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DEVELOPMENT OF A NEW METHOD OF SEARCHING A NEW PRODUCT DEVELOPMENT OPPORTUNITY

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Original scientific paper
We developed a method for a systematic approach to searching for opportunities for new products by taking account of a particular business environment. The method was developed on the basis of experiences from cooperating in development teams. Combining practical experiences and the aspect of new product development, we developed a method for searching an opportunity for developing a new product (SETL Method). A systematic approach in existing business and technical development process is very precisely defined, especially at the beginning of the process. The process of searching for an opportunity involves recognized social, economic, technological and legislative (SETL) factors through which the outside influences are measured. Using SETL factors makes the process more systematic. The searching process is systematic, from defining a suitable searching environment (direction of the future company development) for an opportunity via recognizing an opportunity to ranking the potential of an opportunity.

Keywords: *opportunity, systematic development, innovation, opportunities search*

Razvoj nove metode traženja mogućnosti razvoja novog proizvoda

Izvorni znanstveni članak
Razvili smo metodu sustavnog pristupa traženju mogućnosti za nove proizvode uzimajući u obzir određeno poslovno okruženje. Metoda je razvijena na temelju iskustva iz suradnje u razvojnim timovima. Kombinirajući praktična iskustva i uvjete za razvoj novog proizvoda, razvili smo metodu za traženje mogućnosti za razvoj novog proizvoda (SETL metoda). Sustavni pristup u postojećem poslovanju i procesu tehničkog razvoja je vrlo precizno definiran, pogotovo na početku procesa. Proces traženja mogućnosti uključuje priznate društvene, ekonomske, tehnološke i zakonodavne (SETL) čimbenike preko kojih se mjere vanjski utjecaji. Korištenje SETL čimbenika čini proces sustavnijim. Proces traženja je sustavan, od definiranja odgovarajućeg okruženja pretrage (smjer budućeg razvoja tvrtke) za mogućnost preko prepoznavanja mogućnosti rangiranja potencijalne mogućnosti.

Ključne riječi: *mogućnost, sustavni razvoj, inovativnost, traženje mogućnosti*

1 Introduction

Generally speaking, companies are interested in new products which would bring them financial benefit. One of the more difficult decisions if not the most difficult one is which and what kind of products or services will really bring that. We believe that in order to do so, companies should adopt a systematic approach to opportunities search with a focus on taking account of the characteristic features of their company. We have cooperated with Slovenian companies in different phases of development process. The problem is that companies do not possess the development process knowledge. Usually, they have been using the so-called trial-and-error process [18]. In the company where Janez Benedičič is also employed the so called trial-and-error development process has been used.

The real mastery and understanding of systematic development methods in a company can be assessed also through work on joint projects. The LECAD laboratory cooperates with companies mostly in the area of new product development. Things have shown that companies are rather vaguely familiar with development processes. The systematics of the development process in the initial phase, where needs are defined and new products are devised, is very weak or non-existent. Let me mention only the most important companies that we have been involved with. The first company is the biggest machine manufacturer in Slovenia. It is a large company and completes most of its projects on international markets. The other company, involved in agricultural machinery manufacturing, is also a large one. It has a sizable market share on international markets (it generates two thirds of its income through international sales). The third major large company produces paper industry products. In the European Union, it reaches a market share of over 30 %, and globally, the share is over 20 %. One of the companies only used the Fishbone analysis while the other two did not apply any of the existing methods for their product development. While the analyzed companies may be familiar with certain methods during the concept phase, there is no systematics involved in the opportunity recognition phase and strategic development planning. In most companies, this part of the process is left to a mere chance.

Development activities in the presented companies were mostly focused on the upgrading of existing products, which is in part also due to the shortage of know-how. Penetrating the market with a new product is a far more demanding task than marketing a fully developed product. The complexity of developing a completely new product is also considerably higher than upgrading an existing one. Therefore, it is easier for companies to upgrade their products than develop brand new ones. Two additional reasons for upgrading a product are technology and knowledge possessed by a company. These are reasons why companies more rarely opt for the development of a completely new product than redesigning the existing ones.

However, each developing company comes to a point where it needs new products for its growth and development. A newly developed product can provide growth for a company. Therefore, the key is to recognize the true opportunities. An opportunity can arise from a new business orientation, cost reductions, simplification of operations, upgrading the existing products, new products platform, a new manufacturing process, new services or a new approach to retail and marketing

services [1]. It depends on their business policy, development of the society where a company pursues its activities and the type of business operations. The answer to the question what exactly an opportunity is, also depends on the development period and research orientation of a particular researcher.

Different definitions of the opportunity appear in the literature. However, the development of the opportunity search processes reflects itself in the definitions of the opportunity. They are becoming increasingly sophisticated and they place ever greater emphasis on an integrated approach to recognizing opportunities. We have selected the most significant definitions of the opportunity (with a view to the time of their creation):

- An opportunity is the direction of activities that are feasible and viable (1978) [2].
- An opportunity is a businessman's special skill, which he or she acquires by means of the products and services sold on the market or their combination, and generates profit. An idea becomes an opportunity once its commercial value has been recognized (1979) [7].
- An opportunity is an improved vision of a new risky job that involves the sought preview of the concept transformation mechanism in the reality with a view to the industry (1984) [8].
- Andreasen [3] defines an opportunity as a favourable connection between the market, the product and the manufacturing technology (1984).
- An opportunity is a possibility to recognize unfulfilled needs with a profitable potential (1997) [9].
- An opportunity is a business or technological gap between the current situation and the vision of the future, recognized by a company or an individual. By doing so, they exploit competitive advantages, answer threats and solve problems (2001) [10].
- An opportunity is a possibility to recognize needs on the market through a creative combination of resources in order to achieve higher values (2003) [11].
- An opportunity is a situation in which new goods, services, raw materials, markets and organizing methods can be introduced through the formation of new means, ends, or means-ends relationships (2003) [12].

An opportunity is the fulfilment or refinement of the opportunity holder, taking account of company's characteristics, which produces a positive financial effect (2007) [4].

2 Processes and models for opportunities' search

Processes and models for opportunities' search are created in the business and in the technical and development environments. The business environment focuses on a company or on an individual businessperson. Therefore, the basic business activity also involves opportunities search. The technical and development environment is characterized by development processes, which have replaced design processes. New products opportunities have been a topic only since around 1984 [3], together with the development of the integrated product development process, but they have been given a closer attention only recently. Development of integrated product development processes has been influenced by the awareness.

The development of integrated processes has been affected by the notion that creativity and innovativeness are becoming increasingly important factors of product development. The literature cites several different terms, defining the opportunity search process. As of yet, there is no standard terminology. Cooper [13] states the discovery of an opportunity or an idea. In the area of integrated development processes, US authors [5]; [6] talk about identifying an opportunity, while Andreasen [3] defines the process as searching for an entrepreneurial opportunity. In his WOIS method, Linde does not define an opportunity in the same way as the others. Instead, he defines the first part of the development process as searching for contrasts that represent obstacles for further development of a product or service. The whole opportunity search process has been termed "generating opportunities" by Eckhardt and Shane [12], while the phase where the opportunity has been recognized is called "discovery". The two process definitions that appear most often are opportunity identification [14] and opportunity recognition [19]. Ardichvili [11] has defined the whole process as identification and development of the opportunity, but he does recognize individual elements. He defines the opportunity search process as a development process because some activities of developing an opportunity can be carried out even before the opportunity has been recognized. Ardichvili argues that opportunities are created, not found [11]; he therefore denies the opportunity search process. Our term for the whole process is opportunity search because our initial goal is to find the most suitable business opportunity for a company. "Searching" has been used as the area is being systematically examined throughout the process and we are searching for opportunity holders. Individual phases within the opportunity search process can bear different names and descriptions than those presented by other authors.

To a large degree, authors place the opportunity search processes, created within the technical and development environment, at the beginning of the development process. Andreasen puts business opportunity search at the beginning of the integrated development process. The same goes for Cooper [25] in the Stage-Gate method, while Di Benedetto and Crawford [5] see it in the development process of new products. The NCD model [10] and the beginning of the iNPD process [6] are in the same position. Linde [22] developed a unique process, covering the development process up to the definition of details. Due to the specifics of the development steps it is difficult to compare it with other existing processes. The processes, created exclusively within the business environment, recognize the opportunity search process as independent, concluded with a business plan, and not in advance connected with product's further integrated development process. Absence of links between the development process and the opportunity search process has a negative effect especially on small and medium-sized companies because they should master several different methods and be able to interconnect them. It breaks the development process. The information and data flow between individual

processes is not smooth. Instead, it requires adapting information and data or individual phases of the process. It is most clearly visible in the processes of Bhave [15], McMullan, Long [8] and Hills [19], while Ardichvili [11] defines business plan as a result of the opportunity identification process, which makes it easier to enter the ensuing development process. Laurie [16] explains that a platform usually emerges from an individual product, however, he does not present the ensuing development process or the platform development. It makes it impossible to define which phase of the development process the results of the process could enter.

The opportunity search processes differ one from another in the input data and guidelines, in breaking down the process into individual phases and also in the results and goals that are to be achieved. We have defined the extreme points of the opportunity search process (Figure 1). It begins with the notion that a new product is required and it ends with data, suitable for performing the project task. Fig. 1 shows the distribution of phases in other models and the phase where they begin the opportunity search process. In the first presented processes, the notion that a new product is required was followed by a direct opportunity identification and, at a later stage, probably also by the development of the opportunity. A strong emphasis was on individual's intuition. Company resources were directly included only in the opportunity recognition phase. After 2002, some authors, such as Ardichvili and Hills, found out that it was necessary to take account also of the possibilities and characteristics of the company, together with the orientation to the user and customer. These findings were still part of the opportunity recognition phase as additional information to the individual, who is an important subject for discovering an opportunity. WOIS was the first to systematically include a comprehensively treated company and user in the product development process. Individual steps of the WOIS process are organized differently and have no typical opportunity search phases. The process takes place up to a detailed definition of the solution. Lumpkin [17] also deserves mentioning as he improved Hills's model [21]. During the preparation phase for the opportunity search process, he defined the guideline (company's capacities, know-how, field of interest, etc.) for the next step of the opportunity identification process. However, he placed these guidelines to a very personal level of an individual who later gets ideas. In the initial phase, Laurie proceeded from the notion that a company needs a new platform and new products on its basis. He defined very well the importance of teamwork, appointing a strategic manager, forming the mission, and preparing the essential characteristics of new growing platforms, which other authors had not paid particular attention to. Later, he formed growing platforms, which concluded the process. It did not reach the point of creating project tasks for individual products of the platform. The NCD model also finishes with the development of concepts and technologies.

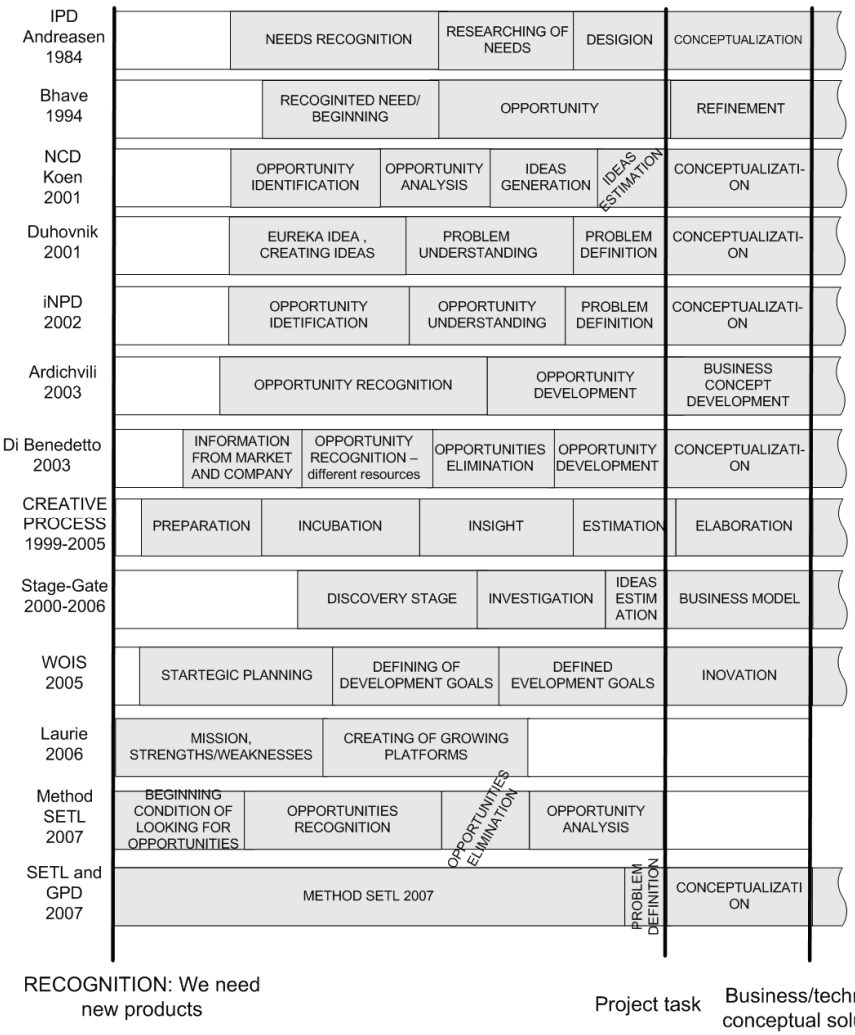

Figure 1 Comparison between the beginning and the end of individual steps within the opportunity search process

Product development processes are developing in the direction of an increasingly systematic approach. Ardichvili [11] argues that unsystematically discovered opportunities are more successful and the return of the investment is faster, compared to those, recognized via a systematic approach. Individuals' Eureka ideas are often exceptional but they are made public only once they have been subjected to a self-assessment process by an individual person. However, only the bravest – entrepreneurs – go for the execution, which makes them look more successful. Contrary to Ardichvili, Laurie [23] attributes much significance to systematics when it comes to discovering opportunities for new products and platforms. In a company, there is no time to wait for an individual person in the development team to come up with a good idea. Developers should always and systematically search for opportunities.

On the basis of industrial experiences and studying other opportunity search methods and processes, we have developed the SETL opportunity search method. It describes the whole process, from the recognition that a company needs new products, to defining project task for the execution of individual opportunities. The method can be incorporated in the GPD method as its integral part, thus rounding up a methodological approach to global product development. Within the process, opportunity search is systematically managed and individual phases are separated with regard to the importance of decisions and possibilities for iterability at a later stage and for transfer across steps. In each step, we can make a step back and, with regard to new facts, change a decision and continue in another direction. We include more systematics in the opportunity search process as well as permanent iterability between individual steps. It provides an individual person with continuous creativity, generating Eureka ideas.

Our SETL opportunity search method is placed in the global development process (GPD), developed by Duhovnik [24]. The GPD process is supplemented with our SETL method in the abstract part, where new product ideas are being sought. It results in a defined project task, which enters the GPD in the problem definition part. It provides higher reliability of information transfer from the SETL to the GPD. The opportunity search method can be applied as a completely independent method. It results in defined project tasks that can be included in the planning of the package of development projects.

3 SETL method

The opportunity search method is a result of a careful analysis of the process of opportunity creation, of the development processes in companies that cooperate with the LECAD laboratory and our experiences from industry. The SETL method corrects deficiencies of the existing processes and opportunity search methods. With the systematics of the initial work, where we are focused on a specific area of opportunity search, and later with the introduction of four factors (social, economic, technological and legislative), we are structurally and systematically looking for and editing information, which is a basis for opportunity recognition.

The method is suitable for small as well as large companies. It is of utmost importance that a company management recognizes the need for a systematic development of new products and that it is willing to invest in training its staff [19] and introduction of systematic development methods.

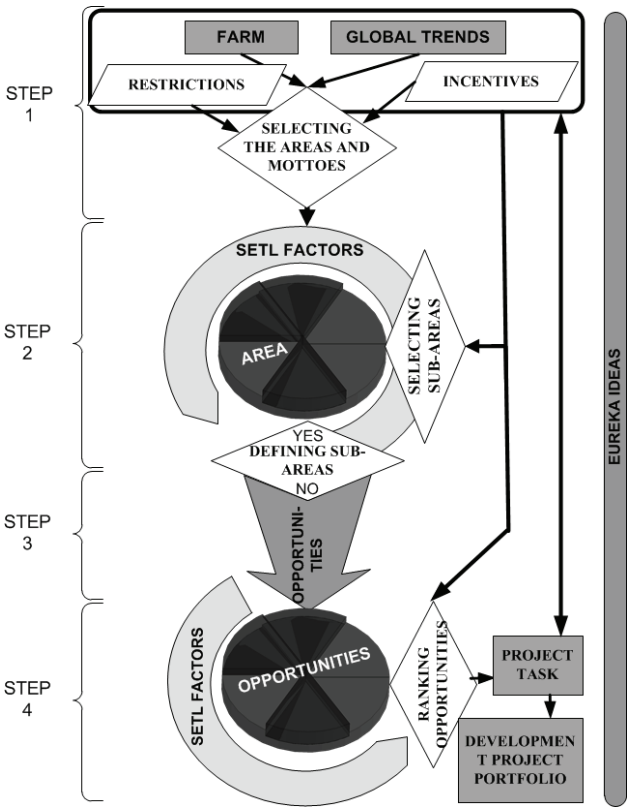

Figure 2 Graphical representation of the SETL method

Opportunity search has been divided into four steps (Fig. 2):

Step 1 - boundary conditions for opportunity search
Step 2 - recognizing opportunities
Step 3 - elimination of irrelevant opportunities
Step 4 - opportunities analysis and ranking.

3.1 Step 1

The first step of our method is actually an answer to problems in companies that we work with (Niko d.d., SIP d.d., etc.) and deficiencies of the initial part of existing processes and opportunity search methods (Fig. 1). Step one results in a selected sub-area and a motto for opportunity search on the basis of the company's characteristic features, markets where the company is presented and trends on the market. Step one is among the most important ones because a proper or improper choice of the opportunities search area for new products can significantly influence the company's business operations and its future orientation. By selecting the opportunities' search area and focusing on it, the possibility to discover opportunities in other areas is reduced. It is true that taking this approach can lead to missing out on some opportunities but the high volume of information in case of detailed search in all areas would considerably extend the necessary time for opportunities search. In the case of

shallow search, some opportunities for the company would certainly be overlooked. In case of the failure in a selected area, we can go back to the first step and pick up the next promising area. By doing so, it is not necessary to repeat the whole method. Instead, we can choose the second most promising area and proceed with the opportunity search process.

The company's characteristic features are definitely a foundation for selecting the area and the motto for further opportunities search. It is necessary to acquire the characteristic data and information on the company and its business operations. Information and data on the company, affecting the selection of the area and the motto are as follows:

Strategy. Our method takes account of the strategy as one of the elements that can direct opportunity search in a specific area. It is necessary to be aware that the company's strategy can change on the basis of recognized opportunities.

Resources. The method takes account of natural, human, organizational and technological resources. By means of an analysis of available sources and their potentials, it is possible to assess the company's capacities.

Production. It is necessary to be familiar with the existing production program and products, produced in the past. There are two other important factors: the size class of the produced products and type of production.

Markets and channels of trade. Markets and channels of trade are very important when an area is being selected. Partial presence of a company on a market already means some degree of understanding and recognisability on the market. Because companies strive for increased growth with a new product, it is important to know the expected growth of a specific sector in the future, which can be an indicator of the growth in sales of the new product. These are the company's key factors that are to be taken into consideration when selecting an area. The mentioned data by themselves can be indicative of a specific area but they can also encourage us to define a new, adjacent area on their basis. The management has and should have a decisive say in deciding about the development of new products because in the long term, it is closely connected with the success of the company. In step one, our method requires the presence of the company's management because selecting the area is of utmost importance. The choice determines the company's future development orientation and the management's role in this process is crucial. The management submits its opinion and seeing the situation, comments on individual analyses and responsibly creates the basis for the execution of the method's subsequent steps.

Special attention should be paid to taking trends into consideration as early as when deciding about the area where opportunities will be searched. There are global trends, affecting different segments of our life. Global trends should be examined and applied to individual defined areas. Understanding the mentioned trends can facilitate our decision about the area for our future activities. A trend can make an area promising. At the end of step one, we can define more than one area with a potential for searching for new opportunities The team should first eliminate irrelevant areas, based on the criteria it had set together with the management. If more than one area remains, the team could apply the AHP (Analytical Hierarchy Process) method [20], by which it assesses and creates a suitability rank of areas. The first area is the selected area for further activities in step two. For a more focused opportunity search, we can also choose a motto or slogan of the information search process. It is useful only in the first cycle of step two. The motto can be the basic function of a particular product group, depending on what goal we want to achieve with the new product.

3.2 Step 2

In step two of the SETL method, opportunities are recognized. In most other processes and methods, the opportunity search process usually only begins with recognizing an opportunity (Fig. 1). The second step in the SETL method involves intensive data and information gathering on a particular area, based on four recognized influential factors: social, economic, technological and legislative. We are looking for opportunities carriers, represented by wishes, fantasies, working processes, trends and reference products in a particular area or sub-area. An opportunity has been recognized if opportunities carriers, together with the company's characteristic features yield a positive financial value. An individual "stores" the recognized opportunity in the domain of Recognized opportunities and Eureka ideas. Applying the creative recognition method, this set is further compiled. Step two (Fig. 3) is a cyclic one, with each cycle adding to the volume of information and thus deepening the understanding of the area or subareas. This step allows more detailed work and breaking down sub-areas into smaller, more specific sub-areas.

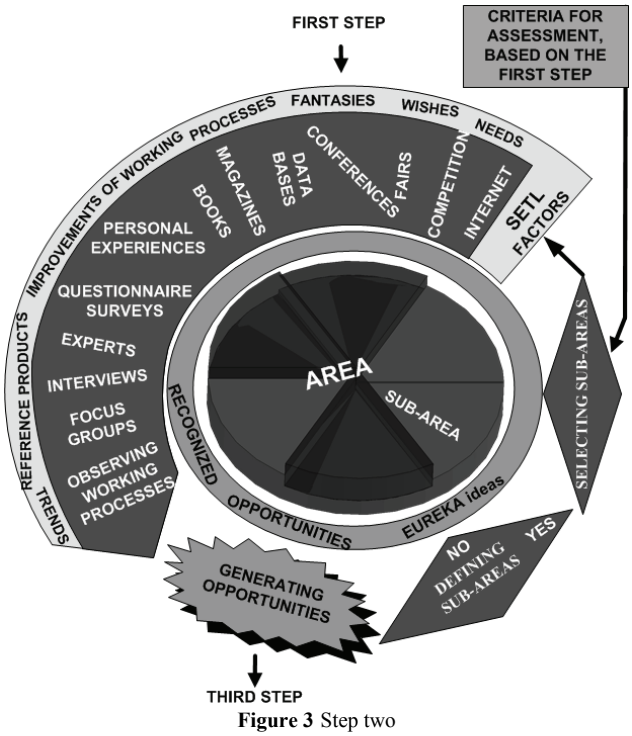

Figure 3 Step two

3.2.1 SETL factors

The SETL factors are four mutually complementary factors that assist in finding and arranging information on a particular area or subareas [23]. The SETL factors structurally capture all the information on an area, an opportunity or a product. They capture all influences on recognizing an opportunity. Going further, the factors define directions towards searching for information in order to recognize opportunities. They can slightly change, depending on the search area. Each direction helps us to think about its current and future influence upon the area where an opportunity is being searched for. It would be possible not to use the presented directions; however it would result in overlooking some important influences in the subject area. The SETL factors are similar to catalogues, used by some development methods [11]. They guide and lead the method user while looking for information. It is a guarantee to gather all vital information. Some directions are considered, some are not. The information and data, gathered via the direction, should complement the existing ones. Particular attention should be paid to the current and coming trends within the area of influence of an individual factor and direction.

The source of data and information is of utmost importance. The more diverse the source of data and information, the greater the volume of different information, which enhances the probability of diverse recognized opportunities. There are primary and secondary sources. Gathering information and data from primary sources is a difficult job as it takes a lot of direct personal communication, which in turn requires more human resources. At the beginning of the opportunity recognition step, secondary sources are the first source of data and information search. They do not require personal communication and they are mostly accessible without major problems. In any case, secondary sources are more widely used in the initial part because one is still getting familiar with the area and defining its boundaries. Primary sources play the most important role later because the biggest volume of information and data can be expected from direct conversations with users, specialists and others and from observing working processes. The structured gathering of data and information has been upgraded to four influential SETL factors.

Social factor. The social factor is becoming an increasingly important part of product purchase decision-making. It represents our way of life and the culture of the environment where we live. It has been created over centuries under the influence of economic, social and political changes. The social factor involves also all those influences that cannot be related to legislation, technology and product's economic category. The key influences within the social factor are as follows:

- Demography (married, single, size of family, children, ageing of the population…),
- Social security (social issues, health protection, unemployment,...),
- Environment (environment protection, impact of the environment, climate changes…),
- Culture (national culture, cultural landscape, cultural changes, impact of marginal cultures on the society…),
- Fashion trends (visual and emotional impact of fashion trends),
- Free time (vacations, hobbies, entertainment...),
- Politics (impact of politics, lobbying...).

The SETL method has been also tested on a farm, where we tried to recognize new ways of stockbreeding, suitable for the specific conditions of the selected farm. Also on the basis of the social factor, a highland cattle breeding has been recognized as suitable during the process of opportunity search. Breeding these animals and their grazing will preserve the cultural landscape appearance, the meat is of much higher quality than regular beef as it contains up to 50 % less fat and cholesterol. Health protection is a highly important factor for the product purchase decision-making.

Economic factor. With the economic factor, we are trying to define the economic promise of an area, an opportunity or a product. When the already recognized opportunities are analysed, it is possible to obtain pretty exact economic information on an opportunity. However, at the level when opportunities are still being searched for or the decision to enter a specific area or branch is still being made, our thinking and gathered information are very abstract. Defining economic prospects of an area and later also of an opportunity, concrete economic and financial data and indicators are required. Because it is very difficult to do so before opportunities have been recognized, we can resort to the so-called reference product in a certain area or branch. These are products that are important from the viewpoint of a company for which we are trying to find promising areas or opportunities. They are typical representatives of the area and match the development orientation of the company. Looking for information, the following directions are of assistance:

- Size of the area
- Current and expected growth of the selected area
- Current and future purchasing power of user
- Added value of reference products
- Financial analysis of working processes (Labour cost and consumables cost assessment)
- Productivity (Assessment of the possibility to increase productivity within working processes)
- Financial effect of related products (Products and consumables for these products or services.).

Technological factor. Good knowledge of modern technology, scientific discoveries and consequently the technology of the future, is of vital importance for the opportunity search process. These factors, included in the technological factor, can represent an important source of new opportunities. There are many cases when it is exactly the use of new technologies that brings new and useful values to existing products. Looking for information, the following directions are of assistance:

- Technology, used in working processes
- Technology of working processes
- Technology of reference products manufacturing

- Technology of reference products application
- Patents (They reflect the current state of technology.)
- New technologies (The application of a new technology in a product is justifiable if it fulfils certain customer's or user's needs. It is necessary to be familiar with new technologies.)
- Environmentally appropriate technologies (Certain technologies can be questionable in terms of environment protection and will therefore have to be replaced by environmentally acceptable ones. It is necessary to understand their characteristics and application requirements.)
- Use of natural resources (Environmentally acceptable use of the natural resources that a company can make use of in its local environment.).

Legislative factor. The legislative factor used to have more importance in the past than in the late 1990's. With the global environment and safety at increased risk, it is now becoming highly important. The prescribed granting of the CE certificate to a product means that it complies with health and safety standards also if it is a very simple product. The regulatory issues of manufacturing, sales and application of products are becoming ever stricter, which will make the legislative factor ever more important in the future. Some laws can encourage a trend in a particular area while on the other hand, trends can dictate adoption of new legislation. New discoveries and radical innovations can also give rise to adoption of rules and laws and vice versa. One should be aware that with a radical innovation we can set standards on the market ourselves. Looking for information, the following directions are of assistance:

- EU Regulations and directives
- Legislation of the state on whose markets we wish to be present
- Legislation of the states that serve as a model to the state on whose markets we wish to be present (Trends in the adoption of legislation)
- Rules and regulations
- Standards.

Niko d.d. is an excellent example of a company that can ensure its own existence and future development through its power upon the legislation. They are a manufacturer of lever arch mechanisms for files. In Europe, they have a 30 % market share, which makes them the biggest manufacturer of the mechanism in Europe. Together with other European manufacturers of the mechanism, they reached the adoption of anti-dumping measures of the EU against China. It resulted in the EU imposing duties of up to 46 % on imported Chinese mechanisms. This measure kept the Niko d.d. company alive, as well as other European manufacturers. Otherwise, these companies would have run out of business or the low retail prices of Chinese mechanisms would have significantly aggravated their situation. The unfavourable dollar - euro ratio would have further contributed to it. Besides the survival, the adopted measures also enabled investments in development that are vital in order to maintain the leading position in Europe and successful growth of the company.

Creative opportunities recognition and decision to continue. At the end of each cycle in step two, there is creative recognition of opportunities. Studying secondary and primary sources generates different opportunities that are "put aside" to a purpose-built area. However, these opportunities alone are not sufficient and it is necessary to recognize more of them. The guideline of the process of creative recognition of opportunities is data and information, the so far recognized opportunities, Eureka ideas and opportunities carriers, recognized on the basis of the data and information, and collected during the preceding work. By using the creative methods we are trying to encourage creative thinking inside the team and each individual.

The volume and quality of data and information, symbolized by the main part of the step two diagram (Fig. 3) is constantly being complemented but there is a point where it is necessary to decide whether to continue or not. It is possible to continue with step three or a new cycle of detailed information and data gathering. In case we decide to continue the information gathering process, it is necessary to decide whether to continue on the same level – sub-area – or go deeper in the research area to sub-areas. There is a possibility that in the Eureka idea sphere, a new area, suitable for further research, appears. If the decision is taken to narrow the scope of research to a smaller number of subareas, their number should be reduced on the basis of the criteria, set in co-operation with the management. The criteria are set according to step one. The criteria can be set also independently by the management but it is best to do it together with the team. In case that more than one area remains, the AHP method should be applied to assess the sub-areas and get the suitability rank of individual sub-areas for further search.

3.3 Step 3

In this step, the unsuitable opportunities are eliminated according to the criteria, set together with the company's management. The criteria should enable a clear distinction between suitable and unsuitable opportunities. An opportunity that has been designated as unsuitable according to any criteria should be eliminated unless the company's management has a different opinion despite the assessment. Note that all four factors should be taken into consideration. This step also allows the possibility of the Eureka ideas.

3.4 Step 4

Most processes and opportunity search methods (Figure 1) also include a detailed analysis of the opportunity, which actually helps us to realize the true potential of the opportunity. It is necessary to answer the question whether the recognized opportunities are realistic or we just believed it due to the lack of information. The procedure results in the suitability rank of opportunities and their detailed description, which can already lead to some requirements for a new product or service. In step four (Fig. 1), the opportunities are analysed up to the point where the company is able to include them in the

range of its development projects. In case that we want to further analyse individual opportunities and find out the suitability of an opportunity, it is necessary to carry out a detailed analysis on the basis of SETL factors. A closer attention should be paid to primary sources because in order to confirm an opportunity carrier, it requires more personal contacts with users.

We created the so-called opportunities parameters and defined more precisely what data and information should serve as a basis for quality decisions on the potential of opportunities:

- The opportunity carrier: confirms whether needs, improvements, working processes, etc. representing an opportunity for a new product, really exist.
- Users and their benefits: how the user sees the opportunity and the benefits it will bring.
- Trends: Trends analysis. How trends encourage the opportunity. Has the trend started developing recently or is it already declining.
- Competition: It is necessary to check the competition's capacities, abilities and dangers.
- Selling potential: We should determine the size of the market and estimate the sales.
- The necessary resources: We should define the necessary resources to develop the opportunity and see whether the company has enough of its own resources available. If not, which and where the company should look for.

Ranking the opportunities is one of the most important decision-making phases for further product development process. A wrong decision can incur big financial losses and also bankruptcy of the company in case of big projects and big risks. The opportunity ranking means the end of step four and the opportunity search method. We believe that this is a very suitable guideline for further activities in subsequent development phases of the comprehensive product development process. Harmonization with the development project portfolio is necessary in advance. The data which each opportunity should involve are broad enough to enable proper ranking of the opportunity within the development project portfolio. The opportunity rank can be created by means of the AHP method [20], based on mutual comparison of opportunities.

4 Application of the method

The method has been used in the industry where its division into four consecutive steps proved sensible as several promising opportunities were recognized by means of the consecutive steps and systematic work with the application of SETL factors. The Niko d.d. company had not been used to apply any methods and systematics for opportunity search and new products development. For this reason, the goal was set to find opportunities for promising new products by means of the SETL method. A team was set up and it learned how to use the SETL method and systematics for the purpose of new products development. Learning took place simultaneously with the application of the method. A moderator was there and he was the only one with a comprehensive overview and had previous practical experiences with the method. He directed the team leader and provided training for the use of the SETL method. The process took place according to specified steps, defined by the SETL method. The use of the method in the Niko d.d. company resulted in recognized opportunities. The top three opportunities were included in the package of development projects (Tab. 1).

Table 1 Rank of identified opportunities for new product development (the top three opportunities are kept secret to public because of the classified nature of the information) in the Niko d.d. company

Rank	Opportunity
1	opportunity 1
2	opportunity 2
3	opportunity 3
4	special rebar connectors
5	noise reduction in buildings
6	transportation aids
7	dilatation elements

Our estimations show that the entire method can take a minimum of 21 and a maximum of 31 weeks. In our case, it took 25 weeks (Tab. 2). The heaviest time load for the team members was in the second and fourth step. Generally, it depends on the complexity of the area and analyses, required for the assessment of the suitability of a particular opportunity.

Table 2 Parameters of the SETL method application in the Niko d.d. company

	Duration / weeks	Workload per team member / hours	Number of team members	Time consumption / hours
Step 1	5	25	7	175
Step 2	11	95	8	760
Step 3	1	3	10	30
Step 4	8	52	11	572
Sum	25	175		1537

5 Conclusion

The SETL opportunity search method for the development of a new product is an important step forward in the development of methodologies. It is divided into four independent steps. They represent a systematic searching process and provide traceability and iterability of the opportunity search process. Compared to other methods and processes, it covers all phases of opportunity search, form the decision that a company needs a new product to the inclusion in the package of development projects. Step one is vital for defining the guidelines and represents the biggest difference in comparison to other methods and processes. Compared to other methods, this step also involves systematics and traceability as we are fully aware why a specific area has been defined as promising for opportunity search and why a particular area has been selected for opportunity search. Systematics and traceability of opportunity search are also provided by the use of social, economic and legislative

factors, which is the second major difference in comparison to other methods and processes. The SETL factors with their defined impacts and directions appear as a catalogue and source of ideas for information gathering. The investigated information enables a structured survey while the opportunity recognition process is constantly running alongside.

Recognizing an opportunity on the basis of the defined factors has been tested in industry by means of the SETL method. Results from NIKO d.d. company showed that all key information on an opportunity or a product are involved within the social, economic, technological and legislative factors. The case studies also revealed that their business excellence comes from these very factors. One single factor stands out in each of the cases as a source of an opportunity. The level of the method's complexity is suitable for a simple introduction in companies, without major tutorials. Training takes place together with the use. Despite its simplicity, the method yields good results, which has been proved by the presented example.

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