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THE INFRASTRUCTURE OF SPATIAL INFORMATION AS AN EXAMPLE OF OPENING PUBLIC SECTOR DATA IN POLAND

Abstract: The subject of this article is the discussion of infrastructure for spatial information as an example of opening public sector data. The main aim of this paper is to identify the concept of opening public data. All areas of public administration activities at the national and local government level are more or less related to the use of spatial data. The article discusses the concepts of: spatial data, spatial information system. The article focuses on the work of the European Union on increasing the integration of spatial information systems. Polish public administration is becoming increasingly aware of the benefits of opening access to public data. This paper presents an enormous value of opening data, which should be disposed of appropriately and properly implement.

Keywords: spatial data, infrastructure for spatial information, public sector information, open data

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Introductory remarks

Public bodies have long since collected and processed information within the framework of the tasks they are realizing. The public sector holds vast quantities of valuable resources in numerous areas, e.g. the data concerning mobility, meteorologic data and economic or financial data. This information can be utilized to develop new and innovative products and services which will benefit society and economy. The challenge is to develop the ability for differentiating such authentic and valuable data from "garbage data" and treating the aforementioned data as a fuel contributing to rapid development of modern economy. Polish public administration is becoming increasingly aware of the benefits of opening access to public data. State data present an enormous value, which should be disposed of appropriately and properly secured. On the grounds of the Resolution of the Council of Ministers dated 24th of September 2014 altering the resolution on adopting development programme "Integrated State Informatization Programme" the currently binding ISIP for years 2014–2022 has been updated. As stipulated in premises of the ISIP by supporting development of digital technologies the state establishes conditions facilitating wide-scale re-use of public data and information from other sources. Access to significant deposits of data is a crucial condition for developing information society (IS) because the quality of IS models is directly dependant on the quantity of data utilized in developing and optimization of the models. As a depository of data the state shall specify the data which qualify as open data.

The concept of opening public data

In 2016 the Ministry of Digitization launched works on "Programme of opening public data", which defines standards for making the data available by the state administration and which influences the greatest possible degree of re-use of public sector information as well as contributes to increasing amount of the data available at the dane.gov.pl website. In order to ensure that the programme is realized it is necessary to implement and propagate the aforementioned standards of public data openness in three aspects: legal, technical (including Application Programming Interface - API) and security.

As of now opening accesss to public data still does not constitute a legal obligation but, as presented in the Integrated State Informatization Programme, the necessity for opening data is indicated as an extremely urgent challenge for Polish administration. The Council of Ministers adopted a draft for the act on open data and re-use of public sector information which was submitted by the contemporary Minister of Digitization. The National Legislator passed an act of 11 August 2021 on open data and the re-use of public sector information. The act adapts regulatons of Polish law to the requirements of the Directive (EU) 2019/1024 of the European Parliament and of the Council of 20 June 2019 on open data and the re-use of public sector information (OJ UE L 172/56). The changes are aimed at increasing the amount of public data, which can be reused and re-purposed. The new regulations are to increase the amount of public data that can be used, for example, for analysis, research or for the purposes of artificial intelligence

solutions, including for business and industry. This solution should positively influence inventiveness of economy and quality of life for the society.

Analysis of global (and European Union) trends also leaves no doubt that opening access to data resources is crucial as a component increasing attractiveness and dynamics of national economy development. Taking into consideration the increase in number of Internet users and entities making use of services provided by the public administration by electronic means we should assume that the society expects that the access to information will expand. The additional benefit for the society is avoiding the costs of wrong decisions made on the grounds of incorrectly issued documents whereas the public administration itself will benefit from the ability to procure from citizens the data and compilations (e.g. annexes to applications for granting a permit) based on credible information which can be further processed and used.

The concept of open data concerns the public data, i.e. the data remaining in possession of public authorities, which were collected for a definite purpose (most frequently in relation to realization of a public task of some sorts) and which constitute a resource which may yield benefits for society when used. Opening public data is a process that, along with the development of new technologies, increases its scope by generating specific requirements (Fisher, 2020). Opening data may be beneficial for public bodies (holders of information) themselves because opening data supports and demonstrates transparency and responsibility of holders and ensures receiving feedback from re-users and end users, which enables the involved public sector body to improve quality of the collected information. In the Communication from the European Commission (COM/2011/0882 final) public data are defined as any information generated and collected by public bodies in the European Union or the data for collecting/developing which the European Union pays. Taking into consideration the criterion of utility of data the public data should be understood as the data which constitute materials which can be used by any person for any purpose, without any restrictions, and which were produced by or are in possession of public sector entities (e.g. statistical data, budget information, parliamentary resources, geographical data, legislation, social and economic indicators, the environmental data, the data concerning public health, education and transport) (Guidelines on Open Government Data for Citizen Engagement, 2013).

Organization for Economic Co-operation and Development (OECD) treats the concept of open government data as a set of policies aimed at promoting transparency, responsibility and developing new values through sharing government data. On the level of definition the departure point is the term data of which terms information and knowledge are derivatives. Public sector information includes information products and services, generated, created, collected, processed, preserved, maintained, disseminated, or funded by or for the government or a public institution, taking into account the legal requirements and restrictions referred to in the last paragraph of the preamble of this Recommendation (OECD, 2008).

Public data is data processed in connection with the implementation of tasks of public administration bodies, regardless of their legal name, i.e. regardless of whether

the subject of access is referred to as data or information (Badowski & Olszewska, 2018, p. 8). In the context of German law, the public data category should primarily. In the light of national government documents the term "public data" should be understood as numbers and individual events or objects on the lowest possible level of aggregation which were not processed by public administration and converted into reports, graphs etc. and which were not put into an appropriate context or interpreted (Program otwierania danych, 2021, p. 8). However, the idea of presenting raw data has its drawback – the data presented out of context adopt primarily a structured numerical form and draw attention of society towards narrow and not necessarily important (although measurable) aspects of a phenomenon and thus such data may undermine trust in authorities instead of reinforcing it. Thus another phenomenon can be observed in relation to opening data – making data available after statistical processing (in the form of reports, graphs, well described and interpreted indicators). On one hand such approach provides users with readily available and easily digestible information, on the other it presents the danger of creating biased reports and statistics which exaggerate or suppress certain phenomena (Pawełoszek, 2014, p. 463). These trends may compliment each other – presentation of processed information which was subjected to calculations or operations on data may be complimented with releasing to the general public the raw data which were not standardized. Opening data results in universal, unlimited and unregulated access to data for everyone and without verifying the accessing party – this, in turn, means that only the data sharing of which will not negatively influence safety of the state or the data which were not granted statutory protection, legal protection or were not classified, unlike personal details, trade secrets etc., qualify for opening (Pawełoszek, 2014, p. 463). Opinions are currently being formed on the UN level claiming that even the data protected under the national security clause (at least the majority of such data) may be of open character. However, under such assumptions the act of qualifying information as classified should take place before determining which data should be recognized as open data. Only personal details should be protected even more absolutely (Guidelines on Open Government Data for Citizen Engagement, 2013), although the fact of the datasets containing personal details not being exempted from open access and only requiring anonymisation (Przemysł+, 2018) is frequently emphasized.

Regulations of Polish law define the requirements data have to meet, primarily in the regulation of Council of Ministers dated 12th of April 2012 on the National Interoperability Framework, the minimal requirements for public registers and exchange of electronic information and the minimal requirements for computerized systems (Journal of Acts of the Republic of Poland 2016, item 113), which, in conjunction with the act on re-use of public sector information, define the general regulations regarding public sector information in the spirit of conformity with the re-use directives.

The direction for opening public authority resources was marked out on the EU level, within the framework of European Commission Guidelines (Commission Notice 2014/C 240/01, p. 1). and the related survey during which participants declared that the most crucial (important) category of data requiring opening are spatial data (which

cover e.g. postal codes), national and local maps (cadastrial, topographic, sea, administrative borders, etc.) and (thirdly) satellite and *in situ* data concerning monitoring weather, quality of soils and water, consumption of energy, emission levels etc. Simultaneously we have to bear in mind that the decision concerning opening data may cover a diverse range of levels of disclosure. The European Commission published on the 19th of February 2020 the "European Strategy for Data" (COM(2020), p. 66). The goal of this strategy is to establish a European dataspace, a uniform data market enabling unrestricted flow of data within the European Union (hereinafter: "the EU") and between sectors, beneficial for businesses, scientific researchers and public administration.

In summary, we must emphasize that opening data in regards to the spatial data concerning environment is desirable and possible but, simultaneously, dependant on meeting specific technological and technical requirements which primarily concern format of data, guarantee of topicality and credibility of data, capacity for making the data available remotely without need for verification of user as well as the guarantee of anonimization of personal details and security of other state secrets.

Spatial information infrastructure

Spatial information is procured, collected, processed, analyzed, maintained, stored, sent, updated and made available through the Geographical Information System – GIS. The Geographical Information System used in Poland stems from the geographic information systems developed in Anglo-Saxon countries, which are well known and were adopted across the entire world. In literature the Geographical Information System is defined as an organized set of computer hardware, software, graphical data and personnel (authors and users) developed in order to efficiently collect, store, process, analyze and made all geographical data available (Kistowski & Iwańska, 1997, p. 9). The basic interpretation of the GIS abbreviation is software allowing the presentation of specific information in a digital form in relation to their spatial position. The development of information systems in the last decade of the twentieth century has extended the definition of including a single user in the group of other users performing spatial analysis operations. Information systems relate not only to the phenomena studied but also to the quality and the manner of receiving the obtained results. Free and Open Source Software is made available on licenses without many restrictions. It allows free use for scientific and commercial purposes. The software can be disseminated, and the obtained results and studies used for profit (Gil & Frąckiewicz, 2019, p. 73). Geographical Information Systems also constitute a tool that is predestined to help local community to be actively involved in decision making processes and at the same time helps municipalities adopt participatory management approach. The main environment for GIS is the Internet. It allow not only for systematic collection of data from citizens and providing them to the appropriate units of the city, but also for all kinds of public participation in shaping the policy of the city – from basic elements such as reporting ideas or problems to the co-decision processes (Ramasubramanian, 2010).

The data collected therein are processed and compiled through application of information and communication technologies. The substantial feature of the GIS is generating complex and synthetic output information through rapid and comprehensive computer analysis of the input data (Linsenbarth & Ney, 1999, p. 174). The GIS is designed to simultaneously function as a database for storing spatial information and a set of tools intended for processing of such data. The goal of the GIS is solving complex planning and organizational problems. The GIS tools should constitute the base for making strategic decisions influencing development of a given territorial unit. Utilizing this tool in the process of making administrative decisions may also constitute an important element of management integration. In order to utilize spatial information efficiently it is pivotal to establish Spatial Data Infrastructure. Spatial Data Infrastructure is a set of appropriate technologies, political and economic means, institutional projects and human resources necessary for efficient collection, sharing and application of geographic data by society on the national, international or global levels. The primary goal of developing a domestic Geographical Information System is making access to spatial data easier for citizens of a given country, public administration units, entrepreneurs, institutions of higher education etc. In legal and organizational terms this task is realized through ensuring that appropriate legal regulations and organizational structures are in place (Gotlib et al., 2006, p. 9). In other words – a GIS is both a database system with capacity for storing spatial reference data as well as a set of tools designed for processing data. A GIS is a system designed for collecting, storing, verifying, integrating, manipulating, analyzing and visualizing spatial data referring to landscape.

In each country of the European Union spatial data have been for many years collected by numerous organization, institutions and offices on both national and regional levels. The European Union legislator indicated significant diversity of formats and structures used to organize and make the spatial data available in the EU as the basic problem. Such state of affairs hindered the process of effectively formulating, implementing, monitoring and assessing the Union legislation directly or indirectly influencing environment and thus steps have been taken to adopt implementing measures facilitating use of spatial data from various sources located in different Member States. Such measures should be utilized with the goal of developing interoperability between spatial datasets and, furthermore, Member States should ensure that all the data or information necessary for reaching the state of interoperability are available under conditions which do not restrict or limit using the data for this purpose (Motif 16 of the INSPIRE directive preamble). In order to facilitate access to the spatial data related to environment and make utilizing such data more efficient it is crucial to realize Directive 2007/2/EC of The European Parliament and of The Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE, OJ EU, 2007, L 108/1). The INSPIRE directive enables comparing the spatial data characterizing European Union countries. Implementation of the INSPIRE directive is to result in increased interest in utilizing spatial data as a tool for managing the broadly understood environment. It is even more

so important owing to frequent use of spatial information in numerous decision-making processes in the field of administration and economy on national, regional and local scale. Collecting comprehensive, complex and cohesive information on the subject of a given region is time consuming and comparing such data between different countries of the European Union is next to impossible because such information is not integrated (harmonized). Therefore a need arose for sorting, standardizing, inventorying and digitizing spatial datasets in possession of the countries comprising the European Union. The INSPIRE directive is based on the spatial data infrastructure of Member States. The INSPIRE directive defines spatial data as "all data referring directly or indirectly to specific location or geographical area" (art. 3, point 2). Within the framework of the INSPIRE directive a geoportal is to be established in each EU country which will enable accessing properly harmonized spatial information infrastructure of each EU country made available in the form of online services, catalogue services, control and monitoring mechanisms and, first and foremost, meta-data which are to be complete and, in terms of quality, sufficient for retrieving, inventorying and utilizing spatial information. Spatial data are divided into groups specified in annexes to the directive and cover coordinates-based reference systems, geo-grid reference systems, geographic names, administrative units, addresses, cadastral parcels, transport networks, hydrography and protected zones. The information regarding these categories of data is to be made available in the first instance. Furthermore these data concern landscape topography, use of land, creating orthoimages, geology and cover: statistical units, buildings, soils, landscape planning, health and safety of people, public utility services and state services, environment monitoring equipment, production and industrial facilities, agri- and agroculture objects, population distribution – demography, land management/restricted access zones/regulation zones and reporting units, natural hazard zones, atmospheric conditions, meteorological and geographic conditions, oceanographic conditions, marine regions, bio-geographic regions, habitats and biotopes, distribution of species, energy resources and mineral resources. The INSPIRE directive requires constant monitoring of its implementation and regular reporting. In accordance with the decision of the European Commission 2009/442/EC dated 5th of June 2009 on the INSPIRE directive (OJ EU L 2009.148.18) the EU Member States are to present to the Commission the information containing listing of spatial data and services annually in order to monitor implementation and utilization of the spatial information infrastructure. In accordance with the decision indicated above reports, including the reports regarding structures coordinating use of the spatial information infrastructure as well as the costs and benefits of implementing the INSPIRE directive, are to be drawn up and submitted by the EU Member States every three years, starting on 2010 (Szpor, 2008, p. 164).

In Poland implementation of the INSPIRE directive proceeds on the grounds of the act on infrastructure and spatial information of 4th of March 2010 (Uniform text: Journal of Acts of the Republic of Poland 2017, item 1382). It concerns all offices, institutions, companies and natural persons, although to a varying degree. The act defines the rules for establishing and using spatial information infrastructure, which is to be understood as spatial data sets described with meta-data and related services,

technical means, processes and procedures, which are applied and made available by leading bodies and other administrative bodies as well as third parties comprising spatial information infrastructure. The rules for establishing and using spatial information infrastructure concern spatial data and meta-data contained within the spatial information infrastructure; spatial data services, interoperability between spatial data sets and spatial data services; joint use of spatial data and cooperation and coordination in the field of spatial information infrastructure. Annex to the act lists 34 topics for spatial data (co-opted from the INSPIRE directive); this list is not exhaustive. The act indicates in art. 9, paragraph 1 the services commonly available by means of electronic communication: search, browsing, downloading, modifying data as well as services enabling launching spatial data services (Compare: art. 11, section 1 of the INSPIRE directive).

Opening spatial data in the context of legal provisions

Despite joining the data opening initiative Poland still remains a party to binding international agreements, particularly to the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, drawn up in Aarhus, Denmark on the 25th of June 1998 (Journal of Acts of the Republic of Poland 2003 no. 78, item 706). Therefore, in relation to the above, the analysis of possibility of opening the resources comprising the broadly understood environmental data should begin with the analysis of the capacity (and possible restrictions) for opening data resulting from international law. Realization of the goals of the convention, which include providing information on the actions concerning environment to the general public, should, according to the opinion of the authors expressed in the preamble, proceed through "use of electronic measures of mass communication as well as electronic and any future forms of communication" and, consequently, each of the Parties to the convention obliged themselves to ensure that the information concerning environment shall be made available, for instance through: undertaking and engaging in practical actions such as: setting up publicly available listings, registers and datasets (art. 5, paragraph 2, point b) and that the information on environment contained in these listings, registers and datasets will be made available free of charge (art. 5, paragraph 2, point c of the Aarhus convention). The premises for establishing electronic databases, registers etc. are specified in further arrangements which were settled upon during meeting of Parties to the Aarhus Convention and which indicate the criteria for satisfying end users of these data by way of distributing information on environment (Report of the Second Meeting of the Parties, Decision II/3 on Electronic Information Tools and the Cleaeing House Mechanism adopted during the II Meeting of the Parties, Almaty, Kazakhstan, 25-27th of May 2005, ECE/MP.PP/2005/2/Add.4, 8th of June 2005, point I.6.).

In the 2005 Decision the Parties agreed that the access to information on environment should be available in electronic form and that the data accessed online should, at minimum, cover contents of legal provisions, plans and programmes

concerning environment, contents of the documentation related to the assessment of influence on the environment as well as the documentation necessary for granting permits and licenses for utilizing natural environment. This decision also projects that the following categories of data will be made available online if possible: environment monitoring data, including spatial attributes, meta-data and information regarding sources of data and (further) data sharing mechanisms (P. II.9 point c, point (vi), P. II.9 point d, points (i-v). Despite the fact of the open data concept not existing at the time of adopting the Aarhus convention the convention itself, as well as the arrangements made during Meeting of the Parties to the Convention, which specify the directions for implementation of Convention's provisions, emphasize importance of the electronic forms of sharing data regarding environment. We should also draw attention to the fact of ensuring that the information on environment will be gradually and automatically made available and distributed among the society (motif 9 of the Directive 2003/4/EC preamble of the European Parliament and of the Council of 28 January 2003 on public access to environmental information and repealing Council Directive 90/313/EEC, OJ L 041, 14/02/2003 P. 0026 – 0032) being turned into one of the principal goals. To this purpose communication and/or electronic technologies should be used in particular (art. 1, point b of the 2003/4 directive) as stated once again in art. 7 of the directive. The tools by means of which these data can be made available should primarily consist of electronic databases which are easily accessible to the public by way of public communication networks. The directive, due to being adopted a decade ago, does not define specific regulations for making the databases containing information on environment available or touch upon the issues of open data but the opinion of the European Commission concerning the latter issue refers to both the information on environment and all the remaining categories of data. It is worth to take note that the European Commission recognizes the initiatives in the field of sharing data in the manner specified in the directive 2003/4 as one of the examples of positive initiatives contributing to the concept of opening resources and wide-spread sharing of data.

Regulations of Polish law refer to opening data in general terms. This fact necessitates reaching for more general regulations which currently consists of the regulations concerning collecting and storing data in the Central Repository, re-use of public sector information and access to information (also permanent remote access for a period of up to 12 months to the resources topicality of which is crucial for applicants) as well as the act on infrastructure and spatial information, which defines the manner in which information of this type is to be collected and mutually exchanged. These regulations jointly form a conglomeration of standards enabling opening resources remaining in possession of public authorities and comprised of information on environment. The aforementioned regulations are complimented with political initiatives, primarily the Public Data Opening Programme discussed herein-above, which specify conditions and rules for opening data. Within the framework of implementation of the Public Data Opening Programme the dane.gov.pl database is being expanded and major public databases are being opened in the form of API. This trend, although merely

in its initial stages, demonstrates the possible importance of open data and services and apps based on open data for the society and economy.

The Water Management Information System (WMIS) is an example of spatial information infrastructure in Poland based on Art. 329 of the act of the 20th of June 2017 – Water Law, (Journal of Laws of the Republic of Poland 2018, item 2268 as amended). It is a major instrument for managing water resources which enables collection, processing, publishing and sharing of the data regarding water economy. The main feature of the water management information system is its multi-tier character which provides access to other information resources which, in turn, enables utilizing data imported from other thematic databases. In this manner, on the basis of proper procedures, the access to up to date data from various sources, uniform reference system and proper application of the data related to water economy in planning and programming social and economic development are ensured. The water management information system has been defined in Water Law as one of the water resources management instruments (art. 11). The primary task of this system is collecting information in regards to water management (art. 329, section 2). However, the role water management information system plays should constitute a starting point for developing subsequent, indirect functionality. A database containing all information related to managing waters should constitute a core of the system and support other water resources management instruments. Ensuring that the information is available and is being distributed is crucial. In this manner the information uniform and coherent in terms of time and location shall contribute to scientific and research endeavours, determining opinions, assessments and ideas in regards to crucial quantitative and qualitative issues of water economy. Provisions of Water Law (art. 330, section 3) also indicate that we should work towards establishing interoperability. Therefore the system should be maintained in a manner which ensures safety of the processed data, oriented at cooperation between the bodies realizing tasks outlined in the act and focused on exchanging information between the entities realizing public tasks (art. 330 section 4, 5). In principle the WMIS was to have a positive influence on the operations of micro, small and medium-sized enterprises. Access to information collected in the water management information system was supposed to facilitate making optimal economic decisions and ensure better conditions for conducting business for entrepreneurs. Therefore introduction of the WMIS seems to address these issues and fulfill premises of the system.

In analysis of the provisions of art 329, section 2, point 20 of Water Law act we may ascertain that the water management information system is being used to collect information regarding water management. As is clear from this provision the legislator intended to integrate the data relating to water management in a single information system. Integrating databases instead of creating separate information and communication systems to service a single-category resource is recommended. Doing so will be consistent with the directions indicated in ISIP for years 2019–2022 according to which interoperability will enable efficient cooperation between institutions in the field of complex administrative processes as well as efficient exchange of information. ISIP

underscores the issues of duplication of data on central, regional and local levels and the problem of data not being re-used to a sufficient degree which result in multiplying expenses on collection of data and information inconsistency. Scattered and uncoordinated management of information resources results in incurring major expenses for developing and maintaining public systems and registers. Ultimately, continuously updated databases, registers and repositories, which will eliminate the need for repeating a set of actions related to realization of daily tasks, are to be developed for the entirety of public administration. The data stored in public systems and registers will allow for systematic and methodical data analysis which will support implementation of public policies and state decision-making system.

Conclusions

In summary, the decision on which data should be made openly available is primarily connected to adopting the premises of gratuitous sharing of data and forfeiting verifying credentials of a person accessing the data, including the purpose of accessing the data. It translates into foregoing licenses determining the purpose of using the data and fees dependant of the purpose of data acquisition (generating profit, education etc.). Only open licenses (e.g. Creative Commons Zero – CC0) are acceptable in relation to opening data. Secondly, opening data requires applying technical solutions for visualizing data in a manner which enables machine reading as well as using open formats and Uniform Resource Identifier (URI) in order to enable searching for and combining data for the purpose of providing context. An additional recommendation for opening data resources is developing the openness policy – the policy of open data defining the purpose of opening data, specifying which categories of data should be open and providing the rules for re-use within the framework of an organization (Ministerstwo Cyfryzacji, 2018).

Results of the surveying conducted by the European Commission also demonstrate that spatial information on environment is one of the principle categories of data which users wish were opened. In national regulations the extent to which the data are being opened has been left up to the holder of the data; however, we should bear in mind that the decision regarding opening data resources must be preceded with the assessment of what holder of data can and is willing to make available – frequently we can observe the top-down approach to sharing data, which means that only the data which the administration is willing to make available, which may not necessarily correspond with the demands and requirements of persons interested in the data, are being opened (OECD, 2015). Another problem plaguing process of data opening is use of non-searchable, closed-access formats (e.g. PDF format for text and numerical data), inadequate preparation of data for sharing (e.g. not restructuring data files, not preparing data sheets in the coma-separated values (CSV) standard, not verifying or cleansing data) as well as lack of descriptors for sources, including meta-data, and improper selection of keywords etc. (Ministerstwo Cyfryzacji, 2018). All the above factors mean that the data cannot be released on the grounds of a spontaneous decision

of an organization but instead releasing the data requires significant organizational (data sharing policy), legal (determining the extent of statutory protected data) and technical preparatory work in order to overcome the aforementioned obstacles for data opening. Simultaneously, should such a decision be made, it is possible to open data resources through use of an appropriate platform.

Opening data – legal under the law and technologically feasible – undeniably presents a challenge for public authorities. It requires from the entities engaged in the process of opening data to make a decision concerning which categories of data should be made openly available under open licenses. We may assume that such data include the data for opening which petitioners apply the most frequently – turning such data into open data will result in significant time savings among employees of public bodies. Furthermore it may be the data which a public body already possesses in electronic form – under the condition that such data are credible, up to date and complete – only then releasing such data may yield benefits for information society. It is also imperative to release only such data which were verified in terms of protection of basic values, such as protection of state security, trade secrets, personal details etc., prior to being made available. Furthermore, it is important to ensure that the released data are recorded in formats which ensure the possibility of further use (open formats , formats suitable for machine reading) and allow for utilizing the data in developing services, products or applications and that the released data are generating benefits for society and economy. The decision-making process concerning the subject of making data openly available, apart from the general guidelines indicated herein-above, should also take into consideration the circumstances related to the technical capacity of the entity holding the data for making the data available. The issue which requires making a decision on a strategic organizational level is determining how often open data should be updated. It may be assumed that in the case of long-term and strategic documents the data should be updated e.g. annually, monthly or automatically whenever entering new data and updating existing data results in changes in the data contained within the system. Data updates may also be dependent on the character of the information, e.g. as it is in the case of spatial data concerning water management where the data regarding bathing beaches are updated once per season, before the launch of holiday season.

The above recommendations do not cover immediate release of data but, nevertheless, they signal a certain form of hierarchy for releasing data dependant on various factors which should be taken into complex consideration when public sector data are being released.

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