



WHAT DOES IT MEAN TO BE SMART?

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Abstract. This paper aims to reveal the essence of the concept *smart*. The main starting point in analyzing the term *smart* is a human being and the quality *smart* is first of all attributed to a human being. The paper is comprised of three parts. The first part of the paper is devoted to present how the concept *smart* is reflected in dictionaries. The second part displays deeper analysis of the term *smart* as the quality of a human being while searching for its conceptual foundation. The third part of the paper is devoted to the implication of the smart conception in the social system.

Keywords: smart, smart human being, smart social system

1. Introduction

Lately the term *smart* has been widely used in scholarly literature as well as in the documents of the EU (e.g., The Digital Agenda (European Commission - EC); Smart Cities and Communities Initiative (EC, 2011)). There are plenty of derivatives too: smart system, smart human being, smart people, smart city, smart region, smart country, etc. One factor unites the abundance of this essential term as well as its derivatives: it is quite frequent that the same term used in different sources reflects a different meaning. The reason for this may be that the term and its derivatives have been introduced in scholarly literature about two decades ago only and, thus, require more substantive discussion and conceptualization. The fact that the conceptualization of the term *smart* and its derivative terms especially became evident in White Paper ‘Smart Cities as Innovation Ecosystems Sustained by the Future Internet’ (Schaffers, Komninos, Pallot, 2012) prepared as the result of the Framework 7 project *FIREBALL*. In this ‘White Paper’ (www.fireball4smartcities.eu) the authors admit that often the term *smart* is purely used for city marketing aims; thus it does not reflect the real meaning of *smart*. The authors of the ‘White Paper’ mention several scientists, who, according to the authors, presented several useful definitions of ‘smart city’. First of all, Caragliu with co-authors (2009) think that there is evidence to call a city ‘smart’ if investments into human and social capital, transportation and ICT-based infrastructure, as well as participatory government and smart management

of nature resources guarantee high quality of life as well as sustainable economic growth. Also, according to Schaffers, Komninos and Pallot (2012), to the above-mentioned definition of ‘smart city’ the characteristics suggested by Von Hippel (2005) should be added: the notion of empowerment of citizens and ‘democratizing innovation’. Thus the entire ‘conceptualization’ is limited by the identification of the characteristics, referring to which the authors (Schaffers, Komninos, Pallot, 2012) later analyse *practical* initiatives of ‘smart cities’ in different countries.

Evidently, there is lack of the deep understanding of *smart* and its derivative terms. The research problem can be expressed by the question: What conceptual basis of *smart* would allow disclosing its oneness in comparing with the terms, which get the right of synonyms in the spoken language? In other words, what would allow distinguishing the common ‘logical root’, which would be the basis of other terms concepts derived from *smart*?

The aim of this paper is to reveal the essence of the concept *smart*. The human being becomes the priority here: the technical/digital systems are products of a human being and, thus, smartness is primarily applicable to a human being (-s). Therefore, the main starting point in analyzing the term *smart* is the human being and the quality *smart* is first of all attributed to a human being. In this paper the technical / digital systems will be analyzed only to the extent how they contribute to the conception emphasis of *smart* by highlighting its human sense.

The paper consists of three parts. The first part is devoted to present how the concept *smart* is reflected in dictionaries. The second part displays deeper analysis of the term *smart* as the quality of a human being. The third part is devoted to the implication of the *smart* conception in the social system.

2. *Smart* and the concepts close to it in dictionaries

As it is possible to judge from the idioms of the term *smart* presented in *The Free Dictionary online* (<http://idioms.thefreedictionary.com/Smart>), first of all this word is used in American spoken language. This term in our discussed context means the following:

- 1) The ironic enough definition of human being's abilities and / or his / her behaviour (*Smart ass* - someone who makes wisecracks and acts cocky - *Some smart ass came in here and asked for a sky hook. Don't be such a smart ass! Smart guy* - someone who acts cocky or rude. *All right, smart guy, see if you like this one. Some smart guy put chewing gum on this bench.* Smart mouth someone - who makes wisecracks; a cocky person who speaks out of turn - *Don't be a smart mouth with me! Mr. Atkins is going to get a reputation as a smart mouth.*
- 2) The recognition that such a human being does something more (has planned more) than it is possible to see by observing his / her activity (You think you're so smart! - You act as if you know far more than you do).
- 3) The recognition of the success in a human being's action (Smart money - money belonging to smart or clever people - *Most of the smart money is going into utility stocks right now. Watch and see what the smart money is doing.*)

The American Heritage Dictionary of the English Language (Fourth Edition copyright ©2000 by Houghton Mifflin Company. Updated in 2009. Published by Houghton Mifflin Company) pays attention to the fact that the meaning of this word, in general sense embodying *intelligent, intellectual*, in spoken language can change depending on in which region of the USA it is used. It can also mean *stinging, sharp*, as well as – vigour or quick movement. In New England and in the south of the USA *smart* can mean *accomplished, talented*.

The semantic viewpoint to the term *smart* is expressed in the Free dictionary (2014), which

presents the entire bundle of meanings of this term: from the ones denoting human being's cleverness, overcoming different situations, elegance to the ability of a thing to change its features by reacting to the environment (here we specially omit the concepts of *smart*, which express the sense of pain as not related to our topic): 1. a) characterized by sharp quick thought; bright. See Synonyms at intelligent; b) amusingly clever; witty: *a smart quip; a lively, smart conversation*; c) impertinent; insolent: *That's enough of your smart talk*; 2. Energetic or quick in movement: *a smart pace*. 3. Canny and shrewd in dealings with others: *a smart negotiator*. 4. Fashionable; elegant: *a smart suit; a smart restaurant; the smart set*. See Synonyms at fashionable. 5. a) Capable of making adjustments that resemble human decisions, especially in response to changing circumstances: *smart missiles*; b) manufactured to regulate the amount of light transmitted in response to varying light conditions or to an electronic sensor or control unit: *smart Windows*.

As it is possible to notice from the meanings presented in dictionaries, *smart* is most frequently attributed to a human being, who is insightful (intelligent), quickly reacting to the environment, clever, inventive (creative), able to adjust to it by adequate decisions.

Thinking and language are determined in cultural sense. It will be useful to get deeper to how the term *smart* is understood and used not only in the English language. In order to compare the authors of this article chose their native – Lithuanian – language. How is *smart* understood in this language, to what other concepts is this notion similar? Thus we analyzed the Lybera Thesaurus (2002) and The Dictionary of International Words (2001). These attempts allowed disclosing the synonyms of the term *smart* (*sumanus*) used in the Lithuanian language, to get deeper into their semantic meaning and by this to broader reveal the very concept.

Ingenious – the person who thinks. To think – to decide what to do. Ingenious is the one who possesses powers and is able to decide, consider and to make a decision. The synonym of *plan*: related to *idea*. Ideas relate to inventiveness.

Inventive – able to invent. This can be, according to A. Lybera (2002), a constructor (inventing, keen-witted).

In the Latin language – a constructor – builder [constructor], and the term 'construct [lot. construere] – to build, to create a construction of something, to do calculations, drawings.

Smart, stylish, dandy, chic – is another group of the meanings for the term *smart*. The synonym of the word *goergous* – is chic, beautiful. Chic

means: beautiful, splendid, and unusual. Fashionable is the remote meaning a bit – madingas (in Lithuan.). Fashion – is the dominance of household articles, especially clothes, external forms during some time. Thus *smart* can be translated by the term *fashionable* [French mode < lot. modus – measure, way, rule, instruction. It is also possible to translate as follows: habit, vocation / inclination; custom.

Shrewd – the meaning of this word is somewhat remote from the term *dandy, knowing*. This is closer to the word ‘inventive’, in the sense of construction / design. *Shrewd* – able to whirl round, calculating, enterprising, able to manage in different circumstances. So such a person demonstrates his / her inventiveness, ability to construct the environment favourable for him / her.

Smart has the meanings of *sharp, strong* (this is not actual in the context we analyze). According to A. Lyber, *sharp* means well cutting, very sharp, strict, expressive, penetrative.

Another possible meaning – is *strong* (possessing a lot of power), *powerful, forceful*.

Thus *smart* can also possess the following meanings in it: *cunning, shrewd, inventive, able to create, construct, enterprising, possessing a lot of power, powerful, forceful*. In order to choose the meaning, the context, in which the word *smart* has anchored, is necessary.

In contemporary literature and life practice *smart* is attributed to both material and virtual structures. Though the aim of this paper is not to get deeper in the *smart* meaning either in material or virtual sense, however, we will analyze this aspect to the extent how it can better reveal the human meaning of *smart* when comparing. The FOLDOC Dictionary (Free Online Dictionary of Computing,

<http://encyclopedia2.thefreedictionary.com/Smart> (foldoc.org) when presenting *smart* for MS-DOS? distinguishes two meanings:

- a) *smart programme* – is the programme, which carries out the correct matters under the broad diversity of complicated circumstances;
- b) *smart hardware* – ‘incorporating some kind of digital electronics’.

Thus, when emphasizing a human being in dictionaries, his / her smartness is often identified with intellect; moreover – it is considered that such a human being is perceptive, quickly reacting to the environment, clever, inventive, and able to adjust to it by adequate decisions. Smartness of material / virtual structures is more understood as the ability to adjust to the environment whereas the ability to sense it and set its conditions as well as to adjust so that this structure would become more

beneficial and more effective is the intelligence of this structure.

Management science analyzes *smart* countries, regions, cities, organizations. They are also structures; however, first of all – social. In life practice they are most frequently not the reality but the vision, to which the EU and particular countries pay great attention.

Thus though alternatives of *smart* meaning became evident from the semantic analysis of the term, however, the following question remains unanswered: is it possible to identify the most general concept of *smart*, more precisely – the conception, that, by referring to it, it would be possible to outline the concepts of *smart* attributed a human being, organization, city, community, region, country, as well as to technical and virtual structures.

3. The meaning of *smart* in the context of a human being

We have already pointed out that this paper will emphasize that meaning of *smart* that is attributed to a human being or social systems.

It is purposeful to get deeper into the essence of a smart human being. So we will use interdisciplinary viewpoint. In principle we will refer to the thoughts of Sasha A. Barab and Jonathan A. Plucker (2002), representatives of ecological psychology and who analyzed intelligence, abilities, and talent, as well as Daniel Wolpert (2012) – the distinguished scientist, recently elected as the member of the Great Britain’s Royal Society for the results of the research on robotics that combine neuro-science, engineering and computer science.

According to Barab and Plucker (2002), *abilities, talent, intelligence are not some set of symbols existent in the head of a human being; this is the function of human being’s thinking in the particular situation (situation thinking)*. They are not the property of ‘a human being’ in his / her inside, this is the set of the functional relations / communication distributed between a human being and environment, due to which a human being is *knowing, able* in the particular situation. In other words, abilities, talent emerges in the dynamic interaction among an individual, his / her physical environment and its socio-cultural context. Thus a smart human being is not *the given in itself*. As Barab and Plucker (ibid) state, his / her intelligence manifests in the activity, relationship with the particular situation. These authors developed the thought of Gibson (1979/ 1986) that the profile of individual’s abilities as person’s effectivities can be understood only in the relation with

environment's affordances. If Gibson (ibid) got deeper into the structure of the information present in this relation, so Barab and Plucker (2002) emphasize socio-cultural structures and what it is possible to call talented behaviour and how it emerges. They get deeper into this, for example, by solving the following question: why Brazilian children, buyers in California, who brilliantly act in their everyday activity (e.g., they perfectly perform certain calculations when buying at the marketplace, a shop), are completely unable to perform similar calculations at school. So it becomes evident that abilities, talent are not the reason but the partial result of person's movements / actions flow in certain situation. Thus, according to Barab, Plucker (ibid), the development of talent is the transactional process, which involves the active change of an individual, physical and socio-cultural environment. As Barab and Duffy (2000) noted, the development of talent is the process of activity but not assimilation, reception. *In order to develop smart individuals, they have to be provided with smart environments.*

However, does the talent become evident in every person's relationship with the best suitable environment for him / her? According to Barab, Plucker (2010), yes; *every* human being, when the most appropriate situation occurring for him / her, can disclose his / her talent/s to be smart. Though this is most desirable; however, the Wolpert (2012) theory puts questions for the above-mentioned conclusion of Barab and Plucker (2002).

The work of Wolpert (2012) is aimed to explain what influence of the brain is in a human being upon almost coded inaccuracy of movements (any action is based on them). First of all – how do these movements occur? A human being knows the world through his / her sensors, but they give him / her information, which is usually distorted by random fluctuations, known as information noise. This provokes instability of our senses (Wolpert writes: let us try to put one hand on the table and on it at the same time, without correcting, to precisely put our other hand; we will see that the second hand has moved in one or several centimetres towards the first one). As Wolpert (ibid) accurately jokes and even speak ironically, the society generously awards those who can essentially diminish this instability of senses; and, if someone doubts in this statement, the author suggests remember what premiums are appointed to winners of golf competition. And they need only target a ball into a pit...

As the research of Wolpert (2012) have shown, the brain of a human being works intensively that would diminish uncertainty and instability in senses and actions. Wolpert (ibid)

proved that the brain of a human being implements what one of mathematics' branches call the Bayes decision theory (<http://plato.stanford.edu/entries/bayes-theorem>).

This theory analyzes the belief possessing certain probability ('0' – I absolutely do not believe in this; '1' – I am certain of this; all figures between 0 and 1 – mean less or greater uncertainty). According to Bayes, any belief is based on two information sources: the data, which we get by sensing the world, and the memory, which can give us our previous knowledge. The essential benefit of the Bayes decision theory is that it gives us the mathematical tool to identify the optimal way to combine our previous (stored in memory) and what we get from sensors, to new beliefs. However, beliefs are of pure value if they do not determine actions. Thus the next part of the Bayes decision theory is a decision (as a task) and subsequent action. However, among the task and actions is great distance (according to the author, e.g., the task – I want to drink – is symbolic enough; however, the muscle system has to perform 600 actions in certain sequence that this would happen). Of course, it is possible to perform in very different ways. However, most people move rather stereotypically, similarly. *But there are such people who move quicker than others: understand – their brain also work better.* However, this directly contradicts the thought of Barab, Plucker (2002) that everyone can be talented, at least these talents can be developed if the environment is particularly favourable. Perhaps such movements allowing to *better perform, achieve* occur through learning?

Wolpert (ibid) determined that our muscle variability in contraction is essential in choosing certain movement. Thus, when a human being raises his / her arm to do something, manifests a random component, which directs the movement from the direction, which the human being hopes for. The *model* developed by Wolpert (ibid) *explains that people move so that they would minimize the negative succession of such random fluctuations. Those who succeed best are quicker, more intelligent, achieve their purpose faster.*

As Barab, Plucker (2002) state, a smart human being is not the absolute given, smartness becomes evident in the relationship of a human being with the physical and socio-cultural environment, action; thus – the movements (and their sequence), to which random fluctuations are characteristic (Wolpert, 2012). All people move so that would minimize these random fluctuations; however, only some people are particularly effective. It is true that some are able 'to move more precisely' by themselves in situations, others

– in other situations; thus smartness manifests irregularly. What does this capability depend on?

‘More precise movement’ should not be identified only with physical features; this can be *mental movement* when a human being solves problems more precisely and faster. Lehrer (2012) pays attention that problem solution – is the process consisting of several elements of a human being, first of all of mental activity: an individual envisages a problem, is able to decompose it (if it is – structured problem) as well as to predict its solution ways, methods; is able to *creatively* solve ill-structured problems; is able not only to plan the solution of these problems but also to implement it. Lehrer (ibid) indicates that most actions of problem solution refer to creativeness; however, he does not excessively mystify this feature of an individual. The researcher states that one has to possess a lot of knowledge for creativeness to manifest, especially – in professional activity. The knowledge is more effectively acquired when people communicate with each other; their interaction and sharing of knowledge take place. It is also not to be forgotten that the situational knowledge, to acquire and use which intelligence is necessary, is important for problem solution and implementation of the solution. Lehrer (ibid) also admits that not only creative but also analytical thinking is necessary for effective problem solution. The latter is simply necessary in predicting the plan for implementation of problem solution. It is obvious that all these actions have to be performed precisely, properly, inventively and quickly, in the viewpoint of *smart* – more properly, more inventively and quicker than others do this. Thus a *smart human being is the person who in interacting with environment is able to envisage in it critical indications or their system, to which quickly and innovatively reacts in adjusting to this environment by adequate decisions as well as using it to pursue his / her goals.*

4. Smart social system

As it has already been mentioned, the term ‘smart’ is often used in different combinations with other words that emphasize common being of people, their activity: ‘organization’, ‘community’, ‘city’, ‘region’, ‘society’, etc. the meanings of the latter terms possess one commonness: this – is social systems. Thus *smart organization, smart community, smart city, smart region, smart society* has one common meaning – they all are *smart social systems* – despite some differences.

First of all – what are social systems? When getting deeper into them, we will refer to the work

‘Observing Society’ by Daniel B. Lee and Achim Brosziewski (2009), in which these authors present Contemporary theory of social system *versus* Social system theory.

The social system theory or classical viewpoint to social system emphasizes people relations. Society is understood as *autopoietic* (closed system capable of creating itself), self-organising system, in which a separate human being is not analyzed in the relationship with people; however, the attention is paid to human being’s socialization – becoming a member of the particular society. According to Giddens, Duneier, Appelbaum (2007), there is no culture without society and there is no society without culture; when socializing, a child becomes knowing, able human being in the context of the culture, in the society of which he / she was born. However, Lee and Brosziewski (ibid) ask: so why people born in the same culture sometimes or even often do not understand each other? Is it possible ‘to revive’ in another culture if you were born in one culture? How to determine society boundaries? How can people be or not be in the space, the boundaries of which have not been identified by science?

Thus the classical social system theory is not able to answer the question *how* general understanding of separate objects, phenomena, events forms in the society. As Lee and Brosziewski (ibid) state, it is possible to answer this if we consider the society as comprised from units of communication. *Observing society*, according to these authors, means that it observes the conditions, under which communication ‘accomplishes an understanding that allows for further communication and the reproduction of society as social system’ (Lee, Brosziewski, 2009:3).

In presenting the contemporary theory of social system, Lee and Brosziewski (ibid) mostly refer to Nikols Luhmann (1997). According to the latter, social systems are systems of communication, and society is the most encompassing social system; communication – is the synthesis of information, utterance and understanding. Also Lee and Brosziewski (ibid) emphasize the research works of other authors, particularly - Ludwig von Bertalanffy (1950,1968), who formed the general system theory, as well as the works of Parsons and his colleagues (Parsons 1951, 1963; Parsons and Shils 1951), which allowed ideas of the general system theory to apply for sociology.

Considering the viewpoint of the contemporary theory of social system, its subject - a human being, who is an observer of his / her environment (closer and farther levels are

distinguished in it), is particularly important in social system. The observers 'recursively self-construct everything that is meaningful in the world, beginning with the difference between themselves and their environment' (Lee, Brosziewski, 2009:4). A human being as observer can consider a particular person, group of people, organization, community, region, society, economics, religion, art and so on as his / her environments. Any social operation is based on communication. The identification of a human being to his / her observed group, organization takes place through communication as well. Lee, Brosziewski (ibid) point out that different social systems (family, work organization, economics, religion and so on) implement specific forms of communication in their defined borders. The language makes an important meaning in communication. It serves for: a) people's coupling around it; b) assessment of events, meanings (the statement communicating the same essential content can possess positive (approval - *yes*) and negative (rejection - *no*) meaning. The ability to start different relations by constructing symbolically generalized media is also important for communication (media – are tools used to store and deliver information or data), so called *success media*. According to Lee, Brosziewski (ibid), people group around the following four symbols: love, power, truth, and money.

Lee and Brosziewski (2009: 9) point out that 'Contemporary theory of social system describes society as the overarching system that includes all communication'. Thus it is not hard to understand so-defined society, but it is complicated to analyze as a researcher faces problems to involve all observers, who communicate in the society, in his / her meta-observation. It is more real to analyze separate, especially – stable social systems. Usually three stable enough social systems are distinguished: a) the system based on person-to-person interaction when the communication takes place 'at present'; b) an organization as system comprised of decisions made by network members; c) societal systems – they are characterized by communication channels that perform functional purpose, i.e. aimed to solve certain problems of society (family, economics, politics, law, science, education, culture and so on).

How does the contemporary theory of social system allow understanding of smart social system? As it prompts to distinguish a human being in social system and his / her interaction with the environment, so smart social system could be similarly outlined as smart individual, but the definition should be supplemented with social system peculiarities. However, the question that

has to be answered is as follows: the contemporary theory of social system points out the communication inside the system, whereas smart system is also intelligent system at the same time; it requires openness of the system, especially – in getting information from outside and using it. Thus smart social system has to emphasize the openness of this system to the interaction with external environments, particularly – in pursuing to get and use external resources.

Thus *smart social system is such system of communications when people ready for their interaction in the environment of their social system but according to the need (especially – to get information and other resources) are also open to other environments, are able to envisage the features critical for their environment or their system, to which they quickly and inventively react by adjusting to this environment with adequate decisions as well as using it to attain the goals of their system.*

Smartness of groups as well as social systems of larger scope is not the additive size of smartness of individuals forming it. The smartness of a group, social system will depend also on many other characteristics, especially – on general norms, rules created inside of this system, as well as – on individuals' communication, relations in this system, on everything what empowers creativity, innovativeness and the rate of decisions and their implementation. It should not be forgotten that social system distinguishes in that people observe the environment. Smart social system has necessarily to be intelligent; this quality has to be characteristic for its separate members and the whole system.

However, is it possible that all members forming the particular social system will distinguish in intelligence and creativeness? It is hard to hope that everyone inherently would possess high-level creativeness. However, Lehrer (2012) states that creativeness – is the abilities that are possible to develop. Gardner (1983) states the same about the intelligence. He, in presenting his multiple intelligence theory, asserts that every human being applies his / her style to get information, to use it, to accumulate knowledge. This style is determined by the sorts of intelligence possessed by a particular human being.

Thus people when intercommunicating first of all must know themselves and one another, consider structures of own and other person's intelligence and try to combine them.

It is also necessary to evaluate that the language is important for successful communication. Though Lee and Brosziewski (2009) point

out the language in *utterance* aspect, however, according to Deutscher (2011), the language people of the particular nation speak has had and still makes influence upon their world understanding. In other words, the language – is also the environment influencing for the meanings of the world. Thus, on the one part, the heterogeneity of social system, different experience of its members should enlarge creativeness, on the other part, the people existent in one social system and speaking different languages will face communication difficulties. Thus the influence of internationality upon smart social system still remains the unanswered question and requires further research. It is only evident: in the social system distinguishing in internationality the intensive processes of learning (especially – of languages, as well as of different phenomena, events and so on, of understanding each other, interpretation of symbols' importance, development of tolerance) have to take part. They are more successful if collaborative learning takes place.

Also further research are necessary for the analysis of such important smart social systems as *smart city*, *smart region* and *smart society*. The work of Lee and Brosziewski (2009) has so far brought greater explicitness only to community and organization as smart social system. It is natural that *smart city*, *smart region* and *smart society* are not only social systems of the higher level of organization. These systems co-exist together with the diversity of other – physical and digital – systems. How can these systems influence each other? What relationship of smart city, smart region, and smart society is to learning, knowing, creative city, region, society? In what peculiarities do smart societal systems, which are aimed to solve certain society problems (family, economics, education and so on), distinguish? These are the questions that require the answer.

5. Conclusions

The scope of explaining the concept *smart* is very broad and diverse. Its usage in the practical life and more importantly the different cultural context has made an impact on it. Such diversity can hardly serve in formulating the general conception of smart, but it allows confirming that *smart* is usually attributed to a human being who is intelligent, quick to react to surrounding environment, able to adjust to it by making adequate decisions, is intellectual and creative. Interdisciplinary approach to the scholarly works allows describing a *smart human being* as a person who when communicating with his / her social environment is able to envisage in it critical features or their system, to which he / she quickly

and innovatively reacts by adjusting to this environment with adequate decisions and using it to the attainment of his / her goals.

Smart social system is such system of communications when people, concentrated for their interaction in the borders of their social systems and by the need (especially – to get information and other resources), or to other environments, are able to envisage the features critical to their environment or their system, to which they quickly and innovatively react by adjusting to this environments with adequate decisions and using it to the attainment of their system goals.

Smart social system as a core concept can allow clearly enough to explain conceptions of smart community and smart organization. Smart city, smart region, smart society, smart country, as well as smart societal systems (economics, education and so on) are social systems of higher organization level, where the central axis of each conception is also the conceptions of smart social system. In pursuing for the completeness of the conceptions of smart city, smart region, smart society, smart country, it is necessary to analyze them extensively in the context of other physical and digital systems making these derivatives, as well as the societal systems (economy, education, etc.) characteristic for them. When analyzing the relationship of the latter with smart city, smart region, smart society, smart country, it will be also possible to define particular smart societal systems, i.e., smart economy, smart education, etc.

Acknowledgement

This research is funded by the European Social Fund under the Global Grant measure.

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