicators are measured with the produced quantity (volume) at a given quality (compliance) for a period of time. Such indicators could be measured relatively easy as they could be subject to an assessment and a quantification.

As discussed in the previous chapter, if the result of the activity **is found to be inconsistent with the objectives set out above**, an analysis should be carried out in order to identify which of the elements were amended and when. In this case, it is crucial to determine the influential factors and identify the means to limit their impact.

In other words, **before any substantial changes to the organization are carried out, appropriate conditions should be established for the process to be carried out with minimal or insignificant deviations.** Next, an analysis of the work tasks and the degree of its complexity should be carried out. It is important to determine whether it is possible for a certain task to be implemented in the frame of a single microsystem (workplace)by a single individual, or it must be assigned to several people or even a separate department. **The work process itself** and the time for execution are depending very much on the work assignment. In more complex tasks, the time for transition from one microsystem (workplace) to another should be added to the single times for execution of various sub-assignments. In this way, the technological run of the task will increase.

The main purpose of **re-engineering and design of a work system is to reduce the technological run of the work tasks.** Therefore, the main efforts should be focused on refining work assignments and speeding up the work process itself. In this sense, the documents regulating the process along with the individual define the true capacity of the work system. The adopted regulations would answer the question “how to execute each individual step (phase) of the process?” so as to meet the requirements of the system (the goals). The function defines the contribution of the human to the implementation of the work tasks. **Your plans for amending the main work regulations should not lead to increasing the load on your employees.** Based on analysis and research, all major work activities could be carefully documented and classified in accordance with their content and requirements to people. For the purpose of enhancing the efficiency of the work system and the introduction of innovation, pre-determined times for implementation of different types of standard work tasks that could be performed by individual employees should be prepared. Such times could be determined by **dividing the assignment or a work task to its main components**, i.e. separate operations and actions. Each of those actions could be then easily measured with an appropriate device. When measuring the times of the individual operations, one should take into account the time that is needed for all preparatory and finishing operations, including regulated rests of the staff. In that manner, much more precise planning of activity in the context of the goals set can be done.

The ratio between projected and real times may be used as a basis for the assessment of effectiveness and execution of a certain task or activity. According to work system condition data, gathered from the analysis and according to the systematic approach presented above, the relevant elements and documents regulating the processes in the work structure can be amended. On this basis, appropriate tools for managing and evaluating the activity, as well as methodological guidelines for the organization can be established. Ultimately, each task is performed by certain people (finite, certain value) at a certain place (space) for a certain period of time. Therefore, the **main elements of the system are 'who', 'what', 'how' and 'for how long'** will implement the assigned task. In this aspect, the time and resources that are necessary for the execution of each task depending on the human, the specifics of the task itself, the adopted work methods and influencing factors. **These are the main elements that stand at the core of the processes of design and re-engineering of work systems.** Therefore, the regulations that determine those elements are crucial for effectiveness and efficiency of the work system and processes.

The scope of changes that are related to the achievement of the goals of re-engineering **has to take into account the elements at the entrance of the work system, as well as to envisage the relevant control of the elements at the exit.** Such elements could include the criteria for selection of work tools, staff, distribution of the functions and stages of the work process, as well as the amount of spent material and non-material resources, and energy.

When examining the functions and processes within the work system, **the individual characteristics of the staff carrying out the activity** should also be taken into account. The assessment of the human factor is carried out precisely in the context of the work system. This is done in order for the assessment to be broad and objective as it is important that the diagnostic methods also guarantee for it. The various methodologies and tools for assessing employability of staff are based on **different theoretical models that examine the personality and abilities of an employee.** The assessment of the person outside the context of the nature of his work is pointless. Therefore, an analysis of the work that has been or will be performed is inevitable.

It is imperative that the **assessment criteria include the employer's requirements for the job.** A very important aspect is the eligibility criteria, which must be based, but not limited to the job description and the internal rules of procedure of the organization. The so-called analysis of labour is important for identifying the which determines the employment qualities such as the principles of distribution of tasks between an employee and a machine, as well as some diseases and specific physiological conditions that are not compliant with employment standards.

In general, it is important that e**mployability assessment is not performed only on staff at senior positions but also on employees engaged at all stages of the manufacturing process.**

On the basis of the accurate assessment of the human factor, a program for development and stimulation of the staff should be prepared. Based on the assessment, the staff of the organization should be “designed” before it is managed. The human factor is designed according to the specifics of the work and the technological process (i. e. it goes hand in hand with the **design and organization of the work process).**

Estimates of work performance are developed taking into **account quantitative and qualitative performance indicators, etc.** It is important that crucial factors such as t**iming and remuneration are identified based on a systematic approach.** It is important for the employee that a direct dependence between the efforts made, achieved results and received remuneration is established.
In accordance with the specifics of the technological processes, **certain requirements to the work of each employee are to be developed.** Both the factors of the work environment at each workplace and the compliance with the main work requirements should be controlled and managed. In terms of content, the requirements of the work system related to the staff are related to satisfying certain criteria.
Such criteria are related to the implementation of specific work tasks in the context of achieving the common goal of the work process. In addition, such criteria could be related to the training and qualification background, psychical and psychological qualities, age and gender of employees, etc.

The human assessment as an element of the work system also requires the **valuation and taking into account of multiple indicators from an ergonomic point of view (the effects of work organization).** Therefore, the main principles for the design of the work system should be carefully examined, observed and taken into consideration.

The design of each work system is based on the limitations of the human element. In this respect, a number of principles and norms have been developed in the process of designing of technological equipment, machines and tools as elements of the work system. The starting point in the design is the anthropometric and biomechanical properties and capabilities of the human body as well as its information-processing abilities (the abilities to receive and process information for a certain time)
The work requirements cannot exceed the adopted average indicators. These averaged indicators are based on a statistical sample of people in working age of both sexes with adequate qualifications and skills for their work position.

Chapter 4.Ergonomic and human-technological principles of organizing the work process when designing a work system

In the work process, a person uses much of his/her psychophysical potential, depending on the job requirements. Satisfying these requirements implies a certain physical and mental load, which creates a prerequisite for **work pressure.** The degree of workload depends directly on the content and context of the work task that takes place in certain circumstances in time and space (i.e. workplace and working environment within the regulated working time). The limitations of the worker resulting from his / her individual peculiarities and psycho-physical potential are essential in the implementation of the activity. These limitations are related to the person's ability to perform multiple and complex tasks as a biodynamic system, including in the work process. They stem from the physical limits and

constructive features of the human body that are different for men and women. In addition, those limits are related to one's age.

The basic aspects of the human that have a direct relation and effect on the work activity can be both physical and mental. Physical characteristics are related to the abilities for movement and implementation of various motions and are characterized with:

- Pace;
- Rhythm;
- Speed;
- Strength;
- Accuracy;
- Coordination.

Depending on the specifics of the activity, the different characteristics are overlapping to a certain degree as the **workload is predominantly physical or mental.**
The degree of physical load that has been adopted in various normative documents is determined by the intensity of movements and respectively the applied muscular force.
In addition to **physical abilities and constraints**, the psychological features of the work activity are also of particular importance. **The capacities of an individual engaged in a work activity are related to his/her abilities to perceive, process and transmit information,** as well as to organize those work activities in a manner that is appropriate to the current conditions and requirements of the work task. **In regard to the information capacity,** an individual has limited possibilities which are determined by the nature and specifics of the information itself, as well as the brain activity.

The psychical characteristics are related to the function and the properties of the mental activity in the work process, namely:

- Receiving, processing and reproducing information;
- Communication;
- Coordination;
- Making decisions;
- Applying algorithms and principles.

Psychological characteristics depend on individual features, but designing work systems is based on average population thresholds. The process of perception, processing and storage of information involves numerous mental processes such as memory, thinking, imagination, etc. They all depend on the intensity of the mental workload. The received information, before being processed, goes into the short-term memory of the individual. This memory is characterized by limited capacity, which implies that it will be processed over a short-period of time. Throughout this process, the most complex and difficult task is the decision-making process, especially in the context of information deficit (entropy) and limited time. **The process of decision-making is fundamental** in terms of the organization of work activity due to its direct relation to the ability to regulate the human psychology which is involved in the work process (i.e. psychic regulation).

The psychological regulation of a work could be described as an information process related to the reception and processing of information and respectively decision-making, realized as a **physical activity**. This activity is an essential element of the overall work process and the work system as a whole. Reducing the number of physical activities has negative effects on the workability of the individual. That is why it is an important factor in the process of work optimization. The physical activity closes the circle between the human operator and the work process and they become a single management system with a **common function.**

According to the specifics of the work activity, certain requirements to the worker and, in particular, for his / her mental and physical abilities. This indicator classifies work as predominantly physical or predominantly mental - respectively pressure is also predominantly physical or mental.

Concerning the load, not only the content of the work itself may be influenced, but also the environment in which it takes place (microclimate, noise, illumination, etc.), which can aggravate or facilitate the implementation of the activity.

Requirements can be varied and complex – regarding qualitative and quantitative parameters (for example, speed coupled with accuracy and precision). Depending on the leading parameters of the work requirements, the distribution of functions between man and the technical means (for instance, a computer) is realized.

In leading indicators such as accuracy, speed, reliability associated with processing large data sets, a computer is used, compared to which a person is slower, inaccurate and more likely to make mistakes.

Table 1. *Comparison of the main features of the human operator and a computer*

Criteria	Computer	Human
Speed	Much faster	Up to 0,05 sec.
Accuracy	Very high	Low
Safety	High, might stop suddenly due to technical failure	Variable, gradual decrease
Memory	Best at literal playback and short-time storage	Big volume, various similar. Best for principal and constructive activities.
Calculations	Fast, accurate, without any possibilities for proofreading	Slow, tending to make mistakes but has the ability to also correct errors.
Essence	The purpose is the leading element; it is predictable; high productivity; energy-dependent	High level of complexity and varied abilities, high level of autonomy (mobility, energetic independence)

However, **if the leading requirements are linked to a high degree of autonomy in terms of energy sources and imply mobility,** no technical device could take up these functions.

On the other hand, **the person is extremely complex, enabling him to perform many complex tasks under different conditions and at the same time to provide feedback and corrective actions in real time.**

Each activity has its own characteristics, for example when implementing administrative work activities, we have the following basic parameters that influence the work performance and increase the workload:

- **Low level of autonomy in the decision-making process** for choosing the pace and work technique due to the limited time and the existence of many routine tasks;
- **Hindered feedback on achieved results** with the management and other units of the organization;
- **Limited opportunities to improve professional skills** and other key competencies through appropriate training (formal and informal);
- **Very large workload, with limited planning capability** and functional allocation by the division between individual team members;
- **Uniform work, static sitting positioning and computer work** more than half of the set working time;
- **Inappropriate work environment** – work spaces are shared by two or more employees, while the same are occasionally attended by different persons for consultation;
- **Low density of the work time** - the need for multiple support operations due to inadequately organized and functionally distributed workplaces (for example, non-compliant building);
- **Insufficient equipment and limited availability of workspace** with regard to the organization of workplaces (for example, non-functional and non-ergonomic furniture and existing supporting facilities).

Organizational changes in such situations could be solved easily and most effectively through the appropriate distribution of the functions of the work systems. In the context of administrative activities, we can focus on the human-computer system whose effectiveness depends directly on the restrictions of the human, as well as the specific features of the computer as a work device.

The main criteria when distributing the functions within a work system is to decide **which of the main elements the operator or the computer / machine** is performing better in regard to certain conditions and specific features of the work that has to be implemented. The main criteria for distribution are determined by the specifics of the work process and the parameters of the final product as well as the restrictions of a human and a computer.

There are considerable differences and restrictions – **a person is usually very dependent and influenced by the factors of the external environment, while the computer is not. On the contrary, a human operator is almost solely independent – the machine is not.**

For the purposes of relieving the workload resulting from the implementation of a certain task and transferring the appropriate functions to the computer, it is necessary to utilize the possibilities of a software application. When using a specific software solution, it is important to carefully study its possibilities and limitations in order to use it effectively. As a result, it will be possible to identify the features that will be needed in the process of performing the task (e.g. Microsoft Office Suite). In the process of distributing the function when using a specific software, **the basic principle "the easiest way"** has to be applied. If there is more than one method for achieving a certain result/purpose, one should introduce one that is easier.

Recently, more and more attention has been paid to the importance of the human and its specific features and characteristics. When considering the human as a part of the work process, his/her

specific features and needs should be carefully analysed and taken into account. Those features should not derive only from a person's work life but also from the specific lifestyle. In addition, there are many new hardware devices that have influenced our daily life. Very often those devices, instead of facilitating the work of users, are making it more difficult. The difficulties that have resulted from the complexity and multitude of new technologies have led to the establishment of the so-called human-centred approaches or **human technologies.**

As a basic feature of all technical devices (software and hardware) that certify their degree of compliance with the principles of human technology is defined as **usability**. The term **"usability"** of a device is defined by the degree of compliance with the physical and mental capacities of the person in the work process. In other words, the construction of the device (process, task or a product) is implemented in a user-friendly manner (an action or a task) and therefore does not provide a high percentage for errors. The usability should be should be considered as the basic feature and characteristic of work tools - software and hardware as elements of the work system. **The worker acts as a "user".** It should be clarified that there is a direct relationship between innovations and human technologies – no innovation could be developed as a **non-compliant with human technologies.** In the context of the work activity, the most important characteristics are related to the process of information perception when using various software applications which need to satisfy their function at their full potential.

Based on the overview of the specifics of the work tasks that was provided in the previous chapters, it is clear that most of them are not entirely consistent with the principles of human technologies (in regards to volume, deadlines and organization). A large portion of those specifics is directly related to the organizational structure and its characteristics. Such features include the level of centralization and formalization.

The concentration of tasks into a single unit or a person is linked to the levels of autonomy in decision-making and work task planning processes. The formalization, on the other hand, represents the level of dependence on the system in terms of existing requirements and rules (laws, regulations).

In general, the effects of the work activity and its context can be either positive or negative (stimulating and oppressive). Positive effects are related to activation and heating of the body while negative effect includes fatigue, monotonic function, decreased level of alertness, mental saturation, etc. Undoubtedly, the optimal working environment, the adequately formulated (sufficient) work requirements and the psychophysical qualities (condition) of the worker will contribute to the positive effects of the work activities. Systematic accumulation of unfavourable impacts results in deterioration of the work performance and stress. Chronic stress causes a number of adverse changes in the body that lead to weakened immune system and a predisposition to diseases. Insufficient luminance, for example, leads to pressure in eyes and makes it hard for the proper functioning of the vision. Frequent and prolonged exposure to the workload of the vision that can lead to a number of pathological changes in the structure of the eye and optic nerve. Damages to the human sight could occur as a result excessive lighting, high brightness and contrast, and excessive workloads, i.e. when looking at a single object over a longer period of time.

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Chronic stress causes a number of adverse changes in the body that lead to weakened immune system and a predisposition to diseases. Insufficient luminance, for example, leads to pressure in eyes and makes it hard for the proper functioning of the vision.

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The unfavourable microclimate is one of the features of the work environment that significantly affects employees and it determines the workers as it determines its influence depending on the indicators for temperature, relative humidity and airflow rates. High relative humidity increases the level of convection and leads to overcooling of the body when combined with lower temperatures.

Low temperatures, which have a stimulating effect, are required in the execution of physical tasks. On the contrary, higher temperatures cause a disturbance in body thermoregulation as it slows down the process of cooling. High temperatures affect negatively the cognitive processes – they decrease the ability for concentration, hinder brain activity and cognitive processes.

Noise also has a damaging effect on the nerve system. It causes anxiety, appetite and sleep disorders, headache, thirst, changes in the vestibular system, etc. Noise leads to cardiac diseases - the pulse is disturbed, the blood pressure changes. Changes may also occur in the human metabolism - energy consumption, blood sugar and cholesterol are increased, and blood chlorides are reduced. Work activity is deteriorated – attention is worsened, muscular power is decreased, the persistence of clear vision is reduced, the perception of colours changes, traumatism is increased. **The working ability deteriorates with about 60% for mental labour and with about 30% for physical one.**

The requirements of work related to volume, content and deadlines predetermine the level of workload (physical and mental) through the effort made by the worker. Depending on the specific parameters of the task, a number of actions are carried out in its execution, as a crucial moment, in this case, is the time for the so-called preparatory operations.

The total time for execution of the task is a function of the times of individual operations, including preparation time, auxiliary and follow-up time **(searching in registers, viewing different documents, printing time, etc.).**

All these work operations have their own specifics and are causing workload (mental and physical in a different ratio) such as:

- Bad working position (mostly static sitting);
- Visual control;
- Considerable load of small muscle groups (wrists and fingers);
- Static loading of the back mussels;
- Continuous work with a computer;
- Processing vast information arrays and database;
- Working under constant pressure and lack of time.

The most significant and **unfavourable impacts and effects of such work conditions and peculiarities** are associated with **productivity and fatigue.**
In cases of monotonous work which involves an uneven load of the muscles and the eyesight (perception), one would experience stuttering (a state when the person would feel tired, but it he/she is not). This provokes an almost immediate desire for rest and change of the work activity. In such conditions, an appropriate physiological regimen with active rest periods (in order to provide a more complex muscle group load) should be used to provide more even generation of nerve impulses in the cerebral cortex. As a result, the state of the person will change as the load which has been causing the unfavourable state would be either changed or alleviated (removed).
The limitation of the unfavourable impact of the various elements of the work system is achieved through various methods, i.e. organizational or technical in accordance with the nature of the impact and its source.
Technical methods could include all preventive actions related to the establishment of an appropriate work environment (through air-conditioning, ventilation, lighting, etc.). In addition, special equipment and a safe electrical installation should be emplaced.
Some of the most important organizational measures could include the introduction of a health and safety management system, functions and responsibilities allocation amongst employees, the introduction of work and rest regime, control and training of the workers. The work system must be carefully evaluated as the condition of each of the elements should be identified.
At the same time, **re-engineering (redesigning) or a completely new design process** of the work system should be carried out.

Re-engineering is an innovation that covers the following features of the work system:

- Work environment;
- Work equipment (hardware and software);
- Workspace and workplace;
- Work organization;
- Work assignments;

The aim of all measures is to **reduce the working pressure by eliminating and/or limiting the unfavourable effects of the individual elements**. This is achieved mainly by limiting (correct dosing) of the load, ensuring optimal working conditions and reorganization of activities. First of all, compliance with the relevant legal and regulatory requirements related to the main elements of the work system should be ensured. After the identification and documentation of those elements is completed, an assessment of the impact of the other factors, which are not precisely regulated should be carried out.

One of the main elements related to the workload that should be taken into account in the process of design and re-engineering of the work system is related to the adoption of an appropriate schedule for work and rest. This schedule should be compliant with the specifics of the work process. The regulated rest should correspond to the workload. If the physical factors are related with a static load, the corresponding rest should be dynamic. In case the mental workload is caused by the processing of vast amounts of information, the rest should be passive in terms of additional mental workload. Such a work break could be comprised of stimulating (generally activating) physical exercises – running, climbing stairs, or any other type of activity that activates diverse groups of muscles. The duration of that rest should not exceed 10 minutes! **Otherwise, the period that will be needed for the individual to get back in work mode will be longer.**

In addition, in order to decrease the negative effects of immense workload, the employee should be given the opportunity to organize his/her own work process and work tasks. One should follow the basic but rather simple principle. **The activities which require additional attention and concentration (important ones) should be carried out only during the first half of the working day (preferably until 11:30).** Routine tasks which do not require paying high levels of attention are good to be implemented in afternoon hours. An orientating plan with approximate times of execution could be developed in order to serve as a roadmap for the **correct organization and distribution of work assignments in terms of time.**
Another important aspect of the process of re-engineering is related to the **organization of the workplace.** An employee should be given the opportunity to organize his/her own workplace by following the main principles and specifics of the work process. **In this case, the following principle would apply - ”What's going on in the inside shows on the outside”, i. e. the arrangement and the current state of one's workplace is a function (projection) one's mental state.**

Another important principle of the re-engineering process that has to be taken into account is related to the development of models (drafts or sample) of main work activities and work results (products) which could be used multiple times. Examples of such models could be letterheads, document blanks, draft reports, statements, analyses, etc., as file configuration (structure) of those documents is prepared in advance. As a result, the time that will be needed for the development and preparation of such products will be saved. A useful advice here could be related to the implementation of frequent analysis of the “final products” which could be made at regular intervals of time (e.g. last two months). This should be done in order to identify “repeating” elements. Such elements could be, for example, tables with identical contents and structure, layout, etc.

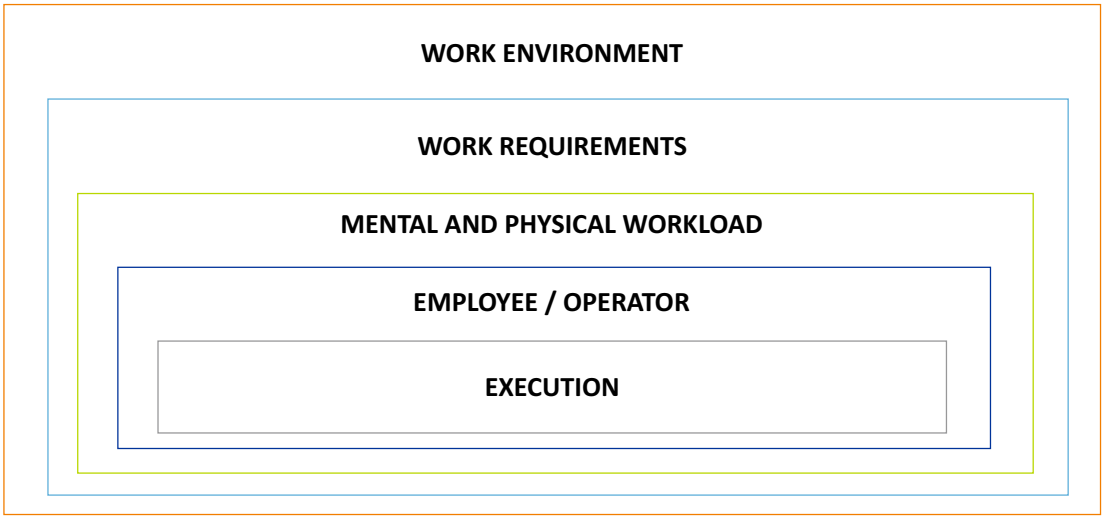
Planning through forecasts – this is a specific technique identical to the one presented above but is based on the analysis of the "urgent" and frequently occurring tasks. For the proper implementation of the planning forecasts method, it is important to mark on a common work calendar, all important activities, events and tasks for the company/organization. This could allow the development of timetables for self-reporting of activities, measuring and planning of urgent and important tasks. The data of the analysis of the tasks over a period of two months (when, how and why they occurred) could provide additional important and valuable information.

The exchange of good practices among colleagues or team members is a very valuable tool. It is based on the utilization of already existing and working solutions, which have been applied by colleagues or other team members in the process of performing certain tasks and activities.

The assistance or support by a colleague is also another suitable tool in the process of optimizing the work process. When seeking the assistance of a colleague or a co-worker, it is important to carefully describe the nature of the requested assistance or information, as well as the needed time for its implementation.

The organization of the work process represents a complicated mixture of the various elements of the work system including their interaction with each other (Figure 20).

Figure 20. *Elements of the work system that affect the execution of a certain task*



Any activity which complies with the following requirements **could be provided as a good example of a well-organized work process in terms of compliance with the main principles of the so-called human-technology**:

- It runs in an optimum working environment (lighting, microclimate, etc.);
- Working requirements are clear, unambiguous, complying with the peculiarities and abilities of the workers;
- Employees are subject to an optimal amount of workload;
- Employees have the necessary professional qualification and training.

The compliance with the pre-conditions provided below could guarantee the achievement of the expected results. **Examples of such pre-conditions in a work system could include:**

- The provided deadlines are adequate to the assignment (which are not necessarily too long, thus creating prerequisites for delays);
- There is a precise distribution of functions amongst the workers according to their individual characteristics (professional training, experience, role in team);
- There are appropriate software applications that serve their main purpose after the necessary data is inserted (a possibility for information extraction by predefined criteria in the required volume);
- There is a sound organization of the working process that creates a multiplying effect from the implementation of a specific task.

In contrast, an example for a **poorly organized working system that is not compliant with the basic human technological principles** could be described below:

- Unfavourable work environment (bag lighting, noise, unfavourable microclimate);
- Work requirements are vague, suggesting subjective interpretation and do not comply with the abilities and possibilities of workers;
- Workers are not optimally loaded – the assignments are unrealistic and could not be implemented in the required period;
- Workers do not possess the necessary training, qualification and do not comply with the requirements of their work positions.

Poor implementation of the work assignments could be justified with both unexecuted conditions (unfulfilled requirements) in regard to the elements of the work system. Here are some examples of the main characteristics of such systems:

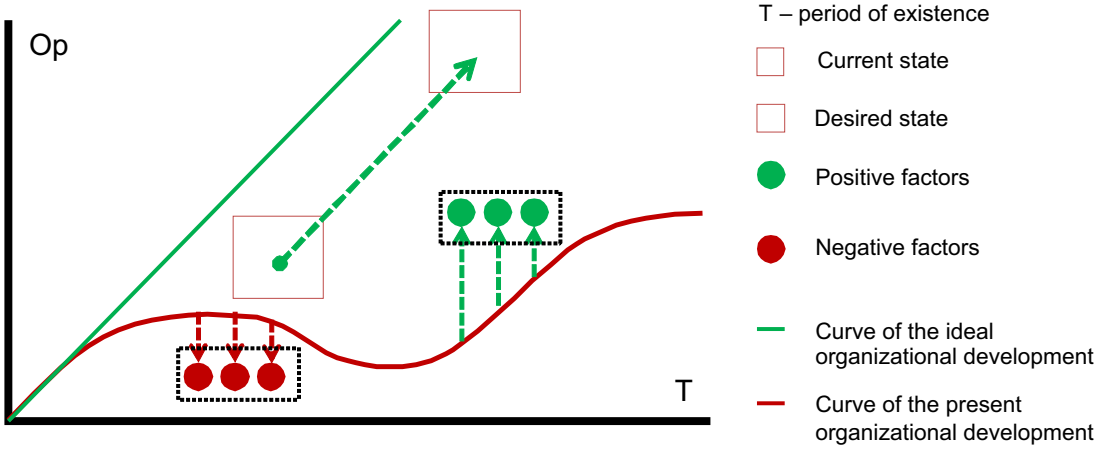
- Duplicating functions (two or more workers do the same job due to lack of coordination between them);
- Late assignment of the work tasks whose deadlines are not adequate to the technological time that is needed for their implementation;
- Using incorrect (inaccurate or outdated) information which may lead to a multiplying mistake at the next stage of the process;
- Controversial requirements that emerge from different regulations and create prerequisites for interpretation by the operator.

Chapter 5. Design and integration of work systems as an innovation process.

The process of designing a work system is related to the creation of a model of the desired state of the organisation including the key indicators that determine this state. Such task would require an analysis of the 'input situation' (current situation) that should be compared with the desired profile of the system and provides an opportunity to spot the differences between the two states more easily.

In the organisational development of each work system, there are two groups of factors which affect growth – positive factors that move the organisation forward and negative factors that slow it down. The primary objectives of the input analysis are aimed at identifying the unfavourable factors and neutralise them, or at least to reduce (restrict) their impact. This is accomplished through the design or re-engineering (redesign) of the work system or some of its core elements. In the process of designing the system, it is essential to introduce new positive factors that will be able to move the organisation forward in order to guarantee that the goals will be achieved. **A model of the process is presented in figure 21.**

Figure 21: *Model of the concept of designing the work system*



The model presented in figure 21 shows that the **optimum curve of development of the organisation** is the green line which represents the ideal and theoretically possible evolution. However, due to a variety of influencing factors and circumstances, the current organisational development (the red axis) is entirely different.

The purpose of organisational innovations is to merge both lines of organizational development by applying various methods and techniques. To put this conceptual model into practice, it is required that the stages of the design process (reengineering) implementation of the work system are carefully described, starting from the considerations and main principles that were described in the previous paragraphs.

In the process of initial analysis, the main areas of improvement and weak spots are analysed since those are the areas which should be the subject of initial interventions. The entire process includes various steps or stages which have to be performed strictly to keep the logical connection between the conclusions from analysis and the focus of interventions (corrective actions). **There are six main stages in the design process of a work system, and each one of them has its characteristics which are going to be further described in the current chapter.**

Stage I. Analysis of input situation

At the first stage of the design process, we should answer the following question **'What is the condition of the work system at the moment?'**, or the so-called input situation. In the first stage of the design process, a description of input situation of the work system should be prepared. This is implemented to gather some critical data that will be essential for the needs of the analysis and its essential elements. **The first primary component to be analysed is the human or employees:**

- Staff data (number, age profile, turnover, absences, qualification, accidents, etc.);
- Potential disadvantages (weaknesses) in structure (insufficient training, lack of motivation, or insufficient one, communicational problems, etc.);
- Workload (physical, mental, conditionality, degree, etc.);
- Performance (execution) – degree of implementation of the working assignments;
- Data for economic and business environment in the region which can influence the processes in the company, including the labour market.

The second element that should be analysed is costs:

- Production costs, including those related to extra work and correction of errors;
- Material costs, including those about scrapping;
- Labor costs, including insurances and all related to staff;
- Transportation costs, including courier services and transportation of workers;
- Energy and energy-providers;
- Service and depreciation of machines and facilities;
- Other payments associated with the primary activity of the company;
- Degree of workload and productivity of the main production tools;
- Cost-related weaknesses;
- Insufficient effectiveness of staff.

The third element that should be subjected to analysis **is the production process:**

- Quantitative indicators for the equipment (age, number, residual value, machine hours, idle time) of frequency and duration;
- Time indicators (working time, times for necessary and additional work, intervals);
- Indicators related to the capacity and lack of materials, instruments, vague material and information flow, bureaucracy;
- Indicators are related to quality, including the work environment;
- Indicators related to the supplies of end products and raw materials by groups, value and number as well;
- Indicators of labour effectiveness;
- Parameters associated with the workplace – course of the working processes and condition of the production tools (labour resources).

The fourth element that should be analysed are **the work assignments:**

- Physical workload;
- Workload related to the working environment (thermal, acoustic, etc.);
- Intensity of movements related to work;
- Working position;
- Accuracy and precision of the operations performed;
- Mental workload – reception and procession of information, communication;
- The content of the work.

All those indicators can be derived from various sources as some of them need to be extracted manually through real-time monitoring, timing or another specific methodological approach and a specialised tool (tests, measurements, etc.). It is essential that that data is objective and reliable. In accordance with the primary objective of the design process, the analysis could be focused on particular aspects and units of the work system. **In this case, several primary areas for could be defined:**

- According to resources (material, human, financial);
- According to hierarchical levels of the organisation;
- According to indicators (financial, quantitative, qualitative);
- Economic, social, cultural, marketing, etc.

A systematic approach could be applied to determine the focus because the system operates as a unity but the overall character of the organisational unit and the variety of interconnections between the components must not be neglected. Also, we should keep in mind that not all internal relationships within the work system could be easily spotted and documented.

Stage 2: Definitation of objectives and assignements

Based on the analysis of the input situation, concrete objectives could be established for the needs of the design process. The main purpose can be reassessed based on the findings of the analysis. Based on the input analysis it could be determined that that the system does not have the necessary capacity and potential to achieve the desired state. In this case, it is necessary to define measures that respond to the main (global) objective **regarding basic parameters taking into account the input state of each measure (Table 2).**

Table 2. *Target measures in the process of designing a work system*

Mandatory measures	Optional measures
• *Location of the work system* • *Production capacity* • *Volume of investments* • *Utilization of specific software and hardware components* • *Regulations and laws* • *Contractual obligations related to the implementation of legislation and order execution (or content of services)*	• *Improvement of effectiveness of the used product and other tools* • *Optimization of working time* • *Increasing product profitability* • *Decreasing production costs* • *Diminishing loading of the workers* • *Increasing the area of operation of workers* • *Raising competences and qualification of workers*

Each draft version of a solution that will be applied must comply with all mandatory criteria. In case the solution does not meet all mandatory measures it should be dropped.
The mandatory measures are the main criteria which represent the irreversible limitations of the system, as well as its purpose. To a certain extent, those criteria are based on the current achievements before the initiation of the design and re-engineering process.
The optional measure should be directed primarily to the implementation of various solutions. These measures could provide the necessary comparative data for the different decision, thus facilitating the selection of the most appropriate solution. **It is crucial that these target measures could be measured regarding quality and quantity.** You can see an example of such distribution of measure in Table 3.

Table 3. *Quantitative and qualitative targeted measures*

Quantitative measures	Qualitative measures
• *Reducing the continuous working process to 5 days* • *Reducing the absence of workers due to illness* • *Decreasing turnover* • *Diminishing the costs per a working operation*	• *Reducing the levels of noise too and less than 65 dB(A)* • *Increasing motivation* • *Increasing qualification* • *Increasing flexibility in organization of labour*

In their essence, all targeted measures represent a common understanding of the organization based on the personal experience and accumulated scientific and research experience in the field of innovations. A team of both internal (in-house experts that are completely aware of the process) and external experts with proper knowledge and experience in the implementation of system decisions, should be involved in the implementation of the such a design project.
After the team is assembled, the distribution of assignments should be done. The elements at the input and output are first determined and described in the process, as well as the working tasks. These are data and conclusions from the analysis of input situation which therefore lead to the tasks that are going to be implemented by the team according to its members' specialization and profile. Also, the means, location and time of coordination and joint work among team members in the context of the task should be defined. After the process is completed, the team should prepare a joint report. Based on the findings of the report the management sets out the main objectives of the project related to the designing or re-engineering of the work system.

Stage III. Preparing a concept of the work system.

At this stage, the design project team **develops a concept of the work system**, which includes the following main stages: determining the course of work; allocating functions between human and production tools (machines); assessing the requirements for staff qualification and planning the required staff; determining the workload of employees; and assessment and selection of a desired profile of the system.
First of all, the planned parameters of the work system are derived from target criteria. This means that the subject and scope of main operation of the work system should be identified, i.e. groups of products or services that are going to implemented / produced as a result.

For the purpose of strategic planning and design, the planned indicators for the capacity of the system should be determined (based on the analysis of the initial situation). The various work phases of the system are specified. They present an overall outlook on the entire process and the logical sequence of operations. **Next, the content of the work assignments should be specified.** This should be done after the merging of different work phases. The data from the analysis of input situation regarding staff and production tools could be utilized for the purpose. Next, the assignments, based on their content, type and quantity, are allocated between various production departments and workers based on their specialization and training. A typical work system could be designed on the basis of work processes by determining who does what - the human or the production tool (the machine). **At this stage, it is essential to take into account the various criteria for allocation of functions according based on the nature of the task itself (Table 4).**

Table 4. *Criteria for distribution of functions between human and the machine*

Criterion (characteristic)	Machine	Human
Speed	Much faster	Up to 0,05 seconds
Accuracy	Very high	Low
Safety	High, sudden failure	Changing, gradual degradation
Power	Big (in the project)	Maximum of 2 horse powers
Memory	Best in literal reproduction and short-time storage	Big volume, a huge number of similar ones. Best for principle and construction activities
Calculations	Fast, accurate, without any special possibilities for correction of mistakes	Slow, tending to make mistakes, but with possibilities for correction of mistakes
Operations	Specific (can be programmed)	Vast, almost unlimited
Determination	Ideal for routine operations which are repeated precisely and constantly	Bad, rapid tiredness in operations with uniform repetitive movements
Essence	Purpose is leading in construction; predictable, high productivity, energy-dependent	High level of complexity and varied possibilities, high level of autonomy (mobility, energy-independent)

The primary criterion to be used when distributing tasks in a typical human-machine based system will be based on which of the elements of the system would implement a certain task or an assignment better based on the nature of the task and the specific conditions. Task distribution criteria are determined by the specificity of the technological process, the parameters of the final product, as well as the limitations of human and the machine.

Those limitation could vary as the human is usually very dependent and influenced by the factors of the external environment, while the computer is not. On the contrary, a human operator is almost solely independent – the machine is not.

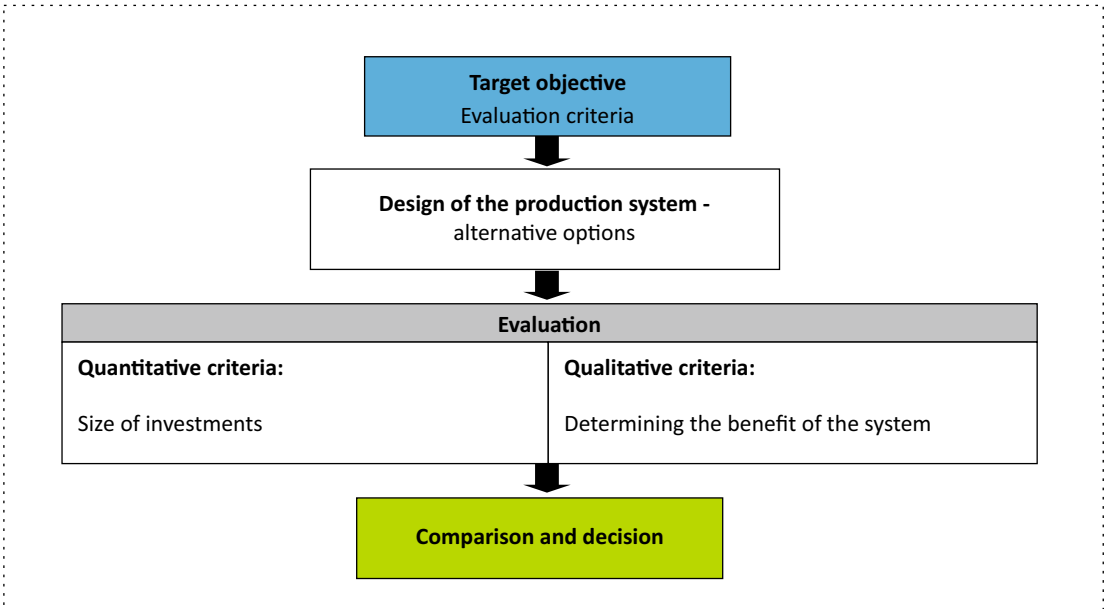
Taking into account the characteristics of human and the machine, their function in the frame of the technological process could be precisely determined. For that purpose, the functions and tasks of the machine, as well as those of the human – operator should be designed.

T**he process of designing a work system** is carried out in both technological and ergonomic aspect. The technological aspect of the process is related to the design of the elements of the machine and its specific tasks. The ergonomic aspect of the design process is focused on identifying the functions and task of the human operator and the organization of the workplace. The optimization of the process is based on the monitoring of changes in the main features and characteristics of both structural elements of the work system in accordance to the complexity of the work assignment.

After the work assignments are defined, the qualification and number of the necessary staff could be examined and planned. The main problem that must be solved in order to achieve the main objectives of the project, is related to the provision adequate workforce / personnel to complete the work assignment. In other words, the necessary staff infrastructure must be developed – the structure, the hierarchy and the organization of the staff that needs to be engaged in the work process. Staff infrastructure is composed of key experts in the organization who are implementing their tasks and maintain the processes that need to be carried out for the main goals to be achieved. The formulation and distribution of assignments must take into account the workload of employees in the process of implementing the assignment. As previously defined, the workload could be physical or mental.

The nature of the workload is based on the content and volume of the work task. At this stage of the design process, some further research is necessary on the existing workload in similar activities in case such information is not already available at the organization. In addition, data on the labour productivity as a result of the distribution of tasks between the human and the machine is also necessary. All those data could be used in the process of determining the remuneration of employees. This could serve as an incentive and an additional measure in the process of achieving the envisaged goals.

Figure 22: *Process of assessment of alternative option and design versions*



All possible alternatives must be compared regarding the qualitative and quantitative measures that were set in stage 2 of the process. This will guarantee that the chosen design of the work system will fit its purpose. The following indicators should be determined on the basis of a comparative assessment of the data related to costs, efficiency and profitability.

Each version of the design project is assessed for its compliance with the target criteria and the requirements related to the volume of needed investments and the projected benefits. At this stage, an innovative solution for each elements of the system should be sought (including definition of the work process; assigning functions between the human and the production tool (the machine); assessing the requirements of staff qualification and planning of the type of required staff; assessing the workload on employees, etc.). **Any available systematic knowledge and information concerning the introduction of such individual practices in similar enterprises could be applied at this stage of the design process, including external knowledge, know-how, etc. The process of assessment of the available options is illustrated in figure 22.**

Stage 4: Guidelines for organization of the work process

After i**ndividual assignments are distributed between the separate departments and people,** and the functions of the human and the production tools (machines) are determined, **it is necessary to identify the specific requirements to the production tools to meet the requirements of the new project (work system)**. All specific requirements to production tools should be transformed into the requested technical parameters of the new equipment which must be provided. The present equipment is assessed whether it satisfies the requirements for productivity and quality (precision, accuracy, speed, etc.). **These requirements represent a significant element of the process of quality management, especially if a quality management system has been already introduced in the organization.** Therefore, all those requirements are documented and saved in a particular folder for further use. This folder could also contain recommendations that were received by the operators or users of the equipment. **They should be assessed periodically and updated in accordance with the specifics of each assignment.** Additional work procedures could also be recorded in the process of satisfying the requirements – concerning both staff and external providers.

Based on the results from the detailed planning of the work system, the requirements to the staff who will be engaged in the execution of the assignments could be defined. Such requirements could relate to different aspects such as qualification and work abilities of employees that will be needed for the achievement of the overall objective.

It is vital that these requirements be adjusted to the specific needs and conditions of all departments that coordinate the process of selection and training of personnel within the company.

Next, it should be clarified which members of the current staff of the organization will continue to implement their duties and how their responsibilities will change. This process will allow the management to identify the type of staff that is needed and the skills that will be required. The qualities of the staff must be divided into two categories – general (responsibility, loyalty) and specific (technical skills and abilities).

These qualities that respond to the newly designed work system could also be organized in a separate folder which could be provided to the human resources department and used in the process of selection and reselection of staff.

The implementation plan should be developed in order to ensure that the work system is already introduced in accordance with its main purpose and functions. **Based on the complexity of the new system the following supporting tools could be used:**

- A plan or a bar chart that indicates the existing dependencies, time expense and deadlines;
- The folder of requirements to the staff and production tools;
- A detailed plan that aims to eliminate accidents and other unplanned events. This plan should also provide guidelines for the smooth integration of new components into the system;
- A work schedule and enough personnel including replacements.

The plan should also contain a detailed description of the work assignments of the team members engaged in the design process of the new system. **Each task should be presented in a table, and the name of the particular person responsible is written next to it.** Based on management decision, the plan could also include other elements that document its progress as well as each new addition. The realization plan itself can be kept and archived in a separate folder which includes **other essential elements related to rules of organization of the work system** (requirements of regulatory documents, regulations of the quality management system, instructions, technical manuals and so on.).

Stage 5. Introduction of the work system (test operation)

The introduction of the work system includes several main stages that are related to the provision of sufficient production tools, installation (montage) of the work system, analysis of system loads and analysis of data. The introduction of the work system into operation is based on the type of system and if its new or modified. At first, the place of installation has to be prepared, including all other conditions (i.e. lighting, working equipment, disposition of all necessary power sources, measurement tools, test materials, folders with the working assignment, etc.).

Each activity (production or a service) requires certain tools that are necessary for its proper implementation. Such tools are referred to as production tools and could include a computer, a metal-cutting machine, or something else. When introducing the new work system, the workplace (or a group of workplaces) is organized in accordance to the target criteria and requirements. **Such requirements are provided in Table 5.**

The established requirements should be verified upon receiving the equipment or when moving an already existing machine or a tool. The placing of the equipment is done in accordance to the specifics of the project and could be positioned via various measurement tools (if necessary).

The process of implementation of the chosen work system should be executed in accordance to the implementation plan and the envisaged costs and time. All employees that are engaged in the installation process of the work system should coordinate their activities with the project team. A coordinator of the project, who will look after the implementation of operations and schedule, can be chosen at this stage.

Table 5. *Requirements when choosing a montage table*

№	Requirements
1	Enough space for movements of hands and legs
2	Possibility of working in a sitting or standing position
3	Unified sizes due to configuration possibilities
4	Existence of a fixed connection for attaching several tables
5	Possibility for additional equipment (screen) montaging
6	Possibility of attaching power wires
7	Presence of a place for personal belongings
8	Ability to adjust the height of the work surface
9	Sufficient worktop surface area
10	Sufficient load capacity
11	Requirements for resistance of the worktop (scratching, impact resistance, etc.)

The work system is considered installed when everything necessary for the work to begin is present. In addition the operators should be trained, instructed and are ready to work. The beginning of the work is reflected in a work system start-up protocol with a date and hour, as well as its elements (workplaces, equipment, etc.).

Before the actual start of the system, one last check of all elements and their condition (power supply, present raw materials, machines, working tools and instruments, etc.) should be carried out.

After the work system is tested, a precise analysis of of the workload must be carried out in the way described in chapters 3 and 4. Before the analysis is carried out, the detailed description of the work system which also includes the working assignment, the working process, the organizational conditions and spatial relationships should be examined. It is recommended that workload data be processed by objective methods and compared to initially chosen parameters. If there are any inconsistencies in the data, they should be recorded in the relevant documentation. The presence of additional influencing factors must be recorded and analysed. For instance, the noise from additional equipment and so on (which are not present at the moment of test operation).

Load times that were recorded in the process should be registered in a special form with a possibility to include extra data and compare with pre-set data for physical and mental load. When there are significant discrepancies between planned and calculated load, a further analysis of the course of the working process is made to determine the sources of the discrepancy. It is very likely that the load is increased because the system is under surveillance. Hence, it is also necessary to analyse the times of the separate phases of the process, and the density of the working time with a report for unproductive time. **In the process of test operation, it is essential to measure data of all elements of the work system** which have been set in other stages of the project implementation. In order to have valid data, it is necessary to guarantee that the system is operated by the necessary number of skilled staff and there are no exceptional (unusual) circumstances disturbing the process. Moreover, it is necessary to provide enough security of all technical devices and equipment to prevent accidents in the process of test exploitation.

At this stage, the most important is the data on the process itself and its structuring in separate phases. It is also important to describe each phase, including the time for completion and to register any factors that could influence both the time and the output of the production.
One should take into account that in the process of observation and recording of data, certain differences and discrepancies are possible due to the fact that the system is under surveillance. In this case, recorded times might be shorter in comparison to projected times or vice-versa.
All data that has been recorded in the phase of test operation should be archived in separate folders. This will allow for the data to be compared to later test during the lifetime of the equipment for various purposes, including the determination of performance criteria combined with the optimal workload.

Stage 6. Introduction of the work system (final)

This final stage of introduction of the work system is also known as verification. At this stage, the system works, but the leading indicators and target criteria must be analysed in order to verify that the system is working. **The project team prepares an elaborate report** on the work stages, recorded times, workload and influencing factors. The reports is prepared in order to serve for future tests and planned assignments. **An economic analysis is made at this stage based on the investment funds, incomes and realized profit.**

Chapter 6. Case studies – best practices of integrated organizational innovations

In this chapter, we have prepared some examples of successfully introduced organizational innovations in different companies and the main benefits that were gained through their introduction. The case studies describe different approaches in the process of implementing certain organizational changes. However, the ultimate goal of each innovation project is related to an improvement. As seen in many of those cases, the introduction of innovative decisions is not necessarily a conscious or an intentional process. In most cases, it has been a spontaneous process which was provoked by an emerging problem that had to be solved without hesitation. In many cases, decisions came without external interference (consultants or experts) and were realized as one-time acts without complying with any planning and other essential aspects. Also, even the management did not realize that the implemented change was to be considered as an innovation.

Success story 1: Megaprint DOOEL, Strumitsa, Macedonia

Description of the innovation: Megaprint DOOEL is a company that works in the field of advertising and large format printing. The company decided to introduce organizational innovation "Flexible working hours".

Taking into consideration that work of the employees mainly involved work on the field, where weather conditions strongly influenced company's operations, the management of the company convened a meeting with the employees in order to find a solution for the work during the summer period. The decision was to introduce flexible working hours. That meant - every worker can organise his/ her own work in the best way during the day.

The task is assigned to the worker, but also the deadline when it has to be completed. Each person has the freedom to work whenever they want, but he/she has the obligation to respect the deadline for completing the task.

The company introduced this innovation in order to protect the workers from the heat that affect Strumica during the summer months, but also to give workers more confidence in organizing their working day and obligations, as well as assign bigger responsibility in their work.

The management of the company has received positive responses from the employees, and this reorganization proved to be successful. The company continued with the same method of operation during the winter months. The productivity of employees increased too.

The main results of the introduction of the innovation are:

- Improved working conditions in the company;
- Increased satisfaction of the employees in the company;
- Increased labour productivity;
- Increased turnover and profit..

Success story 2: Animax LTD, Blagoevgrad, Bulgaria

Description of the innovation: Animax LTD is a company that offers services and consultations on occupational health and safety. The company introduced an organizational innovation that was dictated by the strong competition and the reduction of the price of services related to occupational health and safety. At the same time, the company has been working since 2001 and has a well-trained and qualified team that had to increase its workload in order to keep the same levels of turnover. However, the profit margins were decreasing. Innovation consists of a transfer of services and reorganization of work assignments. Firstly, it was decided that services related to occupational health and safety should become a free supplement to a new service provided in the form of outsourcing to a safety and health official. Instead of being paid on an annual basis, the services were provided for a monthly fee. Secondly, companies which were provided with such service were carefully selected. They had to be companies with staff between 20 and 100 people, which were unable to allocate funds for an occupational health and safety supervisor.

Third, each company client was assigned to a specific team member. Fourthly, standard forms were prepared for each client – company based on its main activities, i.e. construction, production, commercial, as well as on the specifics of their activities and occupational health and safety requirements.

The main results of the introduced innovation were:

- Optimized workflow;
- Achieved high efficiency and effectiveness of the service provided;
- Increased customer satisfaction.

Success story 3: Olive Trade DOOEL, Gevgelija, Macedonia

Description of the innovation: Olive Trade DOOEL of Gevgelija is a company that is operating in the food processing industry. The company processes fruits and vegetables and had introduced an organizational innovation titled “Diverse innovation teams”. The company management assigned the HR manager with a task to look deeper into the experiences and background of various employees that show outstanding dedication and creativity. At the same time, the Technical Manager was given a task to identify the biggest challenges in the technological process. As a result, three so-called “diverse innovation teams” were established involving employees from different departments/ units with different experience and background to work together on different challenges in the production process. They were provided with an adequate environment for meetings and dedicated budget to prototype and test. As a result, teams generated new innovative ideas to address various challenges (e.g. application of the stickers on the jars, decreasing the time of standstills, etc.). This idea was taken and further refined by the management. The management was convinced that bringing together diverse employees has really amplified the company's ability to innovate. In other words, having a diverse set of experiences, perspectives, and backgrounds was a positive prerequisite for developing innovation and new ideas.

The main results of the introduced innovation were:

- Optimized workflow;
- Achieved high efficiency and effectiveness of the service provided;
- Increased customer satisfaction.

Success story 4: Vaniko Ltd., Blagoevgrad, Bulgaria

Description of the innovation: Vaniko Ltd. is one of the leading manufacturing companies in Blagoevgrad region. The company manufactures various units and parts, provides maintenance and repair of industrial equipment. The company decided to introduce an organizational innovation in view of the increased workload, which required a reorganization of the production process and the formation of new production units.

The idea of introducing organizational changes was dictated by the increase in the volume of orders from abroad, which led to the need of increasing the number of staff, as well as ensuring their vocational training and qualification. At the same time, this required a complete reorganization of the production process. In addition, the management of the company did not want to depend solely on orders from abroad, so it decided to utilize the existing technological and human capacity of the company and to diversify company activities.

One of the newly established units was dealing with subscription-based maintenance and repair of industrial equipment and machines. Another element of the organizational innovation was the creation of a modern interactive training centre for training newly appointed staff, which included a training room and a separate production area where trainees could practice their skills and knowledge in a real work environment. The training centre was also used to train machine operators for other companies – based on their specific needs. The second element of the organizational innovation was related to the introduction of flexible production organization system to optimize the production process. The essence of the innovation was to establish certain production data for the different technological times of individual operations through a real-time video surveillance.

The provision of repair and maintenance services for machinery and technological equipment was sought as a business opportunity for Vaniko Ltd. due to the fact that many production and processing companies of the region were unable to implement repairs and maintenance on their own technological park.

Since Vaniko Ltd. has been selling specialized equipment, bearings and other machine parts, specific requirements had to be kept in terms of their installation and follow-up warranty service and maintenance. Such operations should have been performed exclusively by qualified personnel. In addition, for the dismantling of each machine a specialized technological equipment was needed. In some cases, the machine that was marked for in-house servicing had to be shipped to the production facilities of the company in order to implement more advanced interventions. Additionally, upon customers' request, Vaniko Ltd. has been providing specialized services related to the complete refurbishing of metalworking machinery and equipment.

Additionally, due to the large demand of orders from local automotive workshops the company has decided to open a separate production unit to be engaged in performing specific orders related to the production and repair of car parts and custom elements for the automotive industry. The staff that was engaged in this parallel production line was assigned to other manufacturing and machinery maintenance operations whenever needed.

The main results of the introduced innovation were:

- Optimized production process and increased production capacity;
- Improved qualification and production readiness of newly appointed staff;
- Improved efficiency of the technological equipment and resources of the company;
- Fostered diversification of company activities and reduced dependence on external contractors;
- Expanded market share and number of customers. Attracted customers for subscription-based maintenance and repair of production equipment.

PART TWO

MARKETING INNOVATIONS

Chapter 1. Introduction to marketing innovations

Small companies that very often work on the brink of their capabilities appreciate the importance of innovations as an opportunity for a positive change in the current unstable and unsafe business environment. They compete successfully with each other in a particularly dynamic and in many cases unfavourable environment and economic.

They use innovation as a strategic, systemic and technological lever to develop flexible innovation culture and socially responsible business management processes, thus shaping the global business environment. This ensures that they encourage their employees to develop their creative thinking, belief in their own views and beliefs, the ability to create creative ideas, and the courage to try them to provoke the change in the world around them. **How can innovations save the world of business?**

Albert Einstein said "We cannot solve our problems with the same thinking we used when we created them".

The world is full of difficulties that can hardly be solved. The first thing you need to know about innovation is that they are basically seeing, perceiving and solving problems in a creative way! This requires a sense of urgency, passion and non-standard thinking to improve quality and lifestyle.

Adaptation to the effects of so-called "Black Swan" events. Black Swan are random and unpredictable events that can not be predicted, but they challenge new ways to deal with difficulties and insecurity, adapt to them and their impact when they happen. In the recent history as “Black swans” were considered the following events: the sinking of the Titanic; the Chernobyl nuclear disaster; the tsunami and nuclear disaster in Fukushima; the big Wall Street collapse of 1929; the Dot-com bubble from the period 1997-2000 (also known as dot-com bubble, Internet bubble, etc.); the bankruptcy of Lehman Brothers; the attack on the World Trade Center on September 11, 2001, and others.

Taking advantage of the global entrepreneurship movement. Entrepreneurship is becoming a global movement, especially in emerging markets where China and India are leading destinations, and Africa is expected to be the next hot spot. Innovation are the means of stimulating entrepreneurship, as well as a way to empower people to take control of their own lives, increase their living status, and ensure economic prosperity.

Forget about the competition, break your own perceptions of doing business! In the book "Blue Ocean Strategy", American author Chan Kim writes about the market universe, which is made up of two types of oceans - red and blue. Red oceans include all industries that are popular and well-developed. The blue ones comprise of the non-existent industries - the unfamiliar market space. In the red oceans, industrial boundaries are drawn, and rules are known to all. In these so-called "Oceans" opportunities for big profit are relatively small. By contrast, the blue oceans are industries and markets that need to be built and developed. This also implies great opportunities for profit and growth. That is why companies need to separate from the competition. But to reach new gains

and growth opportunities, it is necessary for each company to create its own blue oceans. The market opportunities are potentially limitless, and the key is to go beyond and expand our own perceptions in order to create a “blue ocean”. At the core of this effort are innovations.

Seamless progress in technology. The stimulated distribution of digitization as a result of the development of the Internet connects various devices ranging from home appliances and heating systems to cars and even jet engines. Innovative start-ups are connected in the Internet system via mobile devices, cloud technologies and social media. Software applications help people in every aspect of their business and are an essential factor in improving the quality of life and people's thinking.

Need to adapt to changing dynamics and workplace trends. Because of the negative population growth, conventional planning processes are becoming obsolete. Aging mankind and increased human life worldwide is a widespread problem that provokes not only the financial collapse of the traditional pension system but also the emergence of consumer groups identified with different needs. Millennials born between 1980 and 2000 have been changing workplaces and domicile indefinitely in search of more prestigious work, self-dependency and equal opportunities.

Responding to growing customer expectations. Significant changes are needed as regards the way in which customers' needs, desires and expectations are perceived and evaluated. The supply of goods and services must also adapt fast to the changing and dynamic demands. The focus is on gaining value, the new digital and online technologies, which shows that companies understand clients, interact with them and support their new lifestyle.

Strengthening the link with globalization. The current wave of globalization is driven by policies that have opened up economies at national and international levels. As a result, many governments, by adopting economic free market systems, significantly increased their own production potential and created new opportunities for international trade and investment, while reducing obstacles to the free movement of people, goods and capital.

Chapter 2. Definition and specifics of the marketing innovations

The term **'marketing' originates from the English language.** According to the American Association of Marketing 'marketing is an activity, a number of institutions and processes for making, delivering, communicating and exchanging proposals which are valuable for clients, partners and society on the whole'.
Marketing is the activity of a company concerning the purchase and sale of products and services. It includes advertising, selling and delivering products to customers.
The people who work in marketing departments of the companies do their best to attract the attention of target auditory by using slogans, package design, celebrity recommendations and media campaigns.

The main idea of the traditional 4P marketing concept is that if a company is successful in these four core areas, it should, on equal terms, be competitive, attractive in the eyes of customers, and enjoy good business.

Some experts believe that, besides these four determinants that mark marketing as successful, there are three additional factors - people, processes, and physical evidence.

Marketing is everything a company does to acquire customers and maintain long-term relationships with them. **Everything around us is marketing.** Even small tasks such as writing letters of gratitude, playing golf with a prospective client, answering calls fast and drinking coffee with a former client can be considered good marketing!

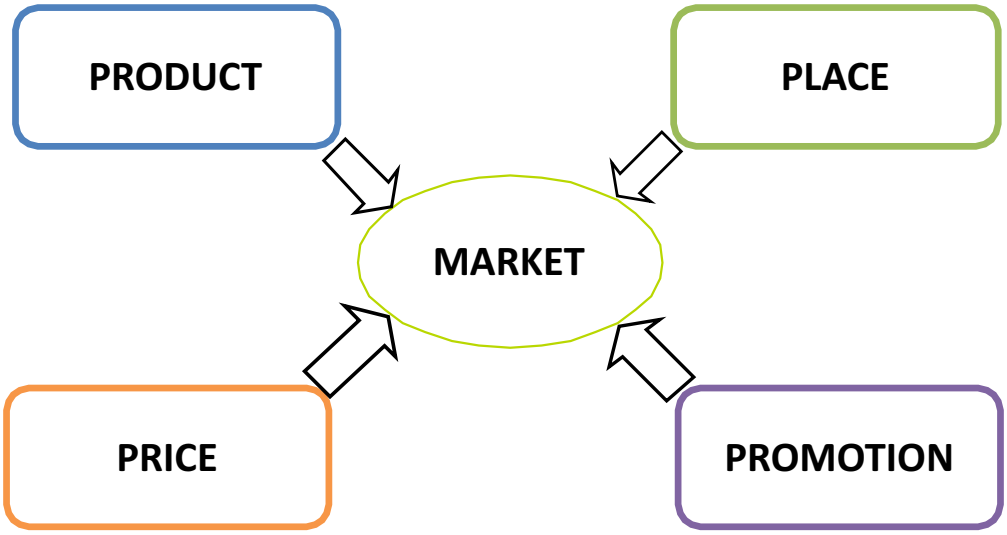
The classic "4P marketing" concept is a model in which a company should make efforts and work in four main directions:

The four "P" of marketing are product, place, price and promotion.

The product covers all the specifics related to the product or service itself and the ways consumers perceive it according to their needs and desires. Products are essential for the company's product policy, including packaging, the prestige associated with product consumption within a given social group, product performance and quality, and more.

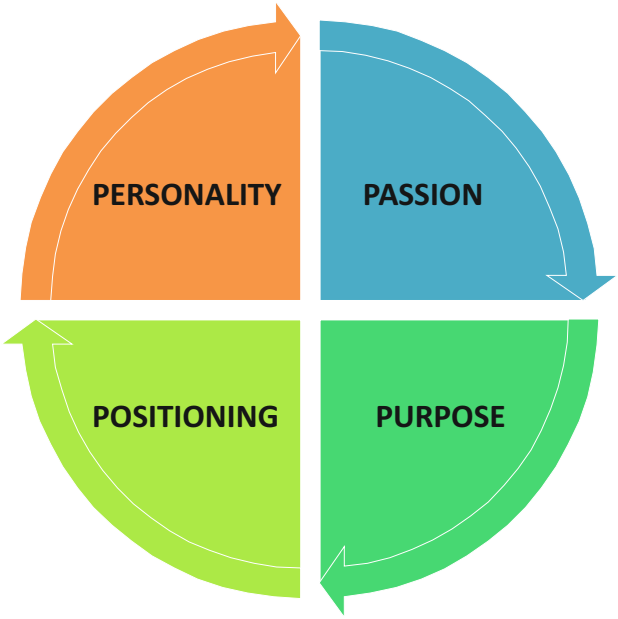
The price refers to the value of the product or service. In determining the price, the cost of manufacturing the product or service concerned, as well as the costs of marketing and distribution, must be taken into account.

Figure 23: *The four "Ps" - the basic elements of the marketing concept*



The place or distribution includes the activities that help the product or service reach the target customers. The primary considerations include whether the product will be sold through a physical store, online or available through the two distribution channels simultaneously.
Finally, the promotion concerns the integrated marketing and communication campaign. Promotional activities may include advertising, personal sale, promotions, public relations, direct marketing, sponsorship, "guerrilla marketing", etc. Promotion is different and it depends on the the life cycle of the product**.** The idea of 4P continues to be of great importance, but today the most important thing in marketing is trust. For example, a customer's engagement with a brand is a form of trust. Trust is at the heart of so-called. new "4Ps" in the world of marketing.
The Passion is the first new "P". It's about the business owner's passion for working and living. When one owner acts with passion in everything he engages, it is passed on to others and to the attitude of the entire company towards consumers and the market. There are many examples of passionate entrepreneurs. Classical examples are Steve Jobs and Richard Branson. Passion gives birth to trust. However, this is not enough. A good entrepreneur should work with passion and emotion but also be able to connect this passion with the meaning and purpose of his company to inspire and motivate other people to excel.
The Purpose is the second new "P" and means not a short-term, operational goal, but a more strategic purpose and a sense of the company's existence - what it is and why it does what it does.

Figure 24. *The new 4 Ps in the world of marketing*



Positioning is the third new "P". Companies that understand the power of purpose and purpose are also aware of the power of positioning. If we take Apple as an example - this company is an excellent illustration of the power of positioning. Positioning gives confidence. It is essential to think about the positioning of your own company.

What is it and where is the company among all its competitors? This is a critical topic for the success of any business or product.

Personality is the last new "P" in marketing. It determines the way a company uses certain human qualities or personality traits as a means to allow its clients to reach the purpose and meaning of the company in question and all that it creates and offers.

Examples can be given a lot. **For example, think about companies that employe sincere, communicative, cheerful and helpful people. These are companies with a specific individuality. Working with such companies is a pleasure**. The purely human qualities and their specific manifestations that come to life in every company activity often make the difference between two seemingly identical firms. Both companies can offer the same thing, but human attitude and presence in one firm could be the determining factor for its choice by consumers.

Product history and customer likeness and authenticity is a form of trust. The message of the product and what it symbolizes is a form of trust. The price is a function of the value of the product, and the value is always determined by the user, which again leads to the subject of trust. The efforts that companies make to promote a product or service aim not only to familiarize the customer with the product or service but also to gain its trust. In the conditions of intense competitive pressure and abundant choice of all kinds of products, it is crucial for each company to gain the trust of the customer.

The principal dimensions in marketing innovations are: aspire, choose, discover, develop, accelerate, scale, grow, mobilize.

It is no secret that the innovation process is complicated even for well-established companies. Generally, they are better producers for well-established and widely used products and services than companies that work as innovators, offering new, unfamiliar products and services, and at least they can succeed through changing creativity rather than optimizing existing and already operating productions and enterprises.

The art of marketing is not so much to produce, but the skill to sell! Even selling a refrigerator to an Eskimo. In fact, it is possible because the temperature is constant in the refrigerator - around 5 ° C. Such temperature is suitable for storing milk and eggs that would freeze at -40 ° C.

Chapter 3. Marketing and marketing innovations

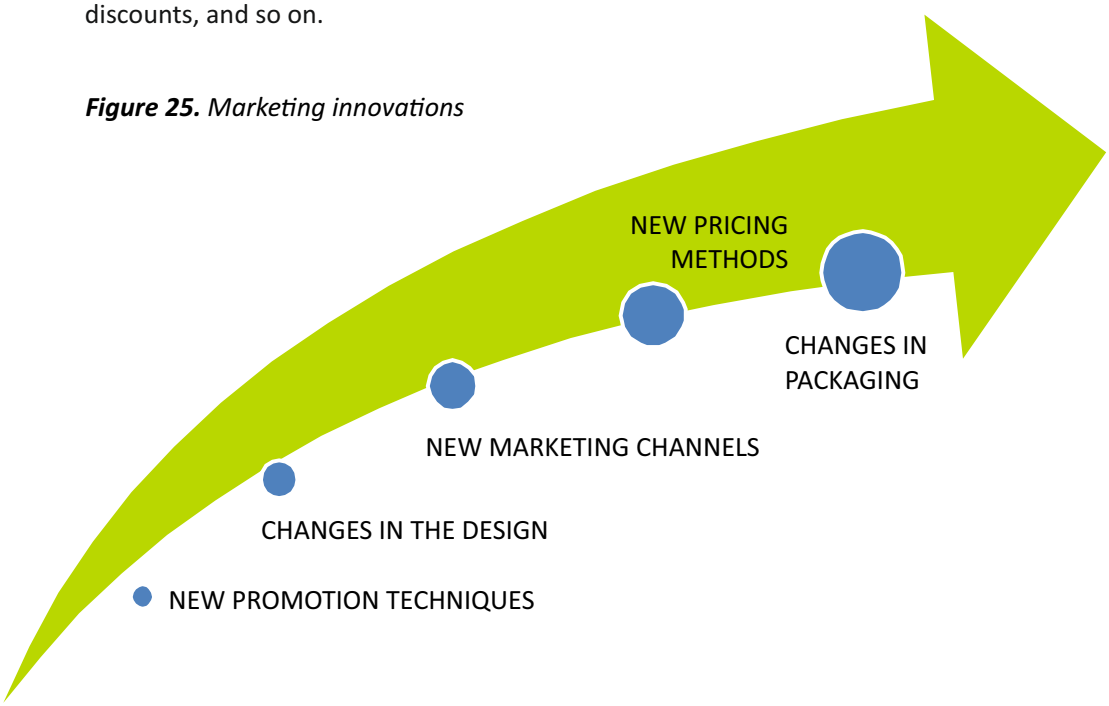
Marketing innovation is the creation of a new marketing method involving significant changes in product design or packaging, product offering, product advertising, or pricing.

Marketing innovations aim at better adaptation to clients' needs, finding new markets or supplying a new product to a market to improve the sales of the company.The distinctive feature of marketing innovations in comparison to other changes in the marketing tools of the company is the introduction of a marketing method that was not previously used by the company. This could be part of a new marketing concept or a strategy that represents an entirely new direction from the existing marketing methods of the company. New marketing methods can be introduced for both new and existing products or services.

The process of marketing innovating includes four types of approaches:

- Significant changes in the design of the product or on the packaging of goods or services;
- New media or product promotion technique - the first use of new advertising media, a fundamentally new brand to target new markets, etc .;
- New methods of placing products or sales channels - first use of franchise or distribution licenses, direct sales, new product presentation concepts, etc .;
- New methods of pricing goods or services – the introduction of variable pricing, discounts, and so on.

Figure 25. *Marketing innovations*



Companies with lower expenses for technological innovations **often attribute their innovative achievements to strategies that focus on competitiveness, marketing and distribution channels – i.e. marketing innovations.** Such strategies could be examined in the field of marketing in three main areas - products, prices and promotion.

These strategies lead to tactical **marketing actions like changes in design and packages, changes in sales or ways of distribution, advertisements and permanent exhibitions.** They aim at improving the attractiveness of company products or at entering new markets.

Theoretically, marketing initiatives are tactical actions and non-material resources which determine specific and defining the innovative supply.

Companies that focus on marketing actions are likely to have a better ability to increase customer satisfaction.

Additionally, such companies will better adapt to changing market needs, will have the ability to discover and benefit from new business opportunities. They will also have access to new information and resources to develop new and more competitive products.

Historical facts about marketing innovations

Creating a product and designating it as such - 3400 BC. This was the first marketing breakthrough in history. It was the first promise given to people that they will receive something without being surprised in an unpleasant way. Those first products were wedge-shaped clay seals that were used for closing up jars of food in ancient Sumer.

Advertising of products in stores - 2500 BC. The ancient Greeks - the owners of shops, were those who began to draw illustrations of their goods and services on the walls of the buildings where their shops were located.

Place for advertising - 1609. The first print ad was published in the world's first newspaper “Relation”, which began in 1605 in Strasbourg, published by Johan Carroll.

Testers - 1870. The idea arose during the Victorian era as a form of marketing in which companies gave out shaving blades to sell razor blades. Later Gillette became the first company to adapt and implement this marketing model.

Direct Marketing - 1872. The first and probably the most successful attempt to eliminate the annoying merchant who came to sell products at the door of the home happened with the introduction of a mail-order catalogue. "Aaron Montgomery Ward" has sent millions of Americans the "Big Book" that advertised thousands of new products.

Commercial Phone Calls - 1890. No one can say when commercial phone calls were first introduced, but it was probably soon after the invention of the phone in 1876.

Designer Brands - 1918. Higher fashion existed before Coco Chanel opened its clothing stores, but she introduced the entirely innovative idea of her time that a commodity / garment could be modern only because it was created by an iconic designer.

Radio and TV Advertising - 1923. The first radio ads were read live by an American millionaire and medical entrepreneur John Brinkley on KFKB radio station in Kansas. The first product, which was advertised on the radio, was a new method for treating male impotence by the goat's gland extract.

Multi-Level Marketing - 1927. Multi-level Marketing was a preferred method of doing business as early as the 1920s. In 1927, Nutriley's vitamin manufacturer, now part of the American company Amway, introduced the idea of "sell distribution, not products".

Guerrilla Marketing - 1984. Guerrilla Marketing is an unusual approach to promoting innovation and imagination, instead of the big advertising budget. The term was created by Jay Conrad Levinson and was mentioned for the first time in his book "Guerrilla Marketing".

Viral Marketing - 2013. Viral marketing is most commonly used on social networks. Viral marketing is a type of advertising that every user shares voluntarily with their contacts.

Chapter 4. Design and branding as areas for innovation

The design is innovation in addition to the research and development activities of companies by turning research into viable products and services and bringing those innovations closer to the needs of the user. **Design acts as a bridge between science, technology and consumers** by placing the user at the centre of the process. The role of the design is to strengthen the link between the different stages of the innovation process: **research – development - production – marketing.** The purpose of design is to introduce and promote technological inventions into practice and make the innovative products commercially acceptable, easy to use and attractive to consumers. In this sense, the design is an instrument for innovation in new or emerging markets, where the market demands attractive design and the right distribution channel.

The design is a tool for innovation even in developed markets, where new products can attract customers with only minor technological improvements. **Good design can increase revenue from sales and profit margins by differentiating products designed for a new group of clients with specific habits, traditions, and mindset** For example, the invasion of food chains offering Italian cuisine was also accompanied by the provision of suitable containers for preparing and serving pasta, pizza, sauces and more. Similar is the case with the supply of Asian, Arabic and other types of food. **In addition, the design has the potential to reduce the cost of production, assembly, packaging, storage and transport and thus increase the manufacturer's profitability and competitiveness.**

What is design thinking? In her article "Design Thinking as an Innovation Strategy" Linda Nieman a founder of the Creative at Work Advertising Agency describes design thinking as a methodology used by designers to solve complex problems and find desirable solutions for clients. The distinctive feature of design thinking is that it is not problem-focused, it's solution focused and action-oriented towards creating a preferred future. Design Thinking draws upon logic, imagination, intuition, and systemic reasoning, to explore possibilities of what could be—and to create desired outcomes that benefit the end user (the customer).

Due to the remarkable success rate of design-led companies, the design has evolved beyond making objects. Organizations now want to learn how to think like designers and apply design principles to the workplace itself. Design thinking is at the core of effective strategy development and organizational change.

Design thinking provides a structured framework for understanding and achieving successful innovation outcomes in ways that can contribute to the organic growth and add real value to its customers. At the heart of the design process are the following stages:

1. Definition, which includes monitoring and studying consumer behaviour and experience;
2. Ideas - Generate ideas in huge quantity for a short period of time;
3. Selection of ideas for realization - selection and classification of ideas
4. Prototyping - the minimum visible product/service for which feedback from potential users could be quickly received;
5. Receiving feedback;
6. Testing - whether our idea works;
7. Study and improvement.

Design thinking puts the person at the centre of innovation, which implies an understanding of customers, consumers or unconscious needs. Design thinking reduces the uncertainty and risk of innovation by engaging customers or consumers through a series of prototypes for exploring, testing and clearing concepts. This methodology relies on customer knowledge achieved through real experiments rather than based only on previous experience or market research.

There is considerable confusion of the meaning of the term 'brand' (accordingly 'branding').
For many years branding was understood as the name, slogan, symbol, or design of an organization or a combination of these elements as they identify the products/ elements. Today, the brand is something much more complicated and even more important in the world of marketing. **A brand is the feeling that the customers feel when they hear the name of your company, product, or service.** The word 'brand' or 'branding' is constantly changing and evolving along with the attitude of customers. Of course, the sense of a brand is influenced by the elements, words and creativity which are connected to your company.
According to Jean-Noel Kapferer, a pioneer in strategic brand management, the brand is a complicated symbol which comprises of 6 levels:

Attributes - The brand is associated with certain functional and emotional attributes. For example, Mercedes Benz, is associated with expensive, durable and prestigious cars.
Advantages - Attributes must be turned into functional and emotional advantages for clients. For instance, the attribute 'expensive' turns into the emotional advantage 'The car makes me feel important'.
Values - The brand also includes introducing the company's values. Mercedes Benz means good performance, security and prestige.
Culture - The brand may present a certain culture. In our case, Mercedes Benz is a symbol of the elements which represent German culture – seriousness, quality and hard work.
Personality - The brand may design a specific personality. Mercedes calls for prosperity, prestige and conservatism.
Customer - The brand appears in the mind of customers who will probably buy and use the product. In the case of Mercedes, these are business people, not students, for example.

If you want to build and maintain a successful brand, it's a good idea to get to know the seven main principles of innovative branding.

Simplicity
Even though it is quite a temptation to try to supply everyone with everything, one of the best ways to separate from competitors is by doing one single classy thing. An excellent representative case is the jewellery brand Vrai & Oro. The company managed to break the contemporary norm of jewellery production as they focused on the production of jewellery with classical and eternal designs. The name of the brand is translated as 'truth and gold', and that is precisely what customers receive – jewellery which is clean and original whose simplicity put them in front of their competitors. The undecorated and artistic vision was also observed on the website of the brand.

Breaking old norms

The strategies which destroy already existing norms could make a whole industry reconsider its behaviour. PillPack is the first online pharmacist's which was created to help people take the right medicine at the right moment. The company works together with a packaging company which delivers packed the dozed medicines to the clients. The design of all elements of the company's vision (including customer interface of the system for making schedules of the medicines, the packages of doze medicines, and the web design) are simple, intuitive and created for the ordinary user). PillPack threw down the gauntlet to the confusing and had to understand the language of traditional pharmaceutical companies.

A bold statement

A bold phrase or a quote could create a new and original attitude towards something that already exists. Tina Roth Eisenberg started her own business after her daughter came back from a party with a bad looking temporary tattoo. She, as a designer, was disappointed that there were people who suggested such an ugly art. And she took the chance. Tattly is now a company which makes designs for temporary tattoos and work in cooperation with brands like Forever 21, Urban Outfitters, J. Crew, and many others. This is a big niche industry, but the company managed to exert influence in a brave way.

An innovative idea

An innovative idea could generate emotions and create brand loyalty in an unexpected and long-lasting manner. For example, Johnnie Walker sponsored the 'Future' gallery where were presented pieces of art not created yet. In that gallery, 10 artists presented blank sheets promising to create impressive things for them and dared people to buy the sheets in advance giving a chance to their talent. The auction sold three times more pieces of art than expected. Although Johnnie Walker is not famous for their taste for art, this initiative was a physical manifestation of the personality of the brand – trust in people's potential; the transformation of the way collectors buy new stuff; changing the way new artists start their career. Getting out of its comfort zone, Johnnie Walker humanized its brand as it upheld and inspired the central part of its target auditory.

Symbolism

Powerful symbols overbear words and activate emotions. Lego is a brand which mostly produces games for children, but despite that, the brand captures the fantasies of almost everyone no matter how old are they. Lego creates something much more than colourful plastic bricks; they promote the creativity of adults as well. The brand symbolizes something more than toys; it is a world of possibilities.

Meaning

If you devote yourself to the establishment of a genuine connection to your auditory, you will automatically increase the chances to receive an emotional response. The founders of Warby Parker glass store wanted to provoke their customers not only with stylish glasses at reasonable prices but also with their mission. With every pair of glasses they sold, the company made a donation for optical training in developing countries. If we set aside the fact that Warby Parker provoked the norms in the industry with significant stagnation, the social dimensions of the business model is an innovative approach which serves as an example of many other companies.

Depth

The purpose and clarity of the goal give a feeling of warmth and emotion around a brand. When Airbnb decided to change their logo, they did something substantial and influencing. In a live webcast, the company showed its customers a redesign strategy, identified the central values of the brand and demonstrated its dedication to honest customer experience. Although the primary purpose of the webcast was to display the new logo, those 45 minutes turned in a vital experience making string the feeling of a community home and culture. The company now keeps on promoting its brand in a deep and emotional way by updating security measures with full transparency and regular communication with clients through targeted and multilateral suggestions.

Consumers can choose to remain loyal to a preferred brand. The brand is essential to build a stable and long-term deman for a particular product or a service. In practice, there are several possible branding strategies for creating a new product. Some companies choose to identify each product with a separate name ("Procter & Gamble" have developed over 70 separate brands for their products). Other companies may choose to use the existing brand and expand it or add it to new products ("Yamaha" is a brand that is equally successful for selling motorcycles, musical instruments and consumer electronics).

Studies have shown t**hat trademarks are included and are an essential aspect of the overall innovation process.** The business literature mentions the importance of branding in promoting new products, where brands are a **vital element of the marketing strategy** for launching a new product as well as other product characteristics such as technology, packaging, price, etc.

The building of a new brand makes it possible to create an idea with no strings attached. This might be favourable for the release of a new product, mainly if it differs a lot from company's other products. For instance, such was the case of Mercedes Benz releasing a new product line of small city cars with the new Smart brand (acronym of Smart Mercedes Art Cars) along with Smart group. If the product had appeared under the Mercedes brand, it would have been more confusing for clients and harder for the company to attract its clients, especially when Mercedes is famous for its spacious, comfortable automobiles. But creating a new brand is costly and involves significant investments in advertising and promotion. That's why some companies choose to invest in an existing brand to rely on their image and reputation. For example, "Virgin" is launching many products and services across markets, always using the same brand.

The famous Bulgarian tennis player Grigor Dimitrov already owns a registered trademark for his name on the territory of Bulgaria.
The registration of the trademark was published in newsletter 05/2015 of Patent Office. The fact that the trademark is already registered its future utilization could be done only with the individual written approval of the tennis player.

Trademarks may be used on their own or in addition to other trade protection mechanisms such as patents, licenses, etc. Some companies use them primarily in addition to patents. At first, the company creates a popular brand as a patent, and when the product has already gained sufficient popularity, they will retain the already established market position by registering a protected trademark. This is particularly important in the pharmaceutical industry where trademarked products are often more successful than their equivalent because of the continuous innovation process to add or remove various substances or ingredients to adapt to the treatment of specific diseases.

Trademarks can also be used to protect innovation, and an excellent example of this is Coca-Cola's low-sugar product introduction strategy. Thus, they can be used to implement strategies for the initial introduction of a new product with a logo of products that are well accepted by the market. In this way, intensive advertising campaigns attract early consumer interest. Customer needs and satisfaction have a vital role to play in improving brand identity and value. Customer satisfaction is what drives the interests of brand managers, customer service directors, and other stakeholders. Some experts see in the creation and management of the brand the bottom-up effect needed to form consumer interest by organizing and conducting effective advertising campaigns. **In the 1990s, a significant number of countries changed their trade laws to avoid and manage the damage and risks that may be caused of the use of similar trademarks in other non-competitive markets.** This corresponds to protection against so-called "trademark dilution". This means that some well-known trademarks may be used for products or services that are neither identical nor similar to products or services such as the trademark registered by the owner.

The primary methods of trademark protection are two - patenting and licensing. The patent protects specific objects of intellectual property, namely inventors' inventions. These are objects whose high value derives mainly from their original design and their ability to solve technical problems through innovative methods. Since the process of creating inventions takes time, effort and resources, the law grants specific property and non-material rights to the inventors' inventions. These are such rights, the exercise of which, in principle, does not bring economic benefits. An example of a non-material right is the right of the inventor to be named as such in the patent application, publication of the patent and the patent certificate. More essential rights are the proprietary right which give inventors the opportunity to gain economic benefits from their activities. **There are three proprietary rights that provide patent protection:**

- Right to use the invention, including its manufacture, imitation, sale and import;
- The right to prohibit others from using the invention;
- The right to authorize third parties to use the work.

Ideas or theories cannot be patented. We need to manifest our idea in a specific invention. No matter how innovative our solutions and methods are, it is not enough just to describe them.

Where "design patent" means protection of the appearance of a product, protection is provided through "design registration". Where "design" is a logo, other image or a sign, including the writing of words or parts of them with written marks created for that purpose (but not whole fonts), the protection should be through "trademark registration" . It is possible for an enterprise to realize its output marked with one or more trademarks that do not match its trade name (the company). Matching a trademark with the name of a company is risky, especially when the owners are more than one.

The law defines three main patenting criteria for inventions that each invention must cover at the same time in order to be patented:

- **Novelty -** a new element that was not part of state of the art, i.e. has not been described, produced or used. The novelty is judged from the point of view of whether information about the invention or its use is publicly available.
- **Inventory step -** the invention should be the expression of real technical progress, there is an inventive step. Namely, an invention must be not only new but also innovative.
- **Industrial Applicability -** The invention will easily meet this criterion if it finds application in industry or trade, for example, energy, machine building, agriculture and other industries. It also has to actually be able to achieve its goal - to produce a product, to do some activity for which it is intended. Next, the invention also has a relatively high degree of reliability.

A license is a word of Latin origin that means an authorization to perform a particular action. The license defines the specific activities that are permitted and the specific conditions to be respected. Unlike contracts, in most cases, the license is closely related to the laws of the state, and failure to comply with the conditions laid down automatically removes the authorization to carry out a specific activity. All software products including the free ones are usually accompanied by a license that sets out the conditions under which the software can be used legally. Under the license, each software is licensed for more than one computer or just one. Some licenses allow the software to be installed on more than one computer, but can only be used by one user (sometimes the number of users is explicitly specified) .

Chapter 5. Innovations in the packaging of the product

The growing importance of a healthy lifestyle affects the packaging of products. Consumers already clearly outline four main aspects of packaging who want to see in every product:

- **Easy and fast-to-understand information** on the energy and nutritional value of products;
- **The freshness of the products** - plastics packaging now competes with metal cans and glass jars as they provide extended lifetime through impermeability to vapours and gases, but there is also a renaissance of classic food preservation solutions;
- **Safety** - Users' requirements are already being implemented through innovations such as time stamps - temperature indication with a colour change to assess freshness of the product; printed circuit boards for the intelligent packaging of bulk goods; smart print inks; radio frequency transducers and more.
- **Convenience** - where functionality and aesthetics are necessary parameters by quickly adapting it to changing eating habits and the corresponding need for smaller or promotional packaging. As the variety of products grows, and shopping is quicker and more comfortable, the packaging should send a clear message through bright colours and distinctive shapes.

Packaging represents one solution for satisfying consumers' needs, the Braille letter on pharmaceuticals is another. Therefore, colour, graphic images, textures, shapes and materials play an important role in shaping brands and expanding the variety of packaging. Without drastic

changes, packaging can be optimized using lighter and / or alternative packaging materials, which improves environmental friendliness and reduces costs. The best redesign solutions are achieved through direct dialogue between designers and suppliers. The major design changes require higher inputs. However, they achieve more sustainable results. Research shows that the best way to attract and retain the buyer's attention lies in refreshing the packaging. This can be achieved by reducing the use of materials, embedding a new graphic layout and reviewing the overall packaging design. New design refreshes the image and increases the durability of the packaged product while increasing sales.

Figure 27. *Main trends in the packaging of foodstuff*

No matter if we are going to pay a designer company or we are going to generate ideas on our own, we need to follow some basic techniques and innovative ways of packaging our products:

- **Create a reusable packaging.** The effect is twofold – it implies environmental awareness and limits the irrational use of natural resources;
- **Add something distinctive to the standard package**. The company's logo, a geographical, nature or another landmark will make your product unique and recognizable!
- **Create a packaging that implies and motivates fo a long-term usage**. The beautiful packaging impresses and it is the natural reaction of the user not to throw it away immediately after opening, but to leave some time to think if he can not use it for other purposes.
- **Add humour.** It is a good thing to have a lightweight entertainment element. Such a pack provokes, draws attention and demands to be used for other purposes.
- **Company colours should dominate!** The language of colours is necessary because of the messages they send. Different colours of packaging can stimulate or initiate individual user behaviour. Psychologists have found that the tones of our immediate surroundings can help in accomplishing specific tasks. For example, the green colour symbolizes efforts to protect the environment.

- **Use the back of the label for transparent products in transparent packaging.** Thus, instead of two, a two-sided label can be printed, which can be read even though it is glued to the surface. This way you save costs and time for labelling of your products
- **Try metallic effects.** The use of packaging made of a derivative of metallic colour and hardness is a good solution when comparing the cost of manufacturing cardboard, metal, copper or another packaging.
- **The packaging must have a design corresponding to the target group.** Packs of goods intended for children can have printed characters of fairy tales and even recreate fabulous stories. In this case, the issue of copyright arises.

Chapter 6. Innovations in product placement and pricing

Emerging consumer habits, distribution channels, and globalization have led the food industry to a state **where leading companies increasingly listen to their customers to understand their needs**. Here are some examples of product placement innovations that have been applied by leading companies in the food industry:

In-depth customer understanding - "Everything we do starts with the thought of consumers, we listen to the consumer mood when developing our portfolio," said Ken Powell, CEO and General Manager of General Mills. “Through an in-depth analysis of the attitudes and habits of our customers - what foods they like, where they shop, and how they prefer to cook - we quickly respond to their needs with products that offer innovations in terms of healthy lifestyle, enhanced convenience, and superior taste”. Market tendencies place the focus on protein cereals and yoghurt, snacks and well-prepared dishes with bright and bold tastes, whole grains and gluten-free. The growing number of overweight people, regardless of their age and social status gives bakers the chance to develop and offer a variety of gluten-free and wheat flour products, bread-free bread and other enhancers.

User Testing - In search of new product ideas, Taco Bell developers decided to explore social networks and analyze the behaviour of competition. Every Friday, the company's team organized the so-called "Grocery store" to track trends in retail. Based on the results, the company's research team decided to test each new product in pre-selected restaurants to get feedback from their customers. Nowadays, every product of the company goes through over 100 different tests until it is placed on the market. One of the most famous products of the company - "Waffle Taco" is changed over 80 times in terms of shape, weight, thickness, the intensity of the vanilla aroma, etc.

Innovation in taste characteristics - "Valio" is one of the biggest Finnish company that produces dairy products. The company focuses on developing innovative products for consumers who are interested in a healthy lifestyle. According to the studies, between 15 and 20% of the Finnish population is lactose intolerant. In some Mediterranean countries, nearly half of the population has such intolerance, and in most Asian countries almost everyone cannot consume products containing lactose. Following these trends, Valio began production of over 100 different lactose-reduced milk products. After a lengthy process of research and numerous developments, the company managed to patent a unique process for the production of lactose-free milk based on chromatographic separation that has similar taste characteristics to real milk.

Amazon is the world's largest online retailer with a unique business model. First of all, the company sells goods directly through its online store. This store is powered by an extensive warehouse network. In addition to direct sales, Amazon also supports a retail platform. In this way, "Amazon" avoids retention of stocks of slow-moving goods and manages its profits more efficiently. **Just as "Amazon" is known to most American consumers as the titan of e-commerce, the Chinese online market is dominated by Alibaba.** China's online giant acts as an intermediary between buyers and sellers, facilitating contact and managing the buying process through a well-developed network of online stores. Taobao's largest is an online store where neither vendors nor buyers receive a commission. Seven million active Taobao sellers pay only to rank higher on the site's internal search engine, thereby generating revenue for Alibaba.

"Help for Women" is a UK NGO working to prevent domestic violence of women. As a result of working with a leading advertising agency, the company is developing an interactive ad that portrays a woman with facial scars. The ad uses Face Detection technology and monitors the length and number of people who are viewing the image. The more people view the ad, the faster the scars on the face of the woman disappear from the image. The message of the campaign is, "Do not close your eyes to domestic violence."

The German pet food company Granata Pet Dry dog food has developed a pavilion called the Snack Ball Machine, which is installed in parks in a number of German cities. The kiosk can launch special balls for pets. Each ball has a built-in sensor that measures different characteristics such as speed, distance, and so on. Pets returning the ball back fast enough (based on distance tracing) are considered healthy and receive a cup of dog food as a reward from the machine.

Innovation in pricing

Innovation in pricing involves the use of new strategies in pricing for the marketing of goods or services. Examples of this may be the first use of a new method of changing the price of a product or a service in accordance with current demand (for example, lowering the price when the demand is low) or introducing a new method allowing customers to choose their desired product characteristics on the company's website, etc. New pricing methods, the sole purpose of which is price differentiation by consumer segments, are not recognized as innovations. **Seasonal, regular, and other routine changes to marketing techniques generally do not represent marketing innovations.** In order to become innovative, such changes should necessarily include marketing methods that the company did not use before. For example, a significant change in the design or packaging of the product based on the concept of marketing that has already been used by the company for other products is not marketing innovation. In a similar way, the use of already existing methods in marketing for the acquisition of a geographically new market or a new segment of the market is also not to be considered as a marketing innovation (for example, a new socio-demographic group of clients). Here are some examples of innovations in pricing:

Reverse Pricing

The Internet allows consumers to be not only the "recipients" of the price but to define it themselves. Since 2005 there are online stores where the user can specify a price for the product /

service he desires and also find a trader who can sell it at the price he / she wants. One of the most popular online stores is www.priceline.com, which has branded its concept "Name your own price". Initially, this method of determining the price of a good or service was applicable only to clients that had membership cards.

Innovative pricing and dissemination
Pricing innovation is not new and is often applied even by the music industry. In 2007, the rock band Radiohead realized the exotic idea of asking their fans to pay-what-you-want download to download their new album "In Rainbows". The campaign lasted three months and attracted a vast audience. The main conclusion is that instead of investing large amounts of money in promoting and distributing a music product, the group makes it more accessible to a broad audience with a variety of financial capabilities. It has been found that this pricing method has a strong impact on online music sales.

Price promotions for citizens with more free time. In the early morning hours of the day, coffee shops in the centre of Blagoevgrad offer morning coffee and a glass of mineral water to their clients at discounted rates. The low prices are mainly used by elderly people. The managers of the establishments appreciated the early awakening of elderly people and attracted them with low coffee prices and the opportunity to develop and expand their social contacts.

Chapter 7. Main channels for introduction of marketing innovations

Online marketing is a form of marketing that uses various forms of internet marketing, such as pay per click, search engine optimization campaigns, email campaigns, and banner ads. Online marketing uses a different toolbox than traditional marketing, and so has the potential to reach more users. **Online advertising is significantly cheaper than traditional advertising methods.** Placing a free ad in an online business catalogue can reach far more potential customers than using traditional paper catalogues. This advertising method becomes more accessible and more efficient than traditional ones such as mailing, printing and distributing promotional brochures, and so on. **The e-mail advertising campaign is much more cost-effective, efficient and environmentally responsible than sending thousands of printed messages through traditional mail. Another advantage of online marketing is that you can track the outcome of each individual ad campaign, post, etc.** The results can be presented in detailed graphs that represent traffic growth, reaching potential customers, sales and more. Using free tools to analyze traffic and clicks, such as Google Analytics and others, can be extremely useful in this direction. Online marketing offers demographic platforms that allow targeting to specific users or groups of users who are likely to purchase the product or service you offer. **Here are some excellent examples of marketing campaigns:**

The Austrian comany Red Bull is one of the leaders in global marketing. At the heart of the company's successful marketing strategy lies the support and organization of various extreme sporting events around the world. The brand name and its primary product could be seen at various competitions, e.g. where the participants descend from a 30-meter ramp with hand-made aeroplanes in water to Formula One races.

Nike is a multinational corporation that produces sports equipment - shoes, clothing, accessories, etc. It manages to develop its global presence by signing long-term contracts for sponsorship of sports teams, individual athletes, events and others. An example of such a successful partnership is the longtime relationship of the company with the football team of Manchester United. Also, the online platform NikeID offers users a way to develop personalized colour and design solutions in the sports shoe industry. This is another innovative strategy that the company uses to expand its market presence on an international scale.

Coca-Cola is an excellent example of a brand that develops its marketing campaign globally. Although it is a large corporation, Coca-Cola organizes many campaigns and charity initiatives on a local level - in poor and isolated areas and communities. In Egypt, the company has funded the construction of 650 clean water installations, as well as numerous food supply and humanitarian aid campaigns in the Middle East. In India, Coca-Cola sponsors the "Support my school" initiative, which aims to improve the conditions in local schools.

Kreston Bulmar is an accounting company in Bulgaria, providing accounting services, tax consulting and training through headquarters and offices in all major cities of the country. The company has its own blog where company experts regularly publish articles related to various topics, such as the VAT regime, administrative violations, customs regimes, and other topics related to the company's core business and expertise. The content is original and published on a weekly basis to a database of subscribers and followers. Thus it is indexed and ranked in Google and other similar search engines. This improves the reputation and image of the company and provides the basis for attracting new customers.

TV advertising

TV advertising is one of the most popular ways to transmit mass messages. In 2016, advertisers around the world spent 480 billion dollars on television advertising. TV advertising offers many advantages, with a direct and powerful impact and reaching a wider audience of potential customers. However, television as a means of advertising has certain limitations that reduce its effectiveness. At any time, the viewer may ignore or interrupt the ad. Many modern television receivers give full control to the viewer on the content being played, allowing to record, interrupt, and skip content (including advertisements).

Social media

Advertisers are now massively using social media to master ads on the web. The direct social networking campaign is related to creating a home page through which the company communicates with its clients. Indirect advertising on social networks is paid for reaching content to more users, depending on the budget. Different social media combine different types of users. Based on demographics and a target audience profile, you can choose the type of social media in which the ad could reach the maximum number of users, and also achieve the best results.

Chapter 8. Case studies – best practices of integrated marketing innovations

Success story 1: Hotel "Tanne", Bansko, Bulgaria

Descritpion of the innovation: Hotel "Tanne" is a four-star whole-year luxurious Bulgarian-German hotel located on the outskirts of Pirin mountain in one of the most beautiful Bulgarian towns – Bansko.

A priority of the management of the hotel is the high-profit segment of users who buy diverse tourist products that include many tourist activities. The hotel has developed the following innovation. If a young couple decides to make their wedding in the hotel, the administration could provide them with optional inclusion in the "Almanac of Newcomers in Family Life". As well as a form of enrolment in an honorary service form, this book represents a valuable database for keeping in touch with family couples in future. It contains information for a place of living, birth dates, wedding anniversaries, big holidays, children birthdays, etc. The contact could be released through postal or email address, groups of the hotel in social media, websites for reservations with feedbacks and recommendations.

This type of communication is particularly important for contacting foreign customers who do not visit the town of Bansko on a regular basis. This communication channel could also be used when announcing important sports events and cultural festivals in Bansko where each couple could be invited. This innovation aided the hotel to overcome the seasonal occupation issues. The administration of the hotel uses this communication channel to send greeting cards, a bottle of wine for an anniversary of the wedding, births and other holidays of children. The administration of the hotel can develop and give a "Member of Tanne-society" certificate to every visitor of the hotel. This type of relationships became a family tradition as next-generation family members became visitors of the hotel.

The main results of the introduction of the innovation are:

- Improved company image;
- Increased the leng of stay of visitors;
- Increased number of returning customers;
- Increased positive reviews by visitors.

Success story 2: Octo Group Pro, Strumitsa, Macedonia

Description of the innovation: Octo Group Pro is a company engaged in the field of online advertising and marketing activities. The marketing innovation that was introduced by the company was related to the development of an online platform called Famenote for connecting brands with people who are popular on social networking sites - influencers (Instagram, Facebook, Twitter and YouTube), and have an authenticity that can easily promote different products & services. They work together to create an authentic story and a highly targeted marketing campaigns. The platform is the place where brands can find, engage and collaborate with influential creators of content on social media to promote their products and services. The Famenote internet platform is used very easily and in fact the entire process can be described in 3 steps: Step 1: Creating a campaign by businesses - A description of the campaign and budget framework. Step 2: Connecting with Influencers on the social media - Researching by content filtering or receiving proposals and negotiating with content creators. Step 3: Content review, campaign start-up, measurement of results. The customer approves the campaign and starts to measure results. By using the FAMENOTE platform, brands can easily find the appropriate influential people (influencers) and achieve quality cooperation. The platform offers a "win-win" situation for client companies and influencers. Benefit for client companies is through authentic promotions to reach out to their target group around the world. Benefit for Influencers is that they can maximize their revenue in partnership with brands by creating sponsored content.

The main results of the introduction of the innovation are:

- Unique solution for advertising products that reach more potential customers;
- Increased turnover;
- Increased profit;
- Better company image.

Success story 3: Niramar Ltd., Bansko, Bulgaria

Description of the innovation: Niramar Ltd. is a travel agency operating on the territory of Bulgaria.
The innovation of the company has three components and represents a complex tourist product based on the three aspects of environmentally friendly utilization of natural sources for achieving positive effects on the peripheral nervous system. The innovative tourist product combines the effects of sea lye, mud and mineral water for improving the overall health status of the individual, as well as for combating various diseases.
The main idea is to combine the typical intensive programme of a recreational tourism with physical exercises, diet, sport and tourism into a single tourist product. Thus each client of the company receives an individually designed product tailored to his/her specific health and tourism needs.

The main results of the introduction of the innovation are:

- Increased customer satisfaction;
- Attracting foreign tourists;
- Increased revenues;
- An expanded network of international contacts and clients of the company.

Success story 4: SP Kiril Kirilov – Perun, Blagoevgrad, Bulgaria

Description of the innovation: Kiril Kirilov - Perun is a company that trades with stationery and office consumables in the town of Blagoevgrad and the region.

The innovation that was introduced by the company has two aspects and it was related to the development of an additional business activity. The company created an advertising agency in parallel to its main activity. The idea of the management was to use the same popular and well-established brand, i.e. "Perun" for the advertising agency. The new company was named "Perun Design" and aimed to shift the main activities of the company to the online marketing and sales.

The other organizational enhancement was related to the optimization of the main activity of the company. The main shops of the company (bookstores) were rented to external contractors. The main company opened larger warehouse and storage facilities. The main idea of this new business model was to have customers order all necessary stationery online through a web-portal and have them delivered through a courier service.

At the same an office of the advertising agency was set-up which consulted customers on their advertising projects and campaigns.

In order to attract younger customers (students), every summer the company has been organizing a textbook exchange campaign where everyone could exchange their old textbooks for new ones.

User data and analysis showed that in many cases customers were attracted to a certain brand or a model through the advertising campaigns that were carried out on the company page on Facebook.

The advertising agency was benefited by the fact that the host-company had a vast contact network with suppliers of consumables and stationaries. In addition, the name and the brand "Perun" were well-known to customers of Blagoevgrad and the region. The various shops of the company outside the region of Blagoevgrad (Petrich, Sandanski, Gotse Delchev) were rented to former employees, thus optimizing their indicators and boosting their sales.

Typical company employees were trained to become warehouse operators and trade representatives. The company realized all its operations without the help of any external funding.

Currently, the company is setting up an online platform for design and purchase of various textile advertising products such as t-shirts, flags and other sports apparel. The platform allows the customer to design his/her own product by choosing a decal, colour and specific properties of each product. A delivery to a specific address is also provided.

The main results of the introduction of the innovation are:

- Reduced maintenance and staff costs (the number of staff decreased by 30%);
- Increased satisfaction, especially for corporate customers, due to the possibility of delivery on site;
- Increased share of corporate customers through the setting up of an advertising agency;
- Increased profit and turnover.

Success story 5: Joka DOOEL, Strumitsa

Description of the innovation: The company Joka from Strumica decided to have to advertise its products in a different way. An experienced nutritionist was engaged to present its products. In a cooperation with one national TV station, a show for a healthy diet has been organized, where the nutritionist gives advice on a healthy lifestyle and diet, and at the same time recommends Joka's products. After the show, the company received a large number of positive reactions from its existing clients, but new clients were also acquired, who learned about the products and their properties through the nutritionist's advice. The marketing innovation is in line with the company's slogan: "Think naturally, feed healthy". In addition, in 2017, the company's management decided to actively support all social and charity events in the municipality of Strumica and the region. This action improved the image of the company at the local level and increased the interest in its products.

The main results of the introduction of the innovation are:

- Increased trust of the company's customers;
- Increased number of new clients;
- Promoted products of the company at national level;
- Enhanced company image at the local level and improved communication and customer feedback.

Success story 6: Procorp DOOEL, Strumitsa, Macedonia

Description of the innovation: Procorp DOOEL is a software company that provides services in the field of web and mobile applications development. PowerAD is a marketing platform for connecting drivers and brands to create powerful advertising on vehicles, creating a mutually beneficial relationship between car owners and leading companies on the market. PowerAD is innovative “Pay per kilometre” advertising platform. Each customer is assured of directly measurable results and improved security of the web platform. Each customer (advertiser) and drivers gain access to powerful GPS platform tracking, analysis and reporting of new campaigns, notifications, statistics, offers scalability and promotions supplemented with bonus offers/ campaigns. The relevant control provided by the powerful and intuitive PowerAD platform protects drivers and brands. Each member of the PowerAD network passes certification process even before gaining access to it and making the transformation of the vehicle. Advantage of PowerAD platform compared to the competition (billboards, web portals and TV) is: (1) it uses smart technology; (2) Security; (3) Direct measurement via GPS and statistics; (4) Innovative, unique in the market and powerful ads on vehicles; and (5) Direct cooperation with the clients is achieved. Procorp offers to the users 3 packages to rent their vehicle as an advertising space while earning additional revenue per month through the PowerAD platform. Users can choose one of the three packages: full, partial or panel branding of the vehicle, and depending on the selected package, their potential earnings are determined.

The main results of the introduction of the innovation are:

- Excellent solution for advertising and extra revenue for vehicle owners;
- Increased turnover and profit of the company;
- Enhanced company image.

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