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Research Area [D] Innovation and Technological Change

Innovation and business model - how this can fit together: the SyNat case

Introduction

Absolute prerequisite for the development of innovative society should be the conviction to the idea of free access to knowledge and information of the scientific environment (open science) and thus a kind of wisdom and awareness by people serving science and funded by the public. The team gathered around the project SyNat [1] encounters, however, all sorts of problems when trying to build the economic concept of functioning this, on the one hand technological, but on the other hand - social innovation, which triggers and justifies the desire to speak in the debate. In the era of calls for the dissemination and open access to knowledge and information, (which after all is in accordance with the requirements of the knowledge society), with almost unlimited technical possibilities of the implementation of such a goal, the institutional solutions (especially IP) and economic interests become the barrier. The use of the term "business model" creates a clear interpretation: it is expected not only to identify the project leading to profit and growth of the company implementing it, but also *the method of implementation*, including the design of the organization and its management system. Today, this idea of understanding the business is becoming more visible, also because the business practitioners, filled with the ideas of its creation, seek the proposals for concrete actions / solutions / that bring profit. So the question arises, whether SyNat, the platform of knowledge and information currently being built in Poland, and being a kind of technological and social innovation at the same time, should be restricted to the formula of search of Polish science and technology products ? Well, its role in the economy and society should be seen much further, because it will create a kind of a new level in the national system of innovation, combining the results of scientific and research activity (knowledge products) many of its components constituting ultimately interconnected system of rules governing the terms and conditions of storage, sharing and creating new information and knowledge, and its operation is subjected to the quality of ICT. Depending on the role and scope of the SyNat platform activity, a variant of a business model is required for launching the platform. And in the case of the analyzed draft, the following question arose: how to find a consensus between the theoretical regularity of the economic incentive, and the need of open access to knowledge, which results from the challenges of innovation development? The subject of the discussion is to demonstrate that in the present case it is appropriate to use the concept of social

business model of a dynamic character, since the SyNat platform itself is multi-dimensional innovation, strengthening the development of the knowledge society. Despite the assumption of open access to knowledge and scientific information offered by the SyNat platform, one cannot reject the issue of income generation of this kind of innovation activity and seek a hybrid solution, contained in an adequate legal and organizational formula.

1. Open Knowledge Society (including open Science), as an idea of the SyNat platform

The knowledge and its utilization is the non-renewable source which is used by the information society. Access to information, the ability to creatively use the knowledge and the latest technology become the condition of not only mental development, prosperity (thanks to the increasing value of intellectual property), but also the quality of everyday functioning of an individual in society and the economy. The extraordinary of knowledge is the regularity, that its value multiplies when the knowledge is divided. Therefore, the essence of the knowledge society is the conviction of the need for the wider access to education and its achievements both in the context of its dissemination and promotion in the social sense, as the orientation of the science development basing on the prevailing achievements in a given field. Knowledge society is also related to the new economy (knowledge economy), which is the result of successful economic and social changes, such as the high technology (object-oriented databases, artificial intelligence, etc.) development of telecommunications, e-business, Internet, new ways of life (sickness insurance) new styles of work (work at home - future shock, etc.). The core of the changes of the new economy is the economic and social value of non-material resources - the value of the relationship of knowledge and intellectual property. There are few issues more intensely debated than the role of knowledge in modern society, especially its relationship with economic objectives. But in this context, arises the problem of pricing the knowledge (organization's assets or economy), which undeniably is associated with the market, because the knowledge society also recognizes the new reality of business, which determines the need to construct a different and complex accounts (Edvinson, 2001) and which certainly plays a role in shaping views on the matter of open access to knowledge. Anyway, knowledge is in the new economy the central commodity, forcing to its perception in the economic aspect on the one hand, on the other hand, however, in the new economy develops a model of a society characterized by permanent education, the new role of learning, knowledge and information, the overriding role of social capital, application of knowledge in practice, the growing importance of social capital, which is the ground for development of intellectual capital, which is a high capacity for innovation development, without which the knowledge society has limited growth opportunities. Both of

the issues have to find a place in the enterprise business model that describes the flow of knowledge and information.

According to the assumptions of the European Research Area program, which shows that the driving force behind the development is to create a common market of knowledge and scientific information, effective knowledge flow will be possible through the introduction of open access to scientific content not only for academics, but also for any interested social individuals [Green Paper, 2007]. The basis for the activities related to the provision of access to knowledge in Europe is the "Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities", signed in 2003 [The Berlin Declaration, 2005]. Further steps to introduce the issues of Open Access to political debate in Europe resulted in subsequent documents [2] The future plans of European Commission for open access to knowledge were clearly explained in the "Connecting Europe" (Connecting Europe Facility-CEF, 2012), planning significant funds for this purpose in the EU budget for 2014-2020. The main argument of the European Commission to promote open access to knowledge and scientific information is to increase the benefits from the investment of public funds for research and to ensure that the test results obtained in the course of European taxpayer funding became available to the public and available for use with digital infrastructure. The implementation of open access to scientific content is clearly related to changes in digital technology, information technology and telecommunications, in the publishing and sharing of knowledge. Openness in communication is extremely important in science, where new research hypotheses are created, later are verified, and new methods and ideas are implemented. The wider the audience, the more likely the use of knowledge and development stimulation. The increase in the efficiency of knowledge utilization through scientific openness can make it more productive. Openness in research increases the responsibility for research procedures, attention to the reliability of performed activities, compliance to methodologies, accurate reporting and respecting intellectual property. Opening of learning resources increases the visibility of the universities in the world, encourages others to cooperate and stimulates the innovation of researchers. For a scientist, the readership of his work increases, and there is the opportunity to work with so far unknown research centers. This gives measurable, long-term economic benefits in the overall scale, in the form of return on public investment and development. One also cannot ignore the fact that access to the results of research and publications is a key element of equal opportunities to participate in the knowledge society, on the scale of both national and global. The development of new, digital media has enabled significant changes in production models and distribution of scientific knowledge (business models). Scientific publications - which have been the base of science communication so far - have become - just one part of a dynamic process of communication which shapes and develops the new "knowledge communities". Access to knowledge democratizes and opens on an unprecedented scale, affecting both productivity and innovation of research

activity. Conscious participation in these changes is crucial for the development and growth of competitiveness of Polish science. However, in the Polish practice, even in 2005, the institutional conditions of free access to knowledge and information science were evaluated as a facade [Bednarek-Michalska, 2006]. In fact, today, present regulations define the rights of the individual to the created work, not preferring clearly the public interest. In general, the scientific community can be divided into both, open and closed attitude towards open access to knowledge (Okoń-Horodyńska, 2011). What's more, in many cases, it can be stated that the idea of Open Access in Poland is virtually little known - both in academic circles and among relevant state institutions responsible for the development of science and its funding. Public discourse on the availability of scientific knowledge in the network is still dominated by the issues of plagiarism and piracy - the fear of the aforementioned, prevents from noticing the advantages of model based on openness and sharing of scientific publications. For this reason, as well as due to insufficient knowledge of the law, the scientists are reluctant to share their work in digital form. For years, Polish entrepreneurs also say that cooperation with science is a real ordeal, since the mutual ignorance of the results of scientific research and their usefulness in the economy is a fundamental barrier to the development of innovation (GW, 2012). Open access to scientific information could probably partially alleviate this barrier. It is worth noticing the change in the trend in this regard in Poland, as part of the researchers joins the movement for OA, supported today in Europe by the European Research Council, the European Commission experts and the OECD. The result of this activity is to try to create a universal, open repository platform for hosting and communication of networked resources of knowledge for science, education and open knowledge-based society (SyNat).

2. SyNat as a tool for integration of national knowledge resources: the idea and the realization

While digital model of knowledge distribution is not completely unknown in Poland, it only works to a certain extent, by slowly changing the way science is cultivated. At the moment, all the big universities offer their employees and students access - at least partially - to the international database of electronic journals. This access is revolutionizing the working conditions of academic research and education - especially considering the relatively poor condition of library collections in print. This model, however, is largely restricted to foreign publications available electronically in a subscription model - in a similar manner there are not currently available Polish publications. The inaccessibility of Polish papers on the Internet makes it difficult to build a knowledge-based society in Poland and deepens the gap between Polish science, higher education and the global level, which G. Gorzelak (2012) highlighted with the devastating criticism. For the time being, single titles publish the content of particular numbers on their

own websites or make them available through a number of commercial sites. The further development of science in Poland, however, is not possible without a national infrastructure (scientific publications catalog, virtual libraries and repositories, hosting) ensuring a uniform and simple mechanisms to publish, search and retrieval of publications. The National Centre for Research and Development started to fill this gap on 06/04/2009 announcing a competition for the "creation of open repository platform for hosting and communication of networked resources of knowledge for science, education and open knowledge-based society." The lack of competitiveness between the two project proposals reported by two big consortia led to the fact that they started to cooperate on the project, the more that they have focused the subjects with having the majority of Polish resources of knowledge and information. From their experience it can be concluded, that kind of peculiarities, in a negative sense, of the information in Poland are: the extent of the initiatives that have difficulties in completing, so the information is incomplete, the difficulty of re-cataloging and filling catalogs, digitization of certain types of resources, the lack of some features (ILL, remote access), lack of possibility to search even the resources centrally purchased and operated, scattered sources of funding, imitation instead of creating own model of managing the information and cooperation in this regard, quantitative advantage of the public domain materials, underdevelopment of the institutional repositories. The scientific and technical information system proposed by the SyNat project is therefore to ensure the consolidation of scattered and heterogeneous network resources from major Polish academic libraries as well as Polish and foreign Internet resources and research units, access to scientific resources on the network, through an integrated search tool and supply of materials, regardless of their location, size, model, sharing, respecting the ethical and legal rules, is to create a virtual environment of the highest quality research, as well as provide opportunities for communication between users for the purpose of scientific discourse. Although at the moment this idea is not materialized, however, it seems to be the direction to build an important tool supporting the process of utilizing the potential for innovation and development. It is assumed that the integrated system of knowledge and information planned in the SyNat project, including on the one hand, intelligent software, allowing for excellent use of accumulated knowledge, and on the other hand the knowledge excavated from data collected from scattered and heterogeneous sources, domestic and foreign, or entered by the user (digitization and publication), as well as obtained from monitoring the user interaction with the system (stored on the platform repositories), widely available, can induce positive implications in changing the formula of subjects behavior operating in the science and innovation by stimulating creativity base, even for creative adaptation of the technological solutions, economic, and social which are moved to the country from outside.

The proposed SyNat project covers a wide range of tasks of research character, subordinated to the primary objective - the creation of a comprehensive system that will include:

- **Information technology platform**, realizing the overall system utility functions,
- **Application subsystems**, enabling the platform to support a wide range of content resources, ensuring a high level of scalability and interoperability in the international system,
- **Generic subsystems** for integration of new classes of future applications,
- **Subsystem for new models of scientific communication and open knowledge society**, including the dissemination and promotion program aimed at the general public,
- **A set of proposals for legal models** enable the development of new, open models of communication in science, education and the cultural heritage
- **Business model**, ensuring sustainability of the system, as well as considering the possible areas of its commercialization.

Since the beginning of the discussion on the project, a question arose concerning the role the SyNat can play in the Polish innovation system. Should the national platform for information and knowledge, currently being built in Poland, which is a kind of technological and social innovation at the same time be restricted only to the formula of search for Polish science and technology products? Well, its role in the economy and society should be seen much more broadly, as if it would be implemented in accordance with the assumptions of this kind, it can create a new level in the national system of innovation, combining the results of scientific and research activity (product knowledge) of many of its component parts (universities, research individuals, innovative enterprises, educational facilities, etc.), creating ultimately the system of interconnected rules governing the terms and conditions of storage, sharing and creating new information and knowledge, and its operation is subjected to the quality of ICT. The platform should create a virtual research environment with methodological aids, a set of advanced visualization and analysis tools allowing parameterized, multi-level analysis based on data warehouse and methods of artificial intelligence in the process of data and text exploration as well as supporting the digitization and publication. In this sense, the SyNat platform could also be a specific verifier of the quality of research, the basis for ranking organizations and individuals operating in R & D sector, a tool to assess the spread of knowledge about the development of new technologies, a tool in the future organization of science, a base, on which the government formulates and carries out research and innovation policy. As a result, the following two approaches appeared:

- 1) SyNat as a search engine, which is one of the possibilities to access the integrated resources of Polish science (one platform = one search)
- 2) SyNat as national science and innovation platform that enables transparency of financing and management of Polish science, assessing its usefulness in the economy and the community,

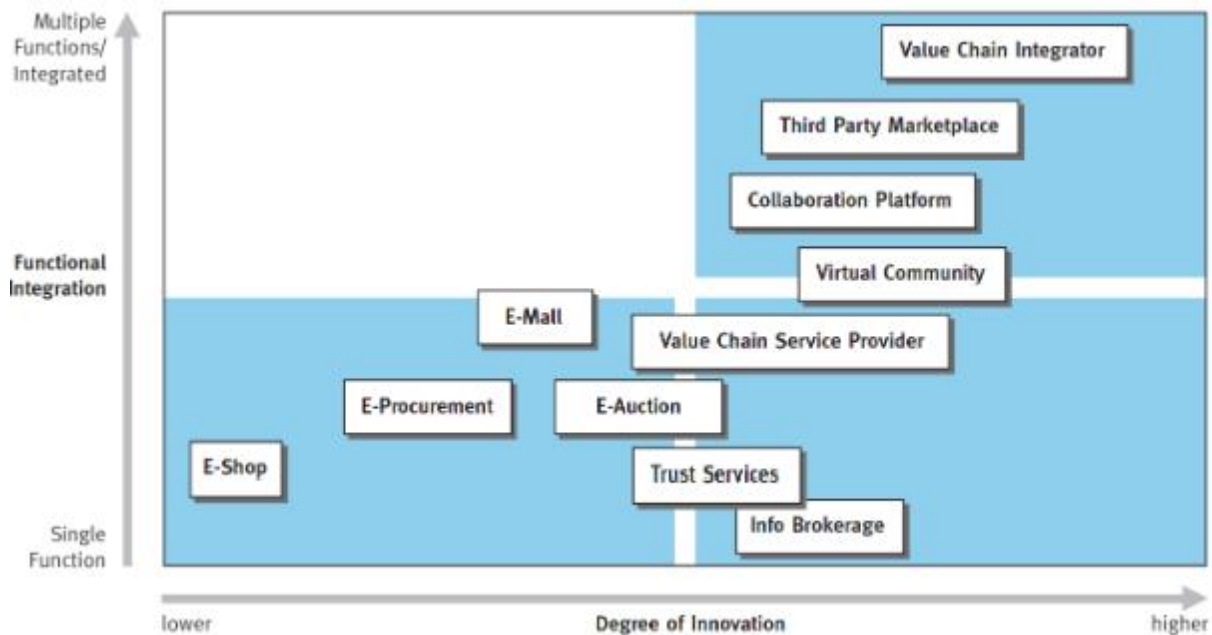
setting new trends in learning to handle and also a tool to introduce the Polish science to the global circuit. It should also be noted that in Poland there is no leading organization that integrates and manages the development of science and its use in the economy.

The adoption of one of the identified approaches defines a path to choose a business model for the proposed innovation project, as the SyNat platform is.

3. The institutional dimension of launching and operating of SyNat - the problem of adequacy of the business model

Regardless of the operating scope of the SyNat platform, a variant of the business model is required in order to run it. Based on the generally accepted internet classification of business models, the proposed SyNat platform is located in the group of models characterized by a higher degree of innovation and comprehensively associates many integrated functions. (Fig. 1)

Figure 1. Classification of Internet business models

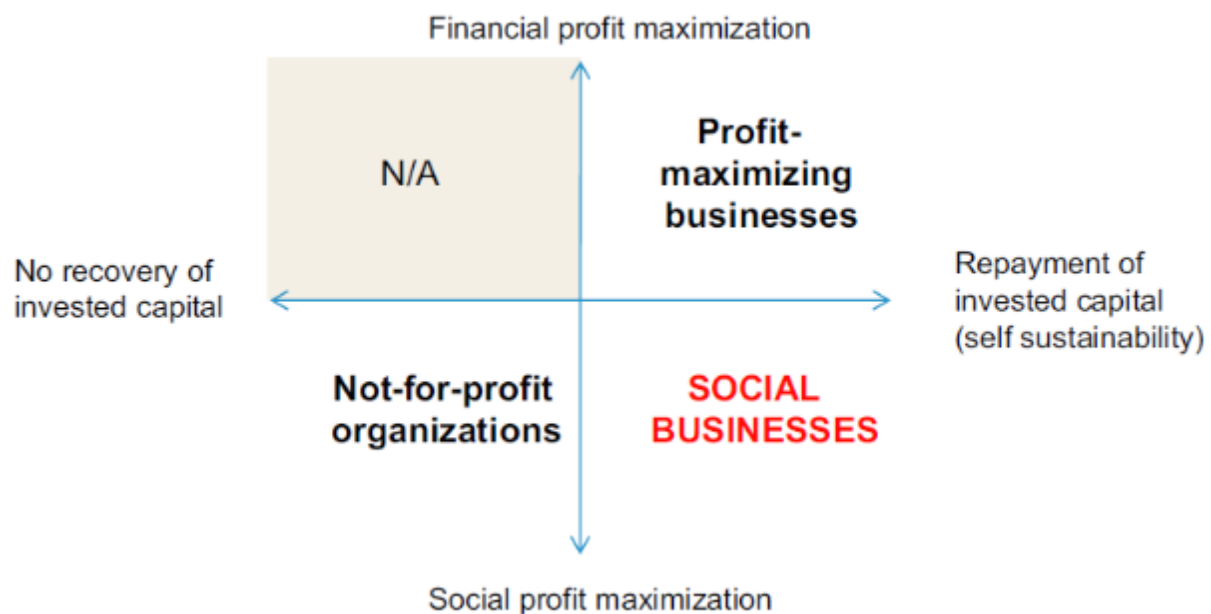


Source: Timmers, P., (1998), Classification of Internet business models, see p. 7.

The idea of creating the SyNat platform was not associated with the business of a profit nature. The validity of the profit motive in the circulation of resources arising in the course of public funds was

rejected. The question arose: how to find a consensus between the theoretical correctness of the economic incentive, and a need of an open access to knowledge, resulting from the challenges of innovation development? The query of the dominant bibliography trend undertaking a business model issue, as well as a comprehensive analysis of the validity of the use of these concepts (Sierotowicz, 2012) leads to the adoption of the concept of social business model for the SyNat platform .The logic of this approach can be set in a special way the proposals of social models of business , such as M. Yunus, B., Moingeon, L., Lehmann - Ortega (2010) and W. Grassela (2012) and the concept of innovation business model A., Najmaei (2011).

Figure 2.The concept of SMB M. Yunus, B., Moingeon and L. Lehmann - Ortega



Source: M. Yunus, Moingeon B. Lehmann - Ortega, L., (2010), Social Business vs.Profit maximizing business and not-for-profit Organisations, p. 310.

The concept of the social model of business (SMB) by M. Yunus, B., Moingeon and L. Lehmann - Ortega (2010) emphasizes that the structure of a non-profit organization is essentially the same as a profit making organization, but its essence is different. However, SMB should be distinguished (Fig. 2), both from the model of charitable organizations that do not provide a return from the invested capital and do not generate income as well as from business model of enterprises focused primarily on generating profit. In SMB, a non-profit organization seeks to maximize the social benefits (non-economic values), (Yunus, Moingeon, Lehmann - Ortega, 2010, p.308-325).The organization focused on the values of a social nature, is defined as a business that has two main tasks:

- 1) maximizing social benefits,

2) ensuring repayment of the invested capital (own maintenance in the long term).

As it can be noticed, despite realizing the mission and tasks focused on social benefits, this kind of organization, known to SMB, must generate a profit to enable the return on funds invested and the maintenance and development of the project in the long term. In comparison to the classical type of entrepreneurial profit organizations, the discussed organization differs in only two aspects:

- a) does not generate profit allocated to stakeholders, besides to return on invested capital,
- b) the mission and efforts are focused on maximizing the social benefits (non-economic).

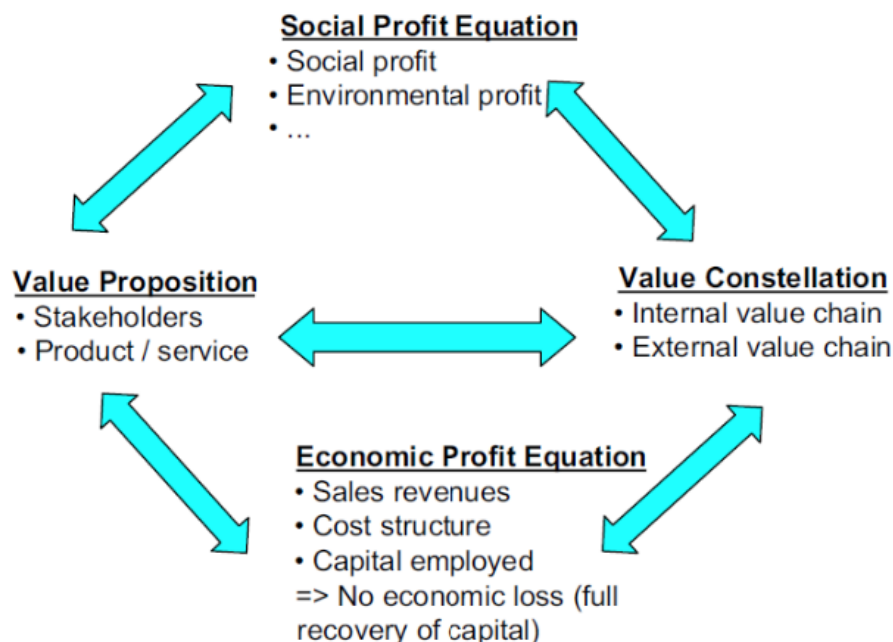
In the other elements, the presented organization does not differ from the classical entrepreneurial activity. An important question that emerges in this context is whether any, and if so, in what way, it is possible to maximize the social benefits by generating social value contained in the knowledge product (science) while generating a profit. It seems that such a combination of entrepreneurial and social role in the activities of one organization significantly narrows the spectrum of the objectives pursued, and thus implies a relatively narrow range of products and services. The main problem is not that this type of organization is some hybrid solution, or that the organization generates a profit, but that it should return the invested capital and ensure the maintenance and development from the generated profits, which means that it fully invested in the organization, and the goal is fundamentally consistent with profit organizations since the condition of their survival is to maintain and develop in the long term. The following characteristics can therefore be attributed to SMB: (Yunus, Moingeon, Lehmann - Ortega, 2010, pp.309-3011)

- focus on generating a value of a social nature,
- generating social value can fill gaps in economy and the knowledge society,
- generating financial profit is not the main goal, (no dividends to shareholders),
- organization operates out of the competition (their goals are social, rather than entrepreneurial, therefore organizations are more likely to learn from each other better practices to achieve these goals and in this way obtain donations)

The second type of organizations specified in this concept (Fig. 2), are non-profit organizations defined as charitable. Such organizations also have a mission and carry out tasks aimed at maximizing social benefits, but unlike the previous forms of organizations, they do not generate profits. Therefore, they are not obliged to return on invested capital, and the continuation and development based on profit generated from running the business. This concept is not of interest to the project SyNat. As it has been demonstrated, social models of business are not identical to the models of charity organizations, because, despite the assumption of open access to information and knowledge on the SyNat platform, the issues related to the generation of profit from this kind of innovation should be justified.

An important question is therefore, how the organization operating on the basis of SMB generates a value (Fig. 3). The investors and partners of the organization participate in the process of generating the value. The value will be delivered to customers (or groups of users) in the form of product and knowledge services. The determination of the value is of course closely related to the determination of the potential audience and estimation of their willingness to support the organization for the delivered products and services. The value that is represented by established products and services is generated in the internal value chain, using resources of the organization and co-operation with partners, which expands the value generation chain to the outside of organization.

Figure 3. The concept of generating social and economic value in the SMB



Source: M. Yunus, Moingeon B. Lehmann - Ortega, L., (2010) The four components of a social business model, p. 319).

In the SMB evaluation area, two components were detailed (Figure 3):

- balance of social benefits (non-economic), including the size of measurable, which allow determining in a calculable way the impact of the offered products and services on social environment,
- the balance of economic benefits, including financial size, allowing for the analysis and assessment of financial flows, including the measurement of generated profit.

It should be noted that the construction of SBM should be treated as a "learning laboratory" constituting an arena where managers involved will face new challenges to their standard knowledge (and wisdom), as the organizations as such in Poland does not exist.

Turning to the concept of W.Grassela (2012), SMB should:

- be driven by a social mission, (which means refraining from distributing profits to shareholders),
- generate positive externalities for society,
- recognize the central role of entrepreneurship,
- take into account the issue of competitiveness.

It is therefore SMB proposal similar to the concept of M. Yunus, B., Moingeon and L. Lehmann-Ortega (2010). The difference is in the recognition of the central role of entrepreneurship and participation of the organization in the competition. In the case of the SyNat platform, at the time of its formation, the problem of competition does not exist, although one cannot predict such a situation in the future. The conception of A., Najmaei is based on the usage of two types of SMB building blocks, namely the two dynamic systems (Fig. 4).

Fig.4.Dynamic approach to SMB

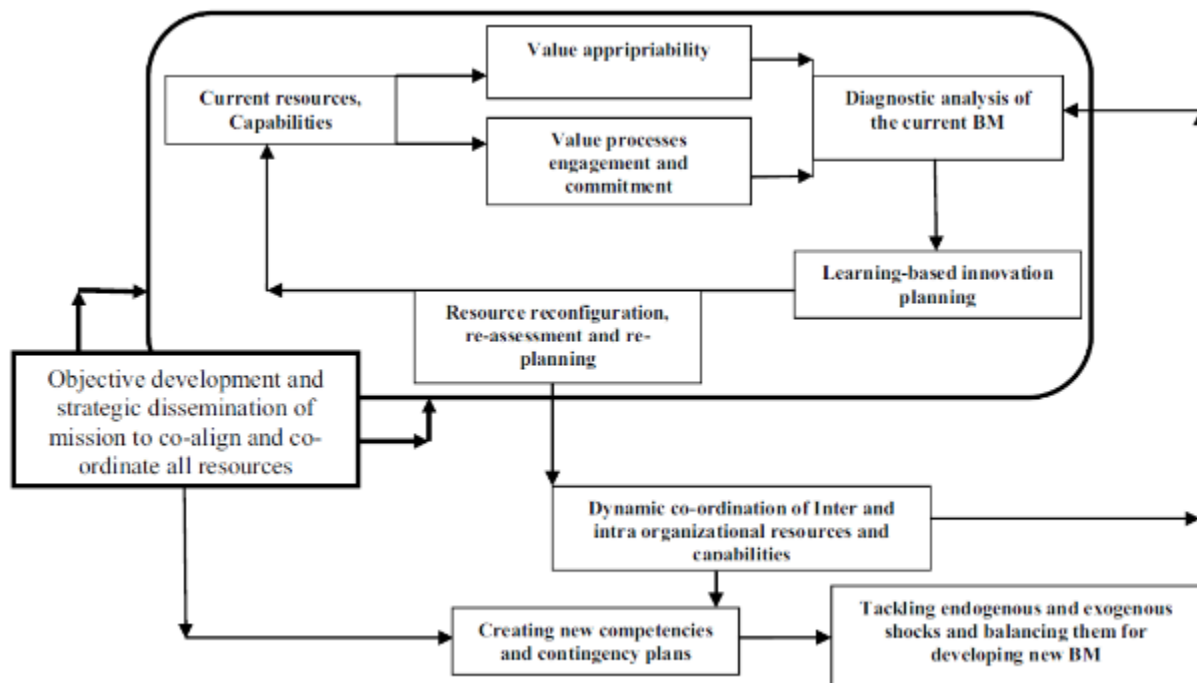


Figure1: dynamic business model innovation: an analytical archetype

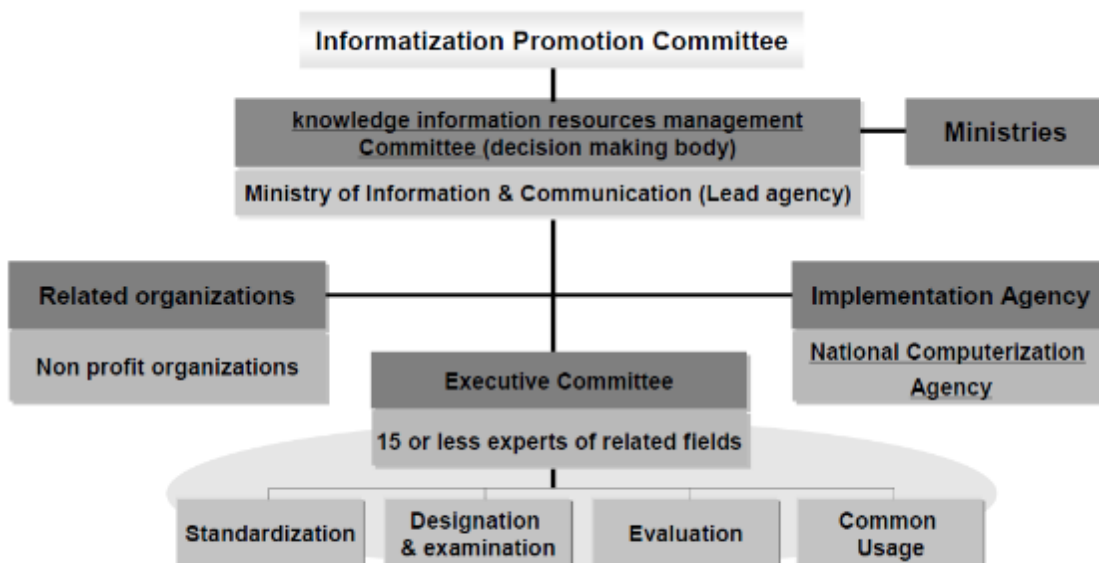
Source: Najmaei A., (2011), Dynamic business model innovation: an analytical archetype, p. 169.

The first one (thicker lines in Figure 4) reflects the possibility of the development and use of resources, which are the result of a rational process of formulating strategic objectives by the management and their implementation, while ensuring coordination and effective dependencies based on internal values, and external relations. Concentration of attention is focused on the dynamic nature of relationship management (relational assets and resources, suppliers, vendors, customers and the elements of the value chain), which in the case of a planned SyNat platform would be very important, because the fundamental assets are the products of knowledge, scientists are the suppliers, and the consumers are on the one hand the scientists, researchers, but on the other hand also students, entrepreneurs, forming specific relationships. The second dynamic system, according to Najmaei is the lasting (routine) evaluation process, reconfiguration of these relationships (defined as cross-compliance) having the form of the diagnostic process. It is carried out in order to create a learning plan aimed at improving the status of existing resources and the development of new strategies of their development or acquisition, which in turn will enable extending the ability to create value based on the data resources in the business model. This part of the business model, for example, would correspond to the demands posed for SyNat platform as a verifier of Polish science and its place in the global system, employee and research units evaluation. Coordination of these two dynamical systems with effective realization of strategic objectives provides the basis for a well-functioning platform for solving internal and external difficulties, undertaking new tasks, developing managerial competencies which enable one to effectively face the challenges of innovative changes of a business model (BM) in an orderly and systematic manner. It is worth noting that the BM during the creation process should be subjected to evolution, supplemented and modified, to eventually obtain a form corresponding to the capacity to implement the aims of the planned organization. Thus, the theoretical concept of BM should be considered as a starting point to build a BM prototype, since in practice, often the same product or service can be produced and delivered basing on a different BM, which also means that the BM cannot be developed once and for all and any proposal of a BM should be treated as one of many solutions. For the proposed SyNat project, the hybrid solution is rather required, which combines the elements of the business model for the enterprise, social business model and innovation business model, which seems to create opportunities for the development of proposals that could satisfy the contradictory, as pointed out earlier, expectations in this regard. As it can be seen, once again, the needs of practice outrun the theoretical concepts.

In the search of right business solution for the SyNat platform, a question arose about the role, which should serve the result of such a significant and even prestigious design-research project. The experience of the Asian example of the solution of open access to knowledge in South Korea (Korea Knowledge Portal), built over the last decade and set on the ubiquitous access to the products and services of knowledge, provided arguments that SyNat should serve as a national platform for Polish science and

innovation that performs more serious tasks (these are discussed in section 2) than just a browser allowing the access to somehow integrated resources of Polish science. The postulated importance of platform named, for example, the National Platform: Polish Knowledge, or Polish Science, or the Platform of Polish Science and Culture (name to be agreed upon) is presented in the following figures. The assumption that is relevant from the business model point of view for a new dimension of the SyNat platform, is the need to treat the platform as a large-scale project of management of the public resources of information and knowledge at the central level rather than a local one. The project must also be closely connected with the process of computerization and digitization of public knowledge and information resources as well as building an electronic exchange system (participation) of various resources, and systematic management of their development (Choi, 2003, p.131). The creation of an integrated system for the exchange of digital information and knowledge resources was and is carried out in South Korea in the form of projects financed from the state budget, and so the social business model is justified, as it is planned to finance the SyNat platform in Poland. In the construction of the Korea Knowledge Portal are involved the ministries responsible for both the development of knowledge products, as well as their technological support, thus the platform is being developed in a product and service way, while acting as a coordinator of the activities associated with the creation and open access to knowledge products. (Fig. 5).

Fig.5. National institutional structure of Korea Knowledge coordination

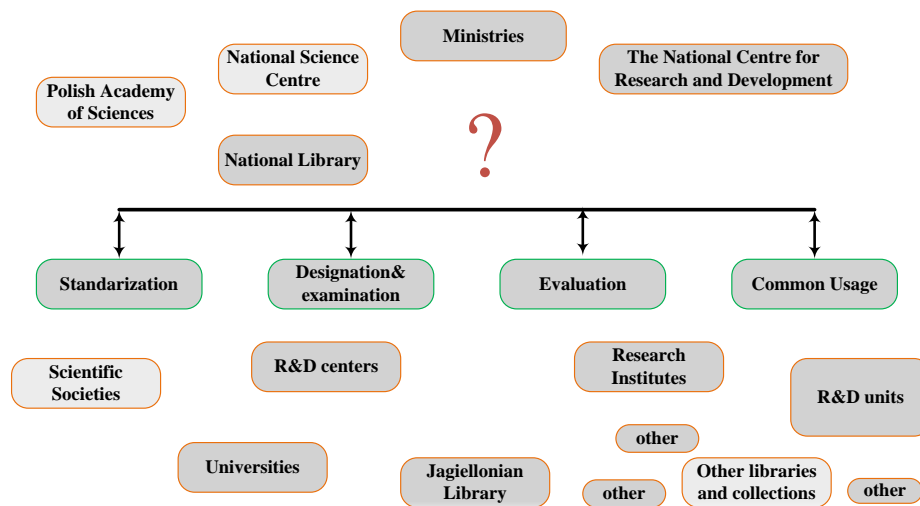


Source: National Computerization Agency, (2004), Korea's Public Knowledge Information Resource Management Project, OECD, p. 7.

The degree of involvement of different organizational structures in building and managing the integrated exchange system of the digital knowledge and information resources is different; the structures of management are highlighted in orange, and the executive in green. Thus, the responsibility and coordination of the development of science and public access to its results is well-defined (the central part of the scheme), hence on the Korea Knowledge Portal access through the block: 'Common Usage' is achieved for all possible knowledge products produced in the country. The portal also provides output information to the global system.

In the Polish structure of knowledge development (Fig. 6) there is not, unfortunately, such an important part which integrates the process of creation, usage and protection of knowledge products.

Figure 6. National institutional structure of coordination of Polish knowledge and information



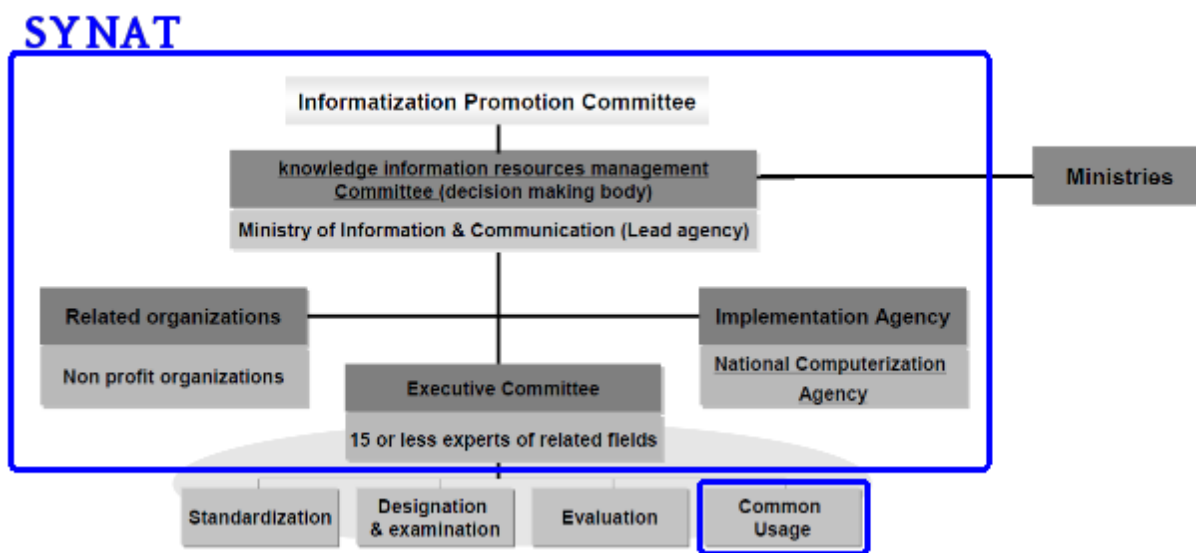
Source: Own work.

In the central part of the system a question mark (?) can be placed. Knowledge resources are located in different places and there is a lack of relationship between them, for example, in Poland there are 80 digital libraries, major universities, or research institutes have their own repositories, various library databases operate separately, Virtual Science library, Scientific Digital Archives, etc. The responsibility for the coordination and development of Polish science and information is scattered, just as its funding - part in the National Science Centre (NSC), part in the National Center for Research and Development (NCRD), part in the Ministry of Science and Higher Education (MSHE) part in the Foundation for Polish Science, and the technological conditioning of distribution of knowledge products located in the Ministry of Digitization only recognizes the problem. In this situation, the implementation of research results to the economy is hampered, because uncoordinated research projects are often duplicated, the repeatedly financed (at different administrative levels, and many research institutes). Access to the products of Polish

science is rather restricted. For example, NSC funds basic research, NCRD funds applied research and implementation projects, but these organizations and how they operate are not coordinated. The relationships between other subjects operating in the process of manufacturing and distribution of knowledge are shaped similarly. For example, the service Polish Science, enabling one to get to the meta data on doctoral dissertations, personal data of Polish scientists or the factual data on national scientific and academic centers have a lot of fundamental flaws. Namely, such as lack of connections with the source documents, bibliographic resources, the lack of English-language version, or poor search "engines" .A reporting of the MSHE projects which has long been implemented in the electronic version, is not available in the Polish Science information system. In the case of domain database there is an information breakdown, the fragmentation of knowledge, poor tools for searching resources and vague codification of databases and resources.

In this context, the implementation of the prestigious SyNat project is a unique opportunity to bridge the institutional and infrastructural gap in the system of creation, dissemination and usage of knowledge and information in Poland, introducing the Polish science to the world on the one hand and taking over the coordination of its development on the other hand. In this model, the dissemination of digital products of knowledge is important, but only one of the tasks (see Figure 7 and 8, block: "Common Usage").Inspired by the proven in practice example of the model of Korea Knowledge Portal, the vision of a new role of the SyNat platform is shown in Figure 7.

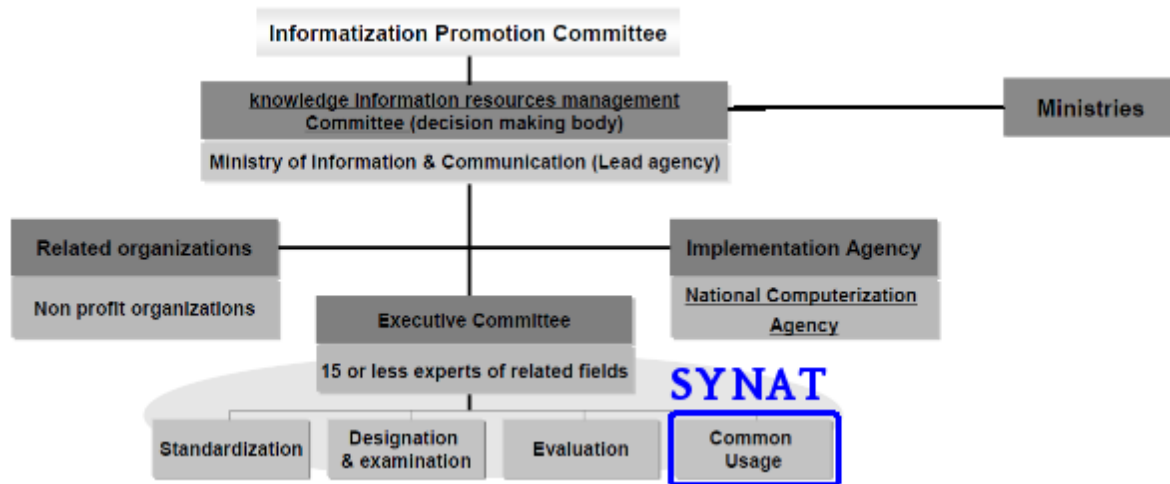
Figure 7. The vision of SyNat platform as the National Platform: Polish Knowledge



Source: Own study based on the model of knowledge coordination in Korea.

SyNat platform could take over the functions circled in blue rectangle, acting as a coordinator and manager of sourcing, processing and distribution of integrated Polish products and services of knowledge, providing open access to them by 'Common Usage' block. Unfortunately, the evolution of the SyNat project, in practice, is heading towards the direction of a major reduction of its role in society and the economy. Instead of leading role of coordinating the Polish science and information, SyNat only takes over one task of the system, namely the dissemination of knowledge and information products in digital form. Still basing on the model example of Korea Knowledge Portal, the function and place of the currently planned SyNat platform can only be located in the 'Common Usage' block (Fig. 8).

Figure 8. The current concept of the role of the SyNat platform in Poland

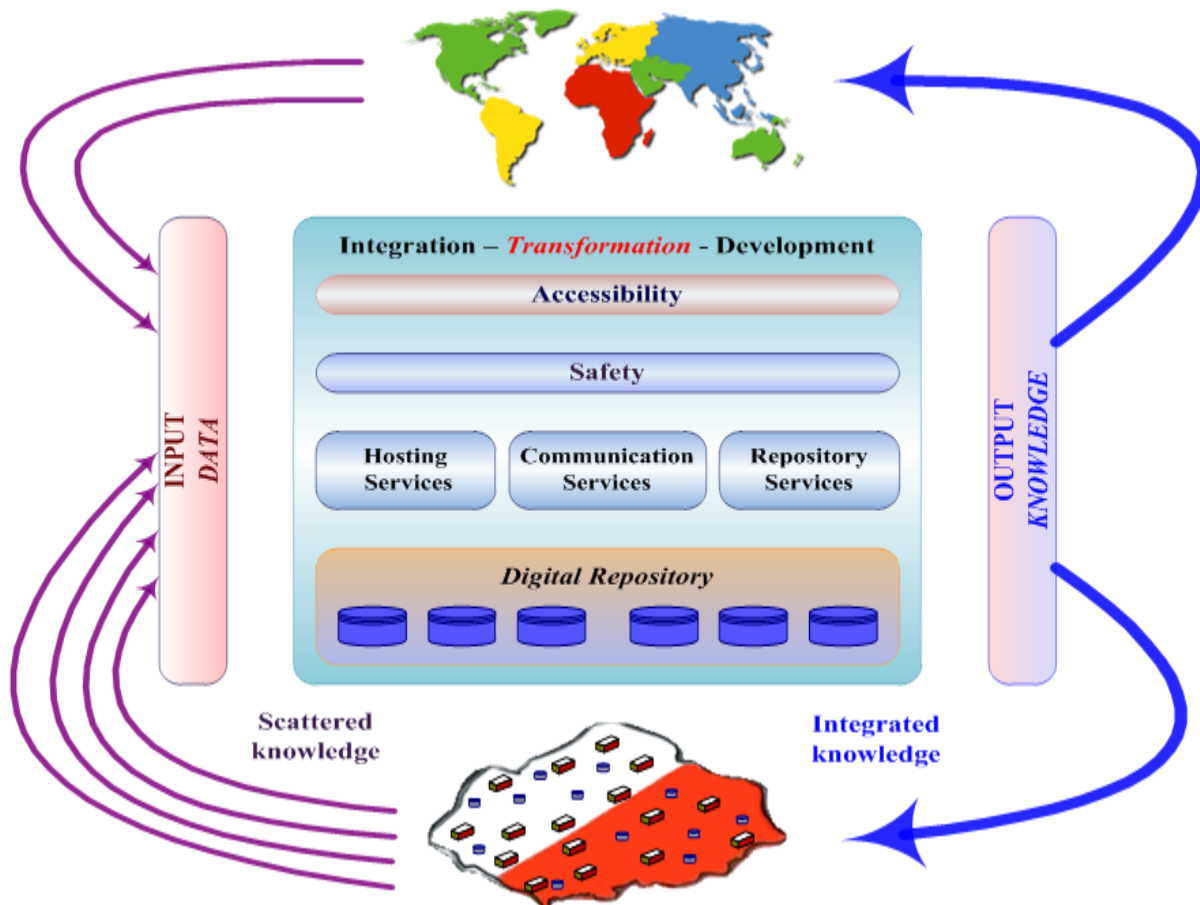


Source: Own work prepared as the research task B6 (2012)

It is assumed that in order to make the Polish science visible to the world - it is necessary to create a repository. Among the skeptics of such a solution, there already raises a doubt as to the advantages of heuristic repositories. There is a risk that the resulting repository will become the freezer of unread articles. This means that the proposed platform cannot be devoid of strict substantial criteria of publishing and collection of the products of knowledge, adherence to the principles of quality, following the intellectual property rights, etc., so-called "filters" set by the coordinator and manager of the development of Polish science who does not exist. Without the aforementioned, the access to the best products in the world of Polish science will be possible still rather only by the influential magazines. So, how to spend the limited public resources in this case? To create the repository, or to build a center for coordinating and managing the development of Polish science? Some partners of the project SyNat favor the second option,

trying to determine the vision and development of the platform (Fig. 9) as well as to build a hybrid business model adequate to operation requirements of the center for coordination of Polish science and information development (fig. 10).

Figure 9. The vision and concept of building the National Platform of Polish Knowledge

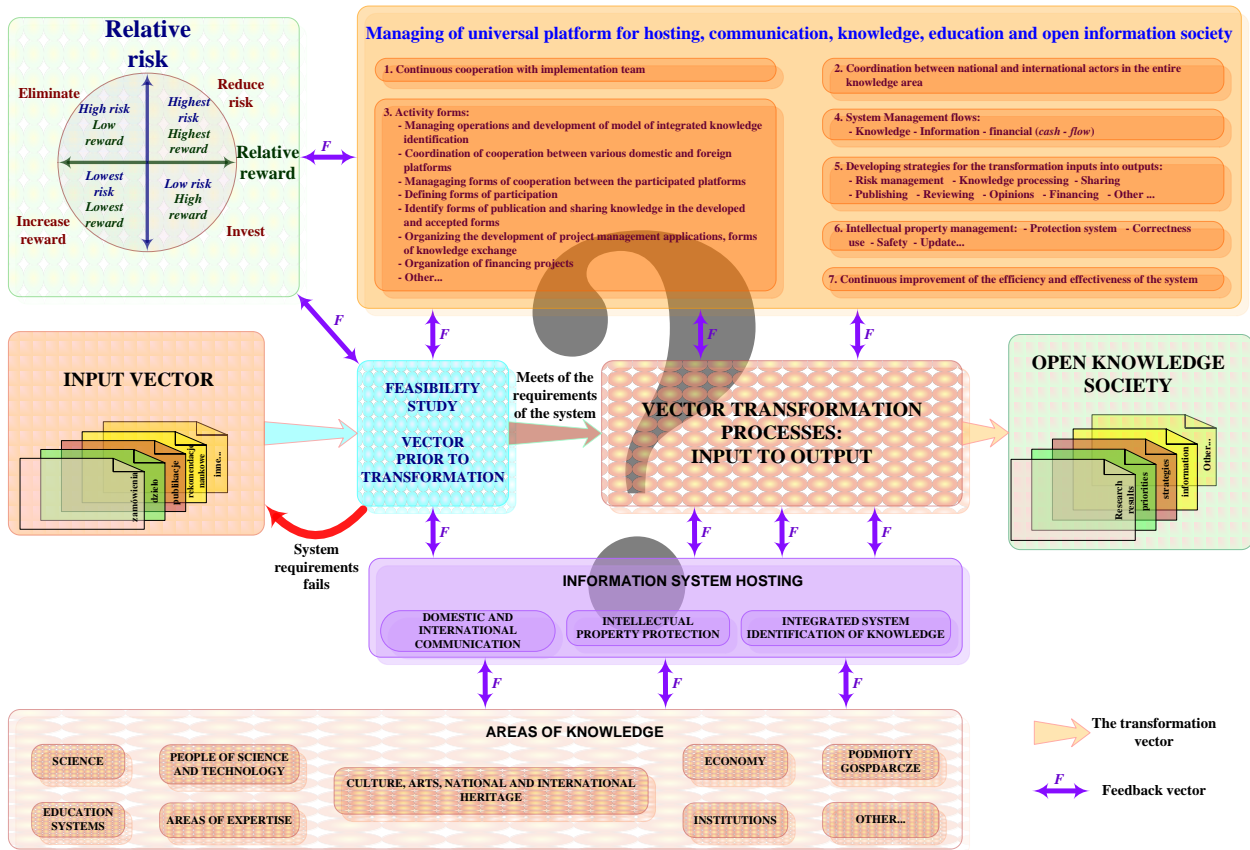


Source: Own work based on the offer to do the research task titled: "The creation of a universal, open repository platform for hosting and communication of networked resources of knowledge for science, education and open knowledge-based society" submitted on the 15th September 2009 to NCRD r, p 288-289.

The concept of creation of the National Platform: Polish Knowledge consists of two basic steps. The first is characterized by the activity that should be focused on the integration of distributed products of Polish science, information and infrastructure resources. In the second stage, the attention must be focused on the one hand on expanding the scale of Polish science products, on the other hand to "connect" the integrated resource of Polish science and information to the global flow. Given the basic roles and functions of the platform, and the results of study researches of different approaches to build a business

model, the already mentioned business model of a hybrid nature was proposed. It is shown in detail in Figure 10.

Figure 10. National Platform: Polish Knowledge - hybrid business model



Source: Own work.

The model consists of five main parts:

- 1) management of the universal knowledge platform,
- 2) risk-management model
- 3) multi-stage and integrated transformation process of the input sizes on the output sizes available for the open knowledge society,
- 4) computer hosting system,
- 5) the area of knowledge, which includes both domestic and international sources to the largest possible extent in all areas of functioning of the society.

Due to the limited scope of the study it is not possible to discuss all the elements of the model, so only a brief comment on two important blocks: platform management and transformation. The management of the universal knowledge platform should be focused on providing substantive, technological and economic development of the entire system of acquisition, processing and distribution of knowledge. The areas of activity in this area are indicated in detail in Figure 10. The management process was closely linked to process of transformation (processing) as a changeable and depending on many factors, which include, among others, type of input quantities (e.g. meta data, order, custom work, publication, scientific recommendations), the types and structure of risk and their levels, the availability scale of knowledge and information products. Depending on the needs related to the transformation of a certain value, the necessary resources, stages and financing methods are defined in the management system. The complexity of the transformation process produces feed-backs conditioning the achievement of a specific output value (e.g., the results of scientific research, the relationship between them, the conclusions and recommendations, concepts, solutions, tools, priorities, strategies, and all sorts of other sources of innovation. Output data are openly available to the public, constitute the increase in its capacity, skills, awareness, thus determine its development.

Finally, the platform SYNAT is an institutional and infrastructural construction process for

- the presentation of the Polish culture heritage (science is a part of it),
- integration of the academic environment, including scientific or administrative
- acceleration of a new stage of socio-economic development, the distinctive feature of which is the global and total range of processes and information systems as well as the possibilities of a global impact on society and the economy through information.

Conclusions

The creation of the SyNat platform can be addressed in two approaches: practical or ambitious. The paper presents both opportunities. Project leaders have chosen a practical approach with the attitude to run the platform fairly quickly. The question is whether such a choice is meaningful in the context of the ambitious goals that could be realized in Poland, by leading to the creation of center for management of the Polish science and its development. In any case, it is necessary to integrate the Polish resources of knowledge and information in electronic form. Failure in this regard - in the event of rapidly increasing amounts of data - will only deepen the dispersion, fragmentation or avoidance of social verification. After one year of realization, the project SyNat can point to certain deficiencies "on input", such as:

- Gaps and repetitions between the projects undertaken by the two consortia,
- The dominance of IT projects,

- The lack of typical in project management moves from arrangements to clarifications,
- Under-determination of the principles of knowledge transfer between consortia / teams
- Reducing the sources of knowledge products acquisition - only three libraries were adopted in the project of integration the Polish knowledge resources: the National Library, The Main Library of the Warsaw University of Technology, Jagiellonian Library with Collegium Medicum library.
- Neither archives nor museums were adopted in the project.

This raises the question of the scale and quality of the integration of Polish science and information resources. It can be answered that at the *start-up* level it is sufficient, but under the condition of continuously joining the other Polish knowledge resources which are gathered and residing still in different locations. Quick inventory and evaluation of these resources is particularly important in a situation of unabated criticism of the quality and outcomes of Polish science. Another argument in favor of starting the SyNat platform even in a truncated formula are undoubtedly emerging challenges in areas related to the creation and use of knowledge. They include the following:

- The need for collaborative analysis of large amounts of data
- "Collective Intelligence"
- Citizen science, participatory, requiring continuous communication,
- Open collaboration, open innovation, open competitions for solutions, *open peer review*,
- Multilateral interaction digitized materials: popularization, increased awareness of the "state of the art", inspiration, the emergence of new scientific communities,
- Announcement of the end of the research paper as a unit of "contribution to science." A growing number of sources creating knowledge and information, such as the use of a blog, forum, wiki, etc., raises a problem of archiving, organizing, evaluating and sharing
- Declining in the unit costs of service of the information recipient.

The creation of the SyNat platform should not raise doubts as to the essence, however, it definitely requires an extensive discussion and socialization of its formation process, as it is a project funded by the taxpayers.

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