

# Survey of Open Data in Judicial Systems

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**Abstract** — Judicial data is often poorly published or not published at all. It is also missing from datasets considered for evaluation by open data evaluation methods. Nevertheless, data about courts and judges is also data of public interest since it can reveal the quality of their work. Transparency of judicial data has an important role in increasing public trust in the judiciary and in the fight against corruption. However, it also carries some risks, such as publication of sensitive personal data, which need to be addressed.

**Keywords** — open data, judiciary

## I. INTRODUCTION

Transparency of government data gives citizens an insight into how government works. Access to government data is a subject of public interest because its actions affect public in many ways. It is facilitated by widespread use of Internet and rapid development of information technologies. On the other hand, personal data is sometimes part of government data and it is in citizens' best interest to protect their privacy. These opposing expectations make the publishing of such data difficult, especially in judiciary where a considerable amount of personal data is present. In this paper, we will present different aspects of open data in judiciary: from definitions of basic terms, through licenses of published open government data, to specifying typical judicial datasets. Also, some general approaches for opening government data will be presented in the context of judicial data while some current achievements in this field will be discussed.

In [1] definitions of some elementary terms relevant to open government data are given. The term *data* denotes unprocessed atomic statements of facts. Data becomes information when it is structured and presented as useful and relevant for a particular purpose. The term *open data* represents data that can be freely accessed, used, modified and shared by anyone for any purpose with the requirement to provide attribution and share-alike. Open data defined by [2] has two requirements, to be legally open and technically open. Legally open data is available if appropriate license permits anyone to freely access, reuse and redistribute it. Technically open data is available in a machine-readable and bulk form for no more than reproduction cost. The machine-readable form is structured and assumes automatic reading and processing of data by computer. Data is available in bulk when complete dataset can be downloaded by the user. The term open government data is then defined as data produced or commissioned by government bodies (or entities controlled by the government) that anyone can freely use, reuse and redistribute. [3]

In December 2007, a working group consisting of 30 experts interested in open government, proposed the set of eight principles required for government data to be

considered open [4]: complete (all public data need to be available), primary (collecting data at its source, unmodified and with the highest level of granularity), timely (to preserve the value of the data), accessible (available to the widest range of users and for the widest range of purposes), machine processable (data structure allows automated processing), non-discriminatory (available to anyone with no need for registration), non-proprietary (format of data not dependable on any entity), and license-free (availability of data is not licensed by any copyright, patent, trademark or trade secret regulation except when reasonable privacy, security and privilege restrictions are needed).

Besides these eight principles, seven additional principles are given: online and free, permanent, trusted, a presumption of openness, documented, safe to open, and designed with public input.

Considering legal openness, besides availability of government data (in the sense of technical openness), it is necessary to specify license under which the data are published. Unfortunately, at government websites, the information about the license is often omitted. In [5], three licensing types of published government data are recognized: case-by-case (licensing is present when published data are subject of copyright and other rights, but permission to reuse these data is given on a case-by-case basis), re-use permitted / automatic licenses (corresponds to cases when copyright and other rights are given by license terms and conditions or another legal statement, while re-use by the public is permitted), and public domain (licensing exempts documents and datasets from copyright or dedicates them to the public domain with no restrictions on public reuse).

All Creative Commons licenses [6] share some base features on the top of which additional permissions could be granted. Among these baseline characteristics are: non-commercial copying and distribution are allowed while copyright is retained; ensures creators (licensors) getting deserved credits for their work; the license is applicable worldwide. Licensors may then choose to give some additional rights: attribution (copying, distribution, and derivation are allowed only if credits are given to the licensor), share-alike (same license terms apply to distribution of derivative work as for the original work), non-commercial (copying, distribution, and derivation are allowed only for non-commercial purposes), and no derivative (only original unchanged work, in whole, may be copied and distributed).

Creative Commons licenses consist of three layers: legal code layer (written in the language of lawyers), commons deed (the most important elements of license written in language non-lawyers could understand), and machine-readable version (license described in CC Rights Expression Language [7] enabling software to understand license terms).

To place their work in public domain, Creative Commons gives creators solution known as CC0. Nevertheless, many legal systems do not allow the creator to transfer some rights (e.g. moral rights). Therefore, CC0 allows creators to contribute their work to the public domain as much as possible by law in their jurisdiction. In [8] it is argued that according to copyright protection regulations, neither databases nor any non-creative part of content cannot be assumed as a creative work.

To provide a legal solution for opening data, the project Open Data Commons launched the open data license called Public Domain Dedication and License (PDDL) [9] in 2008. In 2009, the project was transferred to the Open Knowledge Foundation. PDDL allows anyone to freely share, modify and use work for any purpose.

In [10] is emphasized the importance of opening judicial data in preventing corruption and increasing trust in the judiciary. To achieve this, publishing of data about judges (e.g. first name, last name, biographical data, court affiliation, dates of service, history of cases, statistical data about workload and average time period necessary to make a decision, etc.) and courts (e.g. name, contact data, case schedules, court decisions, statistical data, etc.) is proposed. As an example of open data benefits in the judicial branch, Slovakian OpenCourts portal [11] is given and will be described in the rest of this paper.

In [12] is discussed reidentification as an important issue related to the opening of judicial data. It is a risk of revealing identity for an individual from disclosed information when it is combined with other available information.

In [13] it is emphasized the role of controlled vocabularies in order to achieve semantic interoperability of e-government data. Controlled vocabularies are valuable resource for avoidance of e.g. ambiguities, wrong values and typing errors. Its representation is usually in form of glossaries, code lists, thesauri, ontologies, etc. Some examples of legal thesauri are Wolters Kluwer [14] thesauri for courts and thesauri for German labor law. Also, some examples of ontologies for legal domain are LKIF-Core Ontology [15], Legal Case Ontology [16] and Judicial Ontology Library (JudO) [17].

The rest of this paper is organized as follows. First, available methods for evaluation of open government data will be reviewed. Then, several case studies of open judicial data are discussed. After, some directions for opening judicial data will be proposed. At the end, concluding remarks will be given and directions for future research.

## II. OPEN DATA EVALUATION METHODS

In this section several methods for evaluation of open government data will be reviewed: Global Open Data Index [18], 14 principles of open government data defined in [19] and Open Data Barometer [20].

Global Open Data Index tracks the state of open government data (currently in 122 countries) and measures it on an annual basis. It relies on Open Definition [2] saying that "Open data and content can be freely used, modified, and shared by anyone for any purpose". The Global Open Data Index gives to the civil society actual openness levels of data published by governments based on feedback given by citizens and organizations worldwide. Some benefits of using Global

Open Data Index are: it gives citizen's perspective on data openness instead of government claims; comparison of dataset groups across the countries; helps citizens to learn about open data and available datasets in their countries; tracks changes in open data over time. During collection and assessment of the data some assumptions were taken into consideration: open data is defined by the Open Definition (while, as an exception, non-open machine-readable formats such as XLS were assumed open); governments are responsible for data publishing (even if some field is privatized by third-party companies); government, as a data aggregator, is responsible for publishing open data by all its sub-governments. Datasets considered by Global Open Data Index are national statistics, government budget, government spending, legislation, election results, national map, pollutant emissions, company register, location datasets, government procurement tenders, water quality, weather forecast, and land ownership. Scoring for each dataset is based on evaluation consisted of nine questions. Questions and its scoring weights (in brackets) are as follows: "Does the data exist?" (5); "Is data in digital form?" (5); "Publicly available?" (5); "Is data available for free?" (15); "Is data available online?" (5); "Is the data machine-readable?" (15); "Available in bulk?" (10); "Openly licensed?" (30); and "Is the data provided on a timely and up to date basis?" (10).

Since there are 13 datasets, each with a maximum possible score of 100, the percentage of openness is calculated as a sum of scores for all datasets divided by 1300.

Although Global Open Data Index considers a wide range of government data, only legislation data are tracked in the legal domain. Same evaluation method, applied to supported datasets, could also be applied to judiciary datasets.

In [19] are given essential qualities for open government data, subsumed in four "A"s: accessible, accurate, analyzable and authentic. In detail, these qualities are defined by 14 principles: online and free, primary, timely, accessible, analyzable, non-proprietary, non-discriminatory, license-free, permanent, safe file formats, provenance and trust, public input, public review, and interagency coordination.

Open Data Barometer analyzes open data readiness, implementation, and impact. It is a part of World Wide Web Foundation's work on common assessment methods for open data. Currently, results in 2014 are available for 86 countries. Open Data Barometer based its ranking on three types of data: peer-reviewed expert survey responses (country experts answer questions related to open data in their countries), detailed dataset assessments (a group of technical experts gives an assessment based on the results of a survey answered by country experts), and secondary data (data based on expert surveys answered by World Economic Forum, Freedom House, United Nations Department of Economic and Social Affairs, and World Bank).

For the ranking purposes, three sub-indexes are considered: readiness, implementation, and impacts. Readiness sub-index measures readiness to enable successful open data practices. Implementation sub-index is based on 10 questions for every 15 categories of data. Categories are as follows: mapping data, land ownership

data, national statistics, detailed budget data, government spend data, company registration data, legislation data, public transport timetable data, international trade data, health sector performance data, primary and secondary education performance data, crime statistics data, national environmental statistics data, national election results data, and public contracting data. Impacts sub-index reflects the impact of open data on different categories such as political, social and economic spheres of life. In the calculation of final ranking, implementation participates with 50% while readiness and impacts are weighted with 25% each.

Among datasets assessed by Open Data Barometer, there are no judiciary data, which in addition to legislative and crime datasets, could improve assessment of public data in the legal domain.

### III. OPEN JUDICIAL DATASETS

This section gives an overview of currently available judicial open datasets (or open data portals) for Slovakia, Croatia, Slovenia, Bosnia and Herzegovina, the Republic of Macedonia, Serbia, UK, and the US. These countries were chosen as samples of legal systems in both Anglo-Saxon and continental European countries. Adopting best practices might be helpful for opening judicial data in developing countries such as Serbia.

Besides legislation as the most common dataset in the legal domain, there are many types of judicial data which could be considered for the opening. Most of them are defined by regulations on court proceedings (e.g. [21]). A list of judicial dataset which could be proposed for opening might be summarized as follows: receipted documents records data (e.g. date and time, number of copies, whether the fee is paid or not, etc.), case register data (e.g. case number, date of receipt, date of receipt of the initial document, judge name, date of decision, hearings information, performed procedural actions, etc.), and delivered decisions.

Also, some derived statistical datasets could be the subject of public interest. Such data could be the first step until full opening of judicial datasets occurs. For example, these statistical datasets could be: statistical report for a judge (e.g. number of unresolved cases, received cases and solved cases for some time period, number of relevant solved cases and number of cases solved by other manners, number of confirmed, repealed, partially repealed, commuted and partially commuted appealed judgments, etc.) and statistical report for a court (e.g. number of judges, number of unresolved cases, received cases and solved cases for some time period, number of relevant solved cases and the number of cases solved by other manners, number of confirmed, repealed, partially repealed, commuted and partially commuted appealed judgments, etc.).

#### A. Slovakia

In [10], OpenCourts portal [www.otvorenesudy.sk](http://www.otvorenesudy.sk) is given as an example for re-use of open data published by the judiciary. The portal is initiated by Transparency International Slovakia [22] and its purpose is more transparent and more accountable judiciary. The portal is based on data already publicly available but placed at different government websites and sometimes not easily searchable. OpenCourts portal collect these data and

provides them in a user-friendly form for free. Court decisions are published in PDF format while other data (e.g. about courts, judges, proceedings, hearings, etc.) are available in HTML format. Notifications about the presence of new data matching search criteria given by the user are also provided. Therefore, registration is required for the user to receive such notifications by e-mail. In [23], judge rankings are emphasized as a purpose of OpenCourts portal to give public and advocates insight into scores of individual judges. No open license is provided for published data.

#### B. Croatia

On March 19, 2015. Croatian government launched Open Data Portal [24] for collection, classification and distribution of open data from the public sector. It is a catalog of metadata enabling users to perform a search of public data of interest. It is developed on the basis of open source software, Drupal [25] and CKAN [26], just like UK open data portal [27]. Among published datasets, only a few are available in the legal domain (registers of organizations providing free legal aid, mediators, interpreters, and expert witnesses) mostly in CSV format and some in XML format. The work is licensed under Creative Commons CC BY license [6].

Portal e-Predmet [28] provides public access to court case data of municipal, district and commercial courts in Croatia. Updates of published data are performed on a daily basis and retrieval of case data is based on the court name and the case number. Names of the parties are anonymized while juvenile court cases, investigation cases, war crime cases and the cases under the jurisdiction of The Office for the Suppression of Corruption and Organized Crime are not published at all. Case data are presented in HTML format.

Electronic bulletin board e-Oglasna [29] publishes delivered judgments and other documents from municipal, district, commercial, minor offenses, administrative courts in the Republic of Croatia, Financial Agency enforcement proceedings, and public notaries. Published data are in DOCX or PDF format.

Another open data project in Croatia is Judges Web [30]. It is started by a non-government and non-profit organization consisting of judges and legal experts. Judges Web portal publishes case-law as a collection of selected decisions in HTML format rendered by Croatian municipal and district courts, High Commercial Court of the Republic of Croatia and European Court of Justice. Free of charge user registration is required to access court decisions.

#### C. Slovenia

The open data portal [31] provides links to available open data in Slovenia and to projects developed on the basis of open data. Judicial data are not currently included.

The case law portal Sodna Praksa [32] publishes selected court decisions delivered by Slovenian courts. Decisions are anonymized and available in HTML format. The portal provides free public access for both commercial and non-commercial purposes while reusing of data is permitted if credits to the Supreme Court of Slovenia are given.

#### D. Bosnia and Herzegovina

Open data portal [33] publishes government data in Bosnia and Herzegovina. The data in available datasets is mostly data about public finances and, therefore, neither legislation data nor judicial data are available. There is no license information provided on the website.

Judicial Documentation Centre [34] publishes selected decisions from the courts of Bosnia and Herzegovina while access to decision database is charged for public. A special commission of Judicial Documentation Centre performs both selections of decisions for publishing and anonymization of personal data. Documents are available in HTML, DOC, and PDF format. Open license is not provided.

#### E. Republic of Macedonia

Open data portal of the Republic of Macedonia [35] currently publishes 154 datasets. Portal distinguishes three types of datasets: link (URL to an external web page), file (e.g. DOC, ODS) and database (data downloadable in CSV, Excel and XML format). Datasets published by Ministry of Justice are given as links to web pages related to proposed and adopted laws, bailiffs, mediators, notaries, lawyers who provide free legal aid, interpreters, and expert witnesses. License information is not available on the portal website.

The Supreme Court of Macedonia [36] provides case law database of selected decisions delivered by Macedonian courts. Decisions are anonymized and can be retrieved either in HTML or PDF format. The website does not contain license information.

#### F. Serbia

The website Portal of Serbian Courts [37] provides public information about court cases. It is adapted version of portal developed for commercial courts during 2007. and 2008. Portal of Serbian Courts started operation on December 17, 2010. and published data about cases of basic, higher and commercial courts. The portal became inactive since December 12, 2013. due to ban pronounced by The Commissioner for Information of Public Importance and Personal Data Protection [38]. The ban was pronounced because Portal was publishing personal data (such as full names and addresses of the parties) without legal grounds. Portal continued with work on February 24, 2014. without personal data included. Since October 9, 2015. data about cases of The Supreme Court of Cassation, The Administrative Court, and appellate courts are also published on the portal. However, data about filings received by the basic, higher and commercial courts still contains names of the parties. Published data are in HTML format. Regarding license information, the Portal of Serbian Courts has "all right reserved" notice.

Legal Information System [39] provides free access to regulations currently in force. Case law database of selected decisions is also available but access is charged for public. Both regulations and court decisions are published in HTML format. Open license is not provided.

#### G. United Kingdom

The website data.gov.uk [27] helps people to search government data and to understand the working of UK government. Dataset openness is rated by stars: one star for unstructured data (e.g. PDF), two stars for structured

data in proprietary format (e.g. Excel), three stars for structured data in open format (e.g. CSV), four stars for linkable data served at URIs (e.g. RDF) and five stars for linked data with links to other data. Considering legal domain, UK legislation is marked as unpublished while referencing to the website [40] is given. The license information is available for every dataset and most of them are available under Open Government License (OGL) [41]. This license allows copying, publishing, distribution and adapting of information for commercial and non-commercial purposes only if attribution statement is specified.

The official website of UK legislation [40] publishes original (as enacted) and revised versions of legislation. Public access to legislation is free of charge while legislation is available in HTML, PDF, XML and RDF formats. Bulk download of legislation is also provided. All legislation is published under Open Government License (OGL) except if stated otherwise.

The website of British and Irish Legal Information Institute (BAILII) [42] provides access to the database of British and Irish case law and legislation. Anonymization of personal data found in court decisions is performed by the court of its origin. Documents are available in HTML format while some of them also have RTF or PDF version. Access to the website is public and free of charge. It is allowed to copy, print and distribute published material if BAILII is identified as a document source.

#### H. United States

The website CourtListener [43] provides free access to legal opinions from federal and state courts. Containing millions of legal opinions, it is a valuable source for academic research. After specifying queries of interest, CourtListener provides e-mail alerts which notify users if new opinions matching given query appear. Besides legal opinions, CourtListener also collects other data: oral arguments (as audio data), dockets and jurisdictions. All of these data are available for download as bulk data files. All data are serialized in JSON format (for oral arguments referencing to audio files is performed). Citations between opinions are also provided for bulk download as pairs of document identifiers in CSV format. Data are in public domain and free of copyright restrictions as indicated by Public Domain Mark [44].

Using Global Open Data Index methodology, summary assessment of judicial data openness for selected countries is given in Table I.

Most judicial portals lack data in machine-readable formats. Bulk data might not be practical in the case of court decisions because it results in enormous data sizes. Another issue is publishing on an up-to-date basis. Manually performed time-consuming activities, such as anonymization of personal data, may prevent publishing on a daily basis. Additionally, the practice of publishing only selection of court decisions should also be considered when questioning data existence. Analyzing case studies given in this paper, some guidelines could be proposed. Anonymization is recognized as the most common solution for personal data protection. Instead of publishing court decisions in either HTML or PDF format only, some machine-readable XML format should be adopted (e.g. Akoma Ntoso [45], OASIS LegalDocML [46], CEN Metalex [47], etc.). Also, along with simple CSV format,

TABLE I.  
SUMMARIZED OPEN JUDICIAL DATA ASSESSMENT FOR SELECTED COUNTRIES

Country	Dataset	Data exists	Digital form	Publicly available	For free	Online	Machine readable	In bulk	Open license	Timely & up-to-date	Score
UK	Receipted documents data	-	-	-	-	-	-	-	-	-	0
	Case register data	5	5	5	15	5	-	-	30	10	75
	Delivered decisions	5	5	5	15	5	-	-	30	10	75
Slovakia	Receipted documents data	-	-	-	-	-	-	-	-	-	0
	Case register data	5	5	5	15	5	-	-	-	10	45
	Delivered decisions	5	5	5	15	5	-	-	-	10	45
Croatia	Receipted documents data	-	-	-	-	-	-	-	-	-	0
	Case register data	5	5	5	15	5	-	-	-	10	45
	Delivered decisions	5	5	5	15	5	-	-	-	-	35
US	Receipted documents data	-	-	-	-	-	-	-	-	-	0
	Case register data	5	5	5	-	5	15	-	-	10	45
	Delivered decisions	5	5	5	-	5	-	-	-	10	30
Serbia	Receipted documents data	-	-	-	-	-	-	-	-	-	0
	Case register data	5	5	5	15	5	-	-	-	10	45
	Delivered decisions	5	5	5	-	5	-	-	-	-	20
Slovenia	Receipted documents data	-	-	-	-	-	-	-	-	-	0
	Case register data	-	-	-	-	-	-	-	-	-	0
	Delivered decisions	5	5	5	15	5	-	-	30	-	65
Bosnia and Herzegovina	Receipted documents data	-	-	-	-	-	-	-	-	-	0
	Case register data	5	5	-	15	5	-	-	-	10	40
	Delivered decisions	5	5	5	-	5	-	-	-	-	20
Macedonia	Receipted documents data	-	-	-	-	-	-	-	-	-	0
	Case register data	-	-	-	-	-	-	-	-	-	0
	Delivered decisions	5	5	5	15	5	-	-	-	-	35

suitable XML format for court case records could be proposed (e.g. OASIS LegalXML Electronic Court Filing [48], NIEM – Justice domain [49], etc.).

In [50] are given guidelines for opening sensitive data such as data in the judiciary. First, some issues are identified that should be considered before opening data, also some alternatives to completely opening data are suggested and solutions to some issues are proposed. These guidelines are based on analysis of datasets used by Research and Documentation Center (WODC [51]) in the Netherlands. Since these datasets contains crime-related data some directions are established in order to decrease the risk of privacy violation. Therefore, three types of access (open access, restricted access and combined open and restricted access) are suggested. Open access may involve anonymization of personal data because revealing identities through a combination of several datasets should be avoided. Restricted access is an option if data producers want to provide access to data depending on its type, type of user and the purpose of use. The combination of open access and restricted access is suitable when datasets contain both privacy-sensitive and non-privacy-sensitive data. Instead of rigidly closing data, proposed directions gives an alternative and represents general principles since various people in various institutions may interpret it differently.

#### IV. CONCLUSIONS

In this paper, judicial data, as a special case of open government data is analyzed. First, definitions of some elementary terms related to open government data were given. Then, several methods for evaluation of open government data are reviewed and open judicial data from different countries along with their publishing policies are presented and discussed. At the end, some issues were identified and their solutions are proposed.

Since judiciary is one of three government branches, it is very important to adequately open those datasets. On the other hand, opening judicial data is a challenge with respect to personal data protection acts. There is no universal recipe for opening judicial data because different governments have different approaches to privacy protection.

Considering open judicial datasets discussed in this paper, CourtListener stands out by going further than other judicial portals and offers even court decisions in bulk. Although its size causes some problems, it represents a valuable source for researchers.

Along with publishing open dataset, data mining, and reporting projects would help people understand benefits of open government data. Good opportunities for such promotion of open data are hackathons (e.g. International Open Data Hackathon [52]), where participants interested in open data brainstorm project ideas, share suggestions or creative solutions. For government institutions, it is also a communication channel with data users and a way to get feedback on published datasets.

Developing standardized data structures suitable for judicial data is one direction of future work. It should be performed in order to achieve interoperability with existing software solutions and proposed software tools for judicial data processing. Such tools would be particularly useful to people who are not technically skilled but are interested in using open data.

On the top of open judicial data, development of various services could be achieved and therefore features such as transparency in court proceedings, fight against corruption and protection of the right to trial within a reasonable time would be enabled.

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