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3S-LEADERSHIP MODEL AS A TOOL OF USING DESIGN THINKING IN THE SYSTEM OF PUBLIC GOVERNANCE

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ABSTRACT

The problem of integrated implementation of technology and techniques of design thinking, design management and design leadership into public administration should be considered a priority, as this area is the institutional component that determines the level of either innovative development of a society or its stagnation and decline. The dynamic changes in the intellect, mentality, experience, life values and orientations of modern people set new requirements for leaders in the age of intellectual economy, therefore traditional theories and models of leadership no longer meet the needs of group design-thinking. The purpose of this study is to determine a leadership model most adequate to the principles and criteria of design thinking so as to adapt it to the priority use in the processes and procedures of public administration. The tasks of the study are to analyze the expediency of changes in traditional leadership models and tools oriented to new requirements for design leaders; to outline the conditions for the effective management in the "leader-follower" pair in order to substantiate the role of a leader in design-thinking process and identify the leader's influence on the group's performance depending on the level of his/her mastery of using design thinking methodology; to assess the level of adequacy of the 3S leadership model to the criteria and methods of design thinking. To reach the objectives of the article the method of comparative analysis was used. The results of the analysis of the known models of design thinking processes revealed that this process is a fundamental condition and basis for leaders to create an atmosphere of effective use of their own intellect and the intellect of their followers in "leader-follower" pair for joint creativity and innovation. The conclusions of the study draw attention to the feasibility of and conditions for integrating the intellect of "leader-follower" pair and using for this purpose a model of 3S-leadership, based on common behavioral phenomena of synarchy, syntelect and synergy of its members. The main condition for the group to use design thinking technology efficiently has been defined as the mastery of design thinking methodology by its leader with the simultaneous use of the 3S-leadership model to influence followers, which will allow all group members to re-orient to the criteria of the 3S-model, their intellectual activity to be organized according to the recommendations of design thinking, and the leader to transform into a real design-leader who ensures a collective synergistic effect, i.e. a joint innovative product. Authors believe that the results of this study will contribute to the development of programs for training design-thinking leaders for the national system of public administration.

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Introduction. The problem of leadership has always been and will continue to be relevant for all countries in any area of human activity at all times. It will be on the radar of executives and managers practicing in all spheres of human activity, of politicians and public administration officials from various states as well as scientists engaged in the search of the best theories, models, patterns and technologies and the analysis of examples of and reasons for their success or failure.

Since their emergence, the classical theories of leadership, based on the analysis and identification of recommended lists of qualitative, behavioral, and situational characteristics of leaders, have constantly been developing and improving in the process of scientific and theoretical research and experimental empirical studies and have been supplemented by a variety of models, tricks and tips for their use. This process is justified by the needs and efforts to improve the already known models and styles of leadership conditioned by the constant changes in the society – after all, life values and beliefs, worldviews, orientations, visions, and mentality of modern people differ drastically from the similar characteristics of all previous generations. As many experts (Clayton, G., 2012) point out, these are the factors that lead to constant changes in a typical management pair "leader-followers" in such a way that followers-subordinates are not always ready to tolerate directive approaches of traditional leadership styles (heroic, authoritarian, paternalistic, bureaucratic, administrative, command-administrative, etc). It is obvious that with the changes in the intellect, mentality, experience, life values and orientations of modern people, traditional hero-managers, leader-managers, authoritarian managers and supervisor-controllers become history disappearing gradually and are substituted by human-centered leaders who use modern models, methods and technologies of management, who can find and apply new approaches in order to solve continually emerging problems, and who consciously pursue effective and efficient cooperation with their followers.

Nowadays, however, in numerous publications on leadership, scientists, experts and practicing administrators encounter the endless lists of characteristics, traits, competences, leader abilities and skills, qualifications and requirements, typologies and classifications, models and styles, technologies and techniques, advice and recommendations on leadership, which have led to the emergence of abundance of names for specific variants of performing the important management function; oftentimes these lists also hinder the conscious choice, mastery and application of effective leadership models. At the same time, the plurality of variants of effective leadership increases with the appearance of new research results on the interaction of "leader-followers" pairs in various fields of human activity – education, science, health, public administration and local government, public and political organizations, etc.

The extensive use of design thinking techniques and tools in management has become one of the most promising trends in the enhancement of the traditional leadership model, as a result of using specific approaches to project development and implementation in managerial processes and procedures.

Materials and Methods. Design leadership in academic discourse has not very long history. This trend, however, didn't appear from nowhere; it was amply justified by the needs of the business environment and followed the development of specific types of design management (McBride, 2007) in a design environment (Stone, 2010) produced by a certain set of intellectual minds (teams, groups, organizations), who in the process of designing should generate original thinking products through using design thinking technologies (Carlgren, Rauth, Elmquist, 2016). All this inevitably brings to life specific types of design management and design leadership in business as a result of using inherent in the field of design activity techniques that have become tools of managing thinking processes and generating new ideas and products and, in its turn, transforms practicing designers into design leaders (Spool, 2017).

Admittedly, in the work by Raymond Turner the concepts of "design management" and "design leadership" were already clearly differentiated in a modern business context, where "design leaders help to define future and design management provides tools to achieve it" (Turner, 2013, p.72).

The early variant of design management and design leadership is usually viewed as a set of specific management techniques of a designing process performed by groups of project managers. However, some researchers have recently come to the understanding that it is also feasible to use the same techniques as possible options for enhancing generic leadership in other areas of human activity by using certain specific characteristics of design thinking, which endue these options with a number of positive attributes.

Thus, when discussing the prospects of design leadership and design thinking in her work, J. Gloppen stressed the need to develop training programs in order "… to create design-minded business leaders for the future" (Gloppen, 2009) without whom the integrated process of human resource management in various spheres of a societal functioning is, in our opinion, impossible in the age of the creative, cognitive, intellectual, informational knowledge economy, whatever name it takes.

Therefore, the interest of many researchers in the problem of "how to achieve" the desired level of design leadership (Martin, 2019; Schroeder, 2019; Lyonnais, 2019) puts on the agenda of modern leadership research the problem of justification, outlining requirements and formulating definitions of such concepts as design management and design leadership in various areas of human activity and, above all, in the field of leadership in public administration in order to solve government problems in political, social and other projects (Liedtka, Salzman Randall, 2018; Liedtka, Sheikh, Gilmer, Kupetz, and Wilcox, 2018; Scully, 2019; Liedtka, Salzman and Azer, 2017; Milkowska, 2018; Allio, 2014). Basically, the problem of integrated implementation of technologies and techniques of design thinking, management and leadership into the practice of public administration should be considered a priority, as this area is the institutional component that determines the level of innovation and, consequently, its dynamic development, stagnation or depression (Dzvinchuk. Liutyi, Ozminska, Petrenko, 2021).

The aim of the article is to determine the most adequate leadership model and adapt it to the principles and criteria of design thinking as a condition for its priority use in the processes and procedures of public administration and management.

Results. If we assume that design thinking is a specific way of thinking inherent in the individual who performs the functions of producing ideas which, in turn, correspond to his place in the hierarchy of interaction with other team members, it is obvious that we can and must talk about the feasibility and necessity of using design thinking principles and techniques not only by authors and executors of projects, but also by supervisory-managers, middle-managers and top-managers. Conversely, it is completely apparent that the most effective scenario should be considered a situation in which all participants working on the project are aware of and use the principles and techniques of design thinking.

After all, in the case when the fulfillment of responsibilities of leading a group of people, who think by categories and principles of design thinking technology, is entrusted to a leader who finds the guidelines and criteria of design thinking insignificant or who is not aware of them, then such leader will not be able to create an inspiring atmosphere for the generation of innovative solutions by a group (team) of his followers; he would rather become a hindrance and set obstacles in the path to the development and implementation of innovations or, at the very least, show ignorance of, or passive rejection to the latter.

Therefore, in our opinion, the management body of any organization as long as they are willing to be effective managers and leaders in modern conditions must master the techniques and technologies of design thinking, design management and design leadership, profess the values and criteria of innovative development as well as teach, develop and effectively use the relevant abilities of all followers involved in the interaction.

In this context, there is no denying the fact that any management decision of a group leader can either become a routine, stereotypical, standard result of his thinking with all the consequences that come with it or, on the contrary, it can be the result of an extraordinary, non-standard, original innovative decision of a leader who possesses a high resourcefulness potential of managing the design-thinking process of his followers for the benefit of the organization, company or system.

Thus, the basic condition for mastering the skills of design leadership is the condition under which the leader of the group and all its members, besides displaying their abilities and intellect, must know how to apply the technology of design thinking.

In this regard, it seems appropriate and feasible to analyze the distinguished theoretical leadership models regarding the level of their adequacy to the requirements of modern design leadership in order to identify and use this leadership model, since this will significantly facilitate the implementation of innovative design thinking principles in management processes when making and realizing the managerial decisions for obtaining innovative results. Against this backdrop, it should be noted that the authors of the study (Alnelind & Alvén, 2014) demonstrated that the difference between skills and personality characteristics necessary for integrating traditional types of leadership on the one

hand, and skills and characteristics necessary for design leaders on the other is not so significant and the majority of traditional leaders have already started using certain elements of design leadership.

If we look at the interpretation of an intellectual conscious personality through the prism of the famous thesis "Cogito ergo sum" ("I think, therefore, I am") by René Descartes, then it becomes completely obvious that the consequence of the thinking process ("cogito") is a clear and distinct conclusion about the perception of the result of thinking by this intellect (Hatfield, 2008). That is, the very process of thinking (**Th**) results in the emergence of actions directed at changing someone or something (for example, knowledge **Kn**), with the subsequent formation of the conclusion about the result of this action (new knowledge **Kn**↑).

Thus, interpreting the sequence of transformations of R. Descartes' thesis in the form of "knowledge – thinking – knowledge↑", it can be argued that obtaining an original result by an individual is a consequence of their use of thinking (**Th**) for generating new knowledge (**Kn**↑) based on existing knowledge (**Kn**) though implementing the sequence

$$\mathbf{Kn} \rightarrow \mathbf{Th} \rightarrow \mathbf{Kn}\uparrow, \quad (1)$$

which shows the dependence of the new knowledge product on the process and technology of thinking, namely

$$\mathbf{Kn}\uparrow = \mathbf{F(Kn, Th).} \quad (2)$$

We should note that most of the known models of interpretation of the place and role of design thinking in the process of creating new solutions and projects also use similar sequences of knowledge transformations. For instance, the process model from IDEO includes three stages: **I**nspiration (learn and observe), **I**deation (generate idea), **I**mplementation (bring solution to life) (Dam, Siang, 2011); the Hanover Institute of Language and Communication distinguishes three stages such as **L**earn (empathize, research, communicate), **C**reate (brainstorm, test, prototype), and **A**ct (plan, implement, evaluate) (Stone, 2010), and the Design Process model by the Stanford School includes the following five stages: **E**mpathize, **D**efine, **I**deate, **P**rototype, **T**est (Dam, Siang, 2021), which without violating the content can also be reinterpreted into three stages:

- **E**mpathize, **D**efine;
- **I**deate, **P**rototype;
- **T**est.

In this case, as follows from the content of the actions, the stages of all the above transformation chains generally replicate the sequence of R. Descartes' transformations, since the implementation of their components provides solutions to:

1) the study, determination and comprehension of knowledge **Kn** about the problem that has to be solved, namely

Kn ≈ **I**nspiration (learn and observe) ≈ **L**earn (empathize, research, communicate) ≈ ≈ (**E**mpathize, **D**efine);

2) generating ideas and design solutions aimed at solving the problem, i.e.

(**Th**) ≈ **I**deation (generate idea) ≈ **C**reate (brainstorm, test, prototype) ≈ (**I**deate, **P**rototype);

3) testing, implementing and evaluating new ideas and project solutions in life, i.e.

Kn↑ ≈ **I**mplementation (bring solution in life) ≈ **A**ct (plan, implement, evaluate) ≈ **T**est.

However, what we can accept as valid for the interpretation of the individual thinking process, cannot be used for the interpretation of the collective thinking process of a group led by a leader (manager). It means that the emergence of new knowledge $\mathbf{Kn}_{\sum}\uparrow$ derived from the existing knowledge $\mathbf{Kn}_{\sum}$ can occur only as a result of efficient design thinking of the group $\mathbf{DTh}_{\sum}$ led by its leader, which requires clarification of the functions of the leader and his followers in the design thinking process. At

the same time, none of the known models of group-oriented design thinking has given enough attention to the role and importance of design leadership, limiting it only to the declarations of expediency.

Given the fact that the existing knowledge of $\mathbf{Kn}_{\sum}$ and new solutions generated by the group using design thinking $\mathbf{Kn}_{\sum}\uparrow$ are collective, it is advisable to distinguish such components as $\mathbf{DTh}_{L}$ (design-leader thinking) and $\mathbf{DTh}_{i}$ (thinking of each individual member of the group) in the process of organizing design-thinking. Then the sequence (1) and the dependence (2) of knowledge transformation into results will be respectively as follows:

$$\mathbf{Kn}_{\sum} \rightarrow \mathbf{DTh}_{L} \rightarrow \mathbf{DTh}_{i} \rightarrow \mathbf{Kn}_{\sum}\uparrow, \quad (3)$$

$$\mathbf{Kn}_{\sum}\uparrow = \mathbf{F}(\mathbf{Kn}_{\sum}, \mathbf{DTh}_{L}, \sum\mathbf{DTh}_{i}). \quad (4)$$

Hence, the upshot: the basis for the thinking of both the leader and his followers, in addition to existing knowledge, should be principles, procedures and criteria of design thinking, and the task of the design leader is to ensure the interaction of all team members as a set of design-minded people, which should be reflected in a specific model of design leadership.

Although the leader's consciousness, mind, intellect, abilities and so on are indisputable components in all modern models of leadership (Marques, Dhiman, 2017), none of the known models disclose the requirements, conditions, or details of the leader's use of his own intellect as well as the intellect of his followers. It implies that traditional leadership models do not answer the question of how a leader should think and how his followers should think. The problem is that thinking of a personality can be creative, systemic, critical, convergent, divergent, integrative, lateral, inventive, graphic, etc (Petrenko, 2020), but only design thinking involves the need to generate design solutions by a pair "leader – followers". This fact allows us to state that from the whole palette of common thinking technologies, the very process of design thinking is a fundamental condition and basis for leaders and managers to produce an atmosphere of joint inventiveness and innovative creativity in their teams, which will, indispensably, result in new ideas and products, goods and services, inventions and discoveries.

Although there is no denying the possibility of using the models and techniques of traditional leadership for the same purpose, we should pay attention to the fact that in addition to the actual use of design thinking (**DTh**) in the main component of the creative process (stage 2 –[**I**deation (generate idea), **C**reate (brainstorm, test, prototype), (**I**deate, **P**rototype)]) for joint generation of new intellectual products, the leader of the group must ensure that two more important tasks are carried out.

On stage 1, it is necessary to ensure the collective participation in design thinking of all members of the group in order to observe, study, research, define, etc the needs for the product [**I**nspiration (learn and observe), **L**earn (empathize, research, community), (**E**mpathize, **D**efine)], and on stage 2 it is necessary to perform implementation, testing, and e valuation of the results [**I**mplementation (bring solution in life), **A**ct (plan, implement, evaluate), **T**est].

The attempt to make the requirements and conditions for the proper use by the leader of both the leader's own intellect and the intellect of his followers mandatory is reflected only in the model of intellectual 3S-leadership proposed by the authors in (Dzvinchuk, Petrenko, 2016); unlike traditional recommendations, this model did not dictate what qualities, characteristics and styles of behavior the leader should have, on contrary, it recommends techniques for establishing cooperation in a group of followers in the mode of "co-management" (synarchy), "co-thinking" (sintellect) and "co-action" (synergy) (Fig.1).

Discussion. This model describes a set of leader's process-oriented methods for organizing the intellectual interaction of all members of the group through integrating, motivating, and stimulating the collective intellect in order to pursue and achieve a synergistic result. The authors emphasize that the model, "being an innovative technology for group management, requires both the leader and the members of the group to act together in thinking and generating ideas, in making and implementing decisions, in seeking and achieving synergistic effects" (Dzvinchuk, Petrenko, 2016), which fully complies with the principles, procedures and criteria of design thinking, described by the sequence (1) and dependence (4) of knowledge transformations.

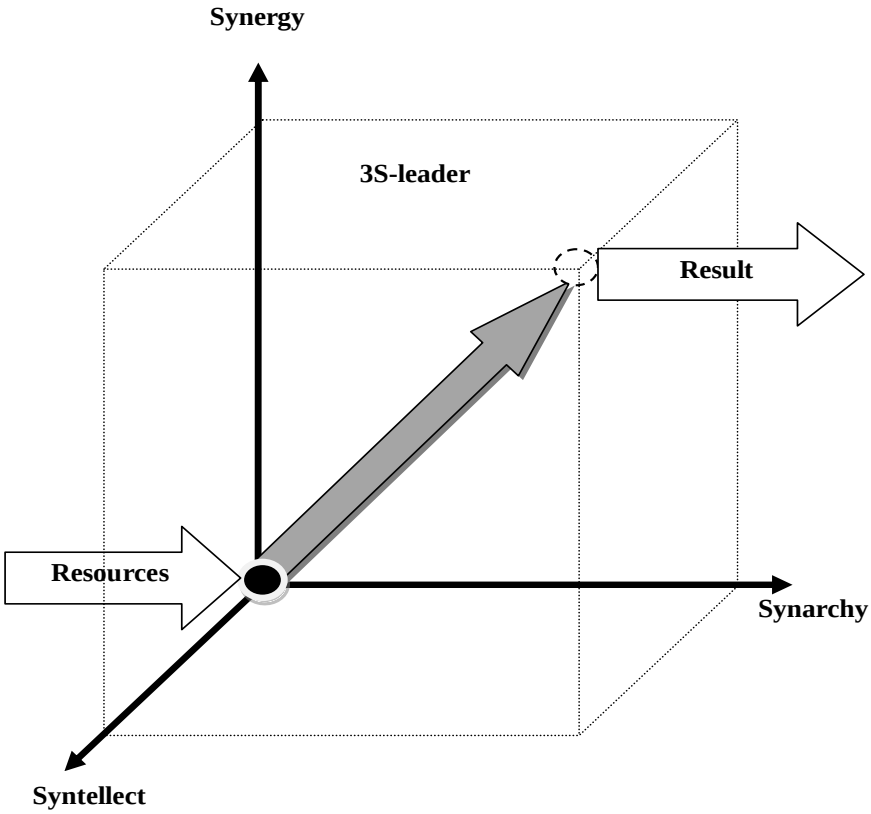

Figure 1. Spatial model of intellectual 3S-leadership based on the phenomena of syntellect, synarchy and synergy

Thus, in the case there is no leader or his influence on a group is insufficient, the subordinates who have different goals and interests in the coordinates "synarchy – syntellect– synergy" can be represented as a sum of chaotically oriented individual subspaces **N** in the similar models of 3S-leadership in the Cartesian coordinate system (Fig. 2).

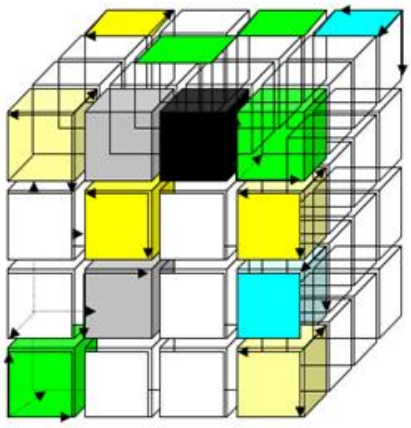

Fig. 2. Spatial model of the group as a sum of motivated individual subspaces N of group members who have different goals and interests and resist the influence of the leader oriented to the criteria of design-thinking

However, if the leader has an influence on the group of followers **N** with their latter reorienting to the criteria of the 3S-leadership model and organizing their activities according to the known

recommendations for group design thinking, each member of the group, who is a follower of a design leader, will perform a sequence of actions **Kn → Th → Kn↑** under the impact of the leader as shown graphically in Figure 3.

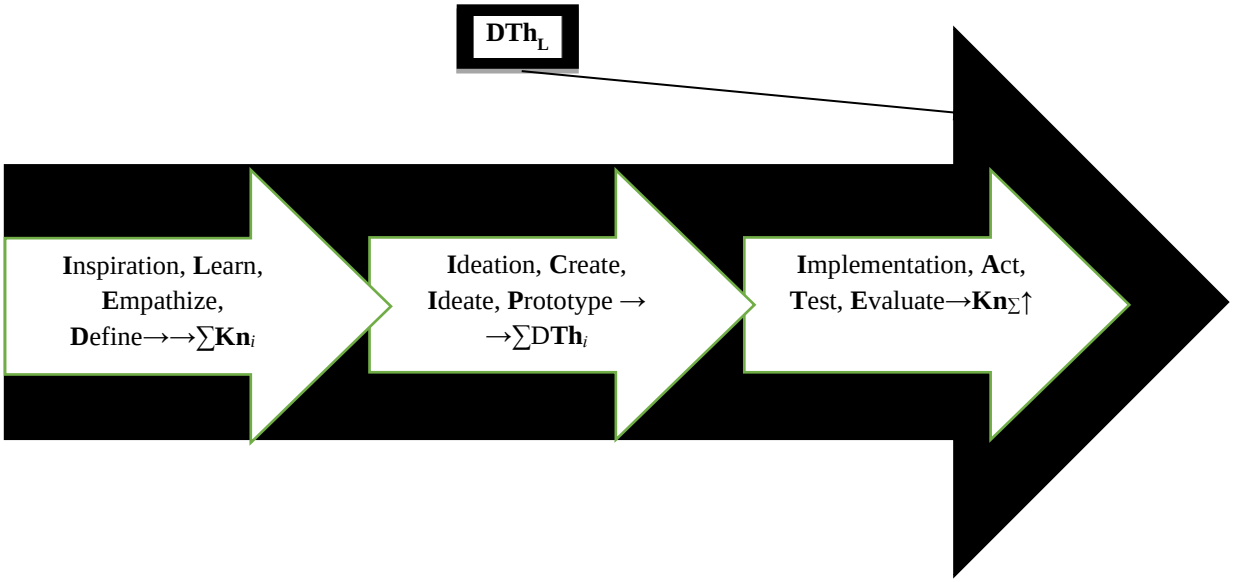

*Fig. 3. Graphic interpretation of the sequence of transformation of the sum of previously gained knowledge ∑**Kn**$_i$ of design leader thinking (**DTh**$_L$) and the collective intellect in the "leader – followers" pair (∑D**Th**$_i$) into new knowledge **Kn**$_\Sigma$↑*

In this context, under the influence of the design leader all individual subspaces **N** of the members of the follower group will be coordinated (Fig. 4) and therefore will act in concert for achieving a joint result, adhering to the criteria of "synarchy –syntellect – synergy". This transforms the uncontrolled and chaotic intellectual interaction of N followers (in case of the absence of a leader or his use of traditional approaches) into the process of group design-thinking.

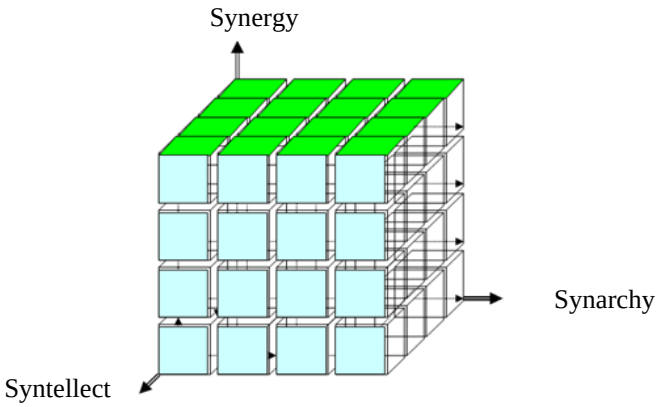

Fig. 4. Spatial model of the group N whose members transform into the effective team of co-workers, co-oriented to "co-management", "co-thinking" and "co-action" as a result of the influence of the leader, oriented to the principles and criteria of design-thinking

In this regard, it is worth noting that most of the actions provided by different models of design thinking coincide with the recommendations and criteria of the 3S-leadership model as the condition for this is the design thinking of the leader **DTh**$_L$ whose influence helps the followers to orient to the criteria of 3S model, namely:

- "synarchy", which organizationally integrates all members of the group to jointly study and comprehend the existence of the problem at the existing level of knowledge of the group $\sum \mathbf{Kn}_i$;

- "syntellect", which is the collective thinking of $\mathbf{DTh}_L$ and $\sum D\mathbf{Th}_i$, which results in the group's generation of a new idea **Kn**↑ to solve an existing problem;

- "synergy", which is the cooperation of all members of the group aimed at the implementation of the jointly generated idea **Kn**↑ into life.

Thus, unlike most known technologies of thinking focused on obtaining new results by a single intellect, the procedures and criteria of design thinking ensure the involvement of the integrated intellect of the "leader – followers" group in this process. At the same time, a condition for this is the presence of a design leader who is a leader not by the traditional definition of personal (even the best) characteristics, but a leader who possesses the expertise in the threefold use of co-management, co-operation and co-action.

Conclusions. Thus, through the analysis of publications concerning the possibilities and permeation of design thinking techniques in various areas of human activity, including public administration and management, and the need to use the techniques of design management and design leadership for this purpose, the study demonstrated the expediency of changes in traditional leadership models and tools oriented to the newly arising needs of leadership in the age of the intellectual economy, the feasibility and necessity of which are justified by the famous statement of George Bernard Shaw: "Progress is impossible without change, and those who cannot change their minds cannot change anything".

It is shown that the model of intellectual 3S-leadership, previously proposed and tested in practical management, can be used as a model and practical tool for developing and disseminating the principles of design thinking in other areas of managing human activity and, in particular, in public administration. The condition for such dissemination is the mandatory mastery of design thinking technology by managers and their skillful use in managing the design thinking processes in the "leader – followers" group, which will help the group to reach the effect of intellectual synergy as a result of their involvement in management (synarchy) and integration of thinking (syntellect).

It is recommended that further research is directed at (1) the creation of programs by "LIDER", a design thinking laboratory at the Department of Public Administration and Management of Ivano-Frankivsk National Technical University of Oil and Gas.The program should be aim to in order to train design-thinking leaders for the national public administration and system, (2) the evaluation of these programs in the educational process and (3) an extensive dissemination of ideas and fundamentals of design thinking method and design leadership in the domestic system of public administration.

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