

OPEN DATA IN SPORT ACTIVITIES

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SUMMARY

Open data is a new concept in the development of e-government. It stands for a public sector information which is available for distribution and usage without any restrictions. In this paper we address the existing initiatives regarding publication of data related to the sport and physical education and present the analysis of the current state in this area. Moreover, we present the ways how open government data can be exploited in light of improvement of physical education and health with usage of modern information technology tools. We will show how providing access to any information on sport activities, especially through open government data, will continue to empower citizens and every stakeholders with modern applications in this area. Furthermore, we reveal the potential of open data for this purpose, emphasizing the possibilities that can be fulfilled by their utilization through attracting and motivating all relevant stakeholders.

Key words: open data, sport, activities, recreation

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INTRODUCTION

Open data as key pillar of open government concept are a new currency for the digital world and lifeblood of the knowledge economy as well as unavoidable ingredient of applications based on these data. They can be of different type, such as weather data, road and other transport data, official registers, geospatial data, health data and etc. [1]. Moreover, motivated by a political or social agenda, hobby, academic exercise, or pure altruism to advance public good, open data leads to the creation of work opportunities, creation of new jobs and improvement of every day life of every citizen. As an unavoidable factor in the

development of open innovation strategies by connecting different pieces of knowledge or innovation components, without them it will be challenging for contemporary innovation to thrive.

Modern society in which we live and which is shaped by innovative digital technologies, goes toward theoretical assumptions and concepts that are in a permanent state of significant transformation [2]. Not to forget that technology, i.e. especially information technology has become an integral part of sport. The purpose of this paper was to explore and present the application of open data in sport and physical activities in Serbia and widely. Our primary aim is to review the portal of open data in Serbia and around the world and its utilization of developing contemporary applications related with sport and physical activities, recreation and similar activities.

SERBIAN OPEN DATA PORTAL

The Serbian Open Data Portal (data.gov.rs) is a place where datasets of open data in the ownership of government agencies of the Republic of Serbia are published (which includes government administration bodies, local governments, as well as regulatory bodies, institutions and utility companies and others).

The open data portal is designed not only as a repository of open data of state authorities, but also as a place of interaction with the community that uses open data. In addition to the possibility of a comprehensive search of published data sets, the portal offers users the possibility of monitoring the activities of government agencies that publish data, as well as the possibility of discussing about the published data. The contents of the portal are available to developers through an application programming interface (API). Also, on the portal, interested visitors are enabled to gain insight into the potential of open data, through the presentation of concrete examples of the use of published data sets - whether it is mobile or web applications which use open data, various visualizations, maps or other forms of reuse [3].

Comprehensive support for the data opening process in Serbia is provided by the United Nations Development Program (UNDP), through the "Open data - open opportunities" project. This project is implemented with the support of the World Bank, the Government of Great Britain as part of the Good Governance Fund (GGF) and the Swedish Agency for International Development and Cooperation (SIDA).

ANALYSIS OF OPEN DATA ABOUT SPORT ACTIVITIES

In this section of the paper, we provide analysis of open data published on Serbian national open data portal which are related with sport activities. In

general, as we can see from Figure 1., there are 2046 datasets in total which are published, 6106 resources inside this datasets that actually contains data in line with 38 examples how this data are utilized.

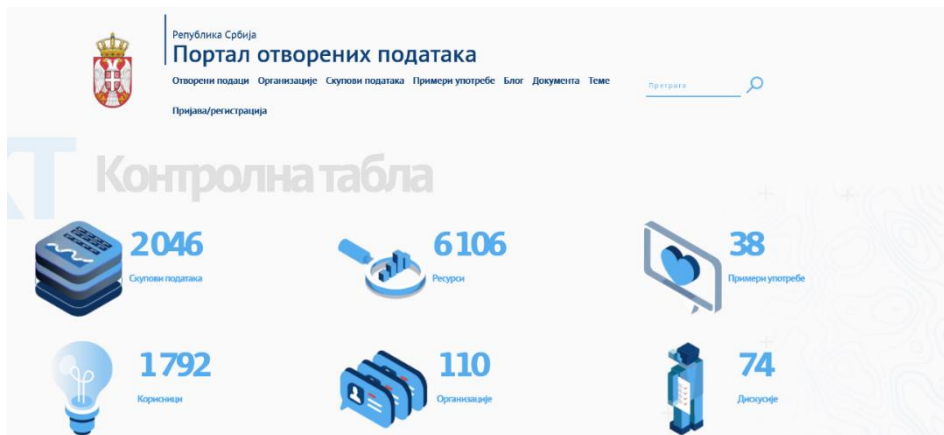


Fig. 1 Statistics about data.gov.rs

Table 1 given below, provides detailed insight into the open data published in Serbia related with sport activities. We have applied given tags in search of open data portal in order to check how many datasets contains it. Although that there is no high number of published datasets in comparison with other world portals (for example, France, Great Britain, Germany), we can notice orientation of government agencies to publish data about sport activities. Ratio of number of datasets which are published in categories that we defined, in regard with total number of published datasets is 2%. This ratio of data is not very high, but published open data can be further exploited in process of extraction new useful knowledge and information.

Table 1. Results of assessments about data.gov.rs

Tag	Number of datasets
sport	37
physical education	1
recreation	1
public health	2

In order to obtain better overview on topic we are researching, in Table 2. we give results of analysis of open data portals around the world conducted in the same way as for Serbia. Not all open data portals publishes data about sport activities. We must also mention that we analyzed portals of various levels, by

which we mean that we analyzed not only national portals, but also city and regional level open data portals. Presented assessment results, tell us that huge potential of open data in area of sport activities is not yet fully exploited. Moreover, if these data is combined crosswise with other types of open data, new useful information can be obtained from them [4].

Table 2. Results of assessments for selected world open data portals

Portal	Total	Sport	Physical education	Recreation	Public health
https://dados.gov.pt	5686	102	3	6	11
https://data.public.lu	1740	31	1	2	3
https://www.data.gouv.fr	45705	823	22	45	91
https://ckan.publishing.service.gov.uk	52760	950	26	52	106
https://open.canada.ca/data	34038	613	17	33	68
https://ckan.opendata.swiss	7774	140	4	8	16
https://datos.gob.mx/busca	9515	171	5	9	19
https://data.go.th	7912	142	4	8	16
https://data.gov.au	13508	243	7	13	27
https://www.govdata.de/ckan	62812	1131	31	61	126
https://open.africa	6798	122	3	7	14
https://data.gov.ie	14435	260	7	14	29
https://data.humdata.org	33558	604	16	33	67
https://data.gov.ro	3038	55	1	3	6
https://data.gov.sk	2939	53	1	3	6
https://dados.gov.br	13685	246	7	13	27
https://data.buenosaires.gob.ar	430	8	0	0	1
http://opendata.hu	69	1	0	0	0
https://data.gov.gh	315	6	0	0	1
https://data.city.kyoto.lg.jp	630	11	0	1	1
https://data.gov.jm	32	1	0	0	0
https://dadesobertes.diba.cat	83	1	0	0	0
https://opendata.by	229	4	0	0	0
http://data.mmr.cz	43	1	0	0	0
https://dati.gov.it/opendata	56296	1013	28	55	113
https://data.cambridgeshireinsight.org.uk	234	4	0	0	0
https://opendata.transport.nsw.gov.au	216	4	0	0	0
https://datosabiertos.rosario.gob.ar	250	5	0	0	1
https://data.nicva.org	190	3	0	0	0
https://opendata.bonn.de	329	6	0	0	1
https://dati.comune.genova.it	141	3	0	0	0
https://data.louisvilleky.gov	300	5	0	0	1
https://data.gov.sa/Data/en	6418	116	3	6	13
https://data.edmonton.ca	2457	44	1	2	5
https://data.cityofnewyork.us	3579	64	2	4	7
https://www.dati.lombardia.it	5635	101	3	6	11

https://data.texas.gov	5932	107	3	6	12
https://data.honolulu.gov	321	6	0	0	1
https://cohesiondata.ec.europa.eu	1171	21	1	1	2
http://www.datos.gov.co	10000	180	5	10	20
https://healthdata.gov	4388	79	2	4	9
http://www.pivcide.pr	70	1	0	0	0
http://data.usaid.gov	1556	28	1	2	3
http://data.sfgov.org	1083	19	1	1	2
http://citydata.mesaaz.gov	967	17	0	1	2
http://data.cincinnati-oh.gov	158	3	0	0	0
http://data.novascotia.ca	1132	20	1	1	2
http://www.data.act.gov.au	1133	20	1	1	2
https://public.opendatasoft.com	616	11	0	1	1
https://data.explore.star.fr	41	1	0	0	0
https://data.laregion.fr	1600	29	1	2	3
https://www.data.corsica	519	9	0	1	1
https://opendata.vancouver.ca	182	3	0	0	0
https://ressources.data.sncf.com	215	4	0	0	0
https://opendata.wuerzburg.de	116	2	0	0	0
https://opendata.comune.bologna.it	606	11	0	1	1
https://data.gouv.nc	143	3	0	0	0
https://transparencia.sns.gov.pt	156	3	0	0	0
https://data.education.gouv.fr	92	2	0	0	0
https://opendata.bristol.gov.uk	237	4	0	0	0
https://data.leicester.gov.uk	213	4	0	0	0
https://data.montreuil.fr	156	3	0	0	0
https://data.bs.ch	179	3	0	0	0

APPLICATIONS BASED ON OPEN DATA ABOUT SPORT ACTIVITIES

Software applications developed by using open data as its main ingredient help people to be informed about decisions that affects its everyday life activities. Mostly, this applications is developed by civic engagement offering innovative, transparent and contemporary applications [5] with aim to equip citizens with smart solutions. Moreover, these apps can provide citizens with high-quality information on sport, physical activity and active recreation. The ongoing potential of open data in physical activity area result in further opportunity for information professionals, for its collection and interpretation with their skills [6]. If data are not managed effectively, then they add little value to their sporting success [7, 8]. The goal of this section is to give an overview of the software applications developed on the basis of open data.

“SAFE PATHS IN BOR (SERBIA)”

This application (<https://bor.sigurnestaze.com>), which thanks to open data on traffic accidents, guides elementary and high school students from Bor to the safest way to school, is definitely one of the exemplary solutions of using open data for a safer life in the city. The application suggests to users a route from point A to point B that bypasses critical locations, such as those without adequate traffic signals where traffic accidents are frequent. The interactivity of the application allows citizens to further improve it by filling out a short and simple questionnaire to describe the problems they see in the school zone, attach a photo and propose solutions, such as installing traffic lights.

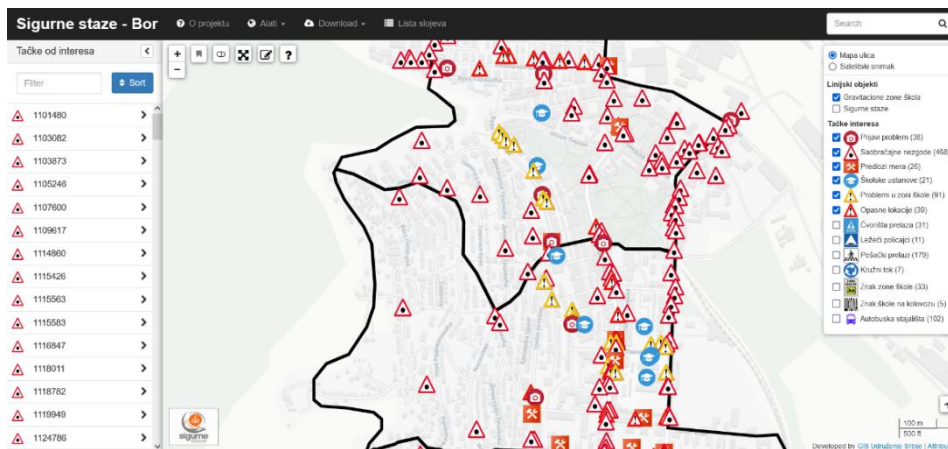


Fig. 2 Safe paths in Bor

“MOVE SUSTAINABLY - PINE ON TWO WHEELS (SERBIA)”

The goal of the project (<https://www.mobilitybor.com/>) is to improve traffic safety, the environment and the accessibility of traffic infrastructure for all traffic participants with a special emphasis on cyclists in the territory of the city of Bor, through the creation of the innovative GIS platform “BiciBor”. The mobile and web GIS application “BiciBor” enables citizens to view, enter and edit data, which gives all citizens of Bor the opportunity to mark locations on the map, add photos, post a description and give their suggestions in order to improve the traffic infrastructure for cyclists on in the territory of the city of Bor. With this project, through the concept of “Public Advocacy”, developer goal is to influence the decision-makers and system creators in the City Administration so that the city of Bor receives a “Sustainable Urban Mobility Plan” and to change the “Decision on the technical regulation of traffic on the territory of the city of Bor”.

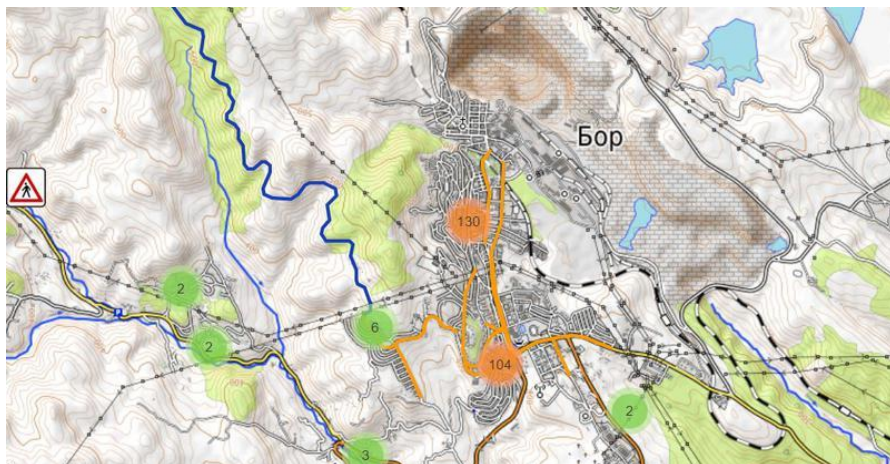


Fig. 3 Move sustainably - Pine on two wheels

“ACCESSIBILITY MAP (SERBIA)”

It represents a kind of interactive platform (<https://mapapristupacnosti.rs/>), which means that citizens are enabled to edit it themselves. They can report inaccessible places by marking the locations on a map, with descriptions and attached photos, as well as suggest interventions, such as installing ramps or lowering curbs that would make a particular location more accessible for people with disabilities. In this way, people with disabilities are enabled to actively participate in the urban development of the city according to their own measure, and with the popularization of the application, their problems become more visible to their fellow citizens, as well as to those who make decisions about the development of the city.

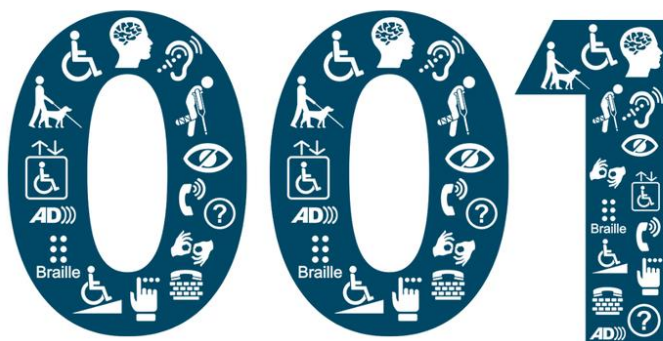


Fig. 4 Accessibility map

“TERRAINCURE TELEHEALTH APP (LITHUANIA)”

Terraincure (<https://www.terraincure.com>) is an initiative that maps out hiking routes, which are suited for patients recovering from COVID-19, in a clean environments worldwide. Around 30% of recovered COVID-19 patients are subsequently diagnosed with respiratory disorders, and 10% with circulatory disorders. By walking on rough terrain with gradual increases in distance and elevation, ideally in an environment unaffected by pollution, the circulatory and respiratory system can be rehabilitated and strengthened. Terraincure makes use of Sentinel-5 data and images from Sentinel-2, both of which are satellites of the European Commission’s Earth Observation Programme: Copernicus. Data collected under this programme is freely and openly available for anyone.

“IMIN (UNITED KINGDOM)”

Imin (<https://medium.com/imin-ltd/>) is a social good technology company that aggregates open data about physical activity opportunities. The application provides APIs for companies and developers to build the next generation of engaging digital health and wellness applications that help people be more physically active. Imin aggregates open data about physical activity opportunities – such as empty squash courts and yoga class spaces – and provides a suite of APIs for organizations to build the next generation of engaging digital health and wellness applications designed to help people be more physically active.

“DUBLINDASHBOARD (IRELAND)”

Dublinked (<https://www.dublindashboard.ie/pages/index>) is the open data portal for the city of Dublin. On the website, users can download data on, among others, transport, energy and the environment, public health and recreation. However, Dublinked only provides plain datasets and therefore DublinDashboard was founded. The Dashboard uses the data from Dublinked, but also from other open data sources (Eurostat, Central Statistics Office), to make visualisations that are easily understandable for its citizens. For example, it shows the air quality of several places on the map of Dublin. DublinDashboard uses open data from the open data portal of Dublin and combines this with other open data sources, such as Eurostat and Central Statistics Office.

CONCLUSION

Sport activities can shape and inspire the contemporary life of many people. Therefore, providing access to any information on sport activities, especially

through open government data, will continue to empower citizens and every stakeholders with modern applications in this area. Research presented in this paper reveals the potential of open data for this purpose, emphasizing the possibilities that can be fulfilled by their utilization. Moreover, open data can be a powerful tool to support physical activities in the long-term by promoting a healthy lifestyle and should be an attractive and motivating for all citizens. Nevertheless, the results of this research indicate that software applications developed on the basis of open data can influence on the motivation of citizens, pupils, students to use these software applications to plan their physical activity, increase health in order to prevent diseases of civilization.

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