

Proposal for Implementing the EU PSI Directive in Serbia

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Abstract. The Linked Data approach, based on principles defined back in 2006 and best practices for publishing and connecting structured data on the Web elaborated by ICT experts, can play an important role in the domain of semantic interoperability of government services. Therefore, this paper explores the technical aspects and challenges of implementation of the revised European Directive on the Public Sector Information (2013/37/EU) emphasizing the role of Linked Data approach for improved interoperability and re-use. Referring to state-of-the-art approaches in EU member states, the paper proposes a framework for implementing the PSI Directive in Serbia.

Keywords: Linked Data · Public Sector Information · Best practices · Policy implementation · Interoperability

1 Introduction

The Directive on the re-use of Public Sector Information (known as the ‘PSI Directive’, 2013/37/EU) [1], which revised the Directive 2003/98/EC and entered into force on the 17th of July 2013, provides a common legal framework for a European market for government-held data (public sector information). It is created around two key pillars of the internal market: transparency and fair competition. It focuses on the economic aspects of re-use of information rather than on the accessibility of information to citizens. Member States were obliged to transfer the Directive into their national legislation by the 18th of July 2015. However, the transposition of the revised PSI Directive into the national legislations across Europe has not been completed yet (see Table 1, document “Open Data: Commission launches infringement cases”, 2015).

The PSI Directive is a legislative document and it does not specify any technical aspects of its implementation. Article 5, point 1 of the PSI Directive, for instance, says ‘*Public sector bodies shall make their documents available in any pre-existing format or language, and, where possible and appropriate, in open and machine-readable format together with their metadata. Both the format and the metadata should, in so far as possible, comply with formal open standards.*’ Therefore, in July 2014, the Commission published guidelines (see “Guidelines on recommended standard licences...”, 2014) [2] related to licenses (encouraging the use of open licenses), datasets (asking for availability, quality, usability and interoperability of ‘high-demand’ datasets) and charges where Commission preferred the least restrictive re-use regime possible i.e. limited any charges to the marginal costs incurred for the reproduction, provision and

Table 1. PSI Directive related documents

Year	Type	Title of documents retrieved from the European commission
2003	Policy	DIRECTIVE 2003/98/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL from the 17 th of November 2003 on the re-use of public sector information. Official Journal of the European Union L 345/90
2010	Policy	Improving semantic interoperability in European eGovernment systems, ISA Action 1.1
2011	Comm.	Open data An engine for innovation, growth and transparent governance, COM(2011)882
2013	Policy	DIRECTIVE 2013/37/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL from the 26 th of June 2013 amending Directive 2003/98/EC on the re-use of public sector information (2013, June 23). Official Journal of the European Union L 175/1
2013	Policy	Regulation (EU) no. 1316/2013 of the European Parliament and of the Council from the 11 th of December 2013 establishing the Connecting Europe Facility. (2013, December 2013)
2013	Analysis	Orientation paper: research and innovation at EU level under Horizon 2020 in support of ICT-driven public sector. EC Digital Agenda news. (2013, May 22)
2014	Policy	Guidelines on recommended standard licences, datasets and charging for the reuse of documents (2014/C 240/01). Official Journal of the European Union C240/1-10 24.7.2014
2015	News	Open Data: Commission launches infringement cases due to the late transposition of the revised PSI Directive in 17 EU Member States. European Commission. (2015, September 23)
2015	Analysis	Study on the Impact of Re-use of Public Data Resources - Creating Value through Open Data
2015	Analysis	Open Data Maturity in Europe. (2015)

dissemination of documents. The Commission has also facilitated the roll-out of *open data infrastructures* under the Connecting Europe Facility (see Table 1 “Regulation no. 1316/2013.”, 2013).

This paper primarily refers to the technical aspects related to the implementation of the Directive, especially the issues that directly or indirectly contribute to the semantic interoperability of open data. Analysing the PSI Directive and other documents published by the European Commission so far (see Table 1), elements can be identified e.g. policies and legislation, software tools and platforms, selection of data for publication/dataset criteria, charging, techniques for opening data, organizational issues, formats, re-use, persistence, data quality issues, documentation of open data and data discoverability [3], that led also to the following research question:

- What do we need for PSI Directive Implementation, efficient data sharing and PSI re-use?

- How does the Linked Data Approach facilitate the PSI Directive Implementation?

The paper is organized as follows. Section 2 further explains the contextual background and justifies the research interest in the Linked Data technologies.

Section 3 presents the findings from analysis of the SHARE-PSI Case Studies on PSI Directive implementation. Section 4, using as an example Serbia, presents an elaboration of actions needed for transposing the PSI Directive in national settings.

2 Contextual Background

2.1 The “Interoperability Solutions for European Public Administrations” Programme

Since 1995, the European Commission has conducted several interoperability solutions programmes, in which the last one i.e. the “Interoperability Solutions for European Public Administrations” (ISA) shall be active during the next five years (2016–2020) under the name ISA¹. The holistic approach (G2G, G2C, G2B) foresees four levels of interoperability, namely, legal, organizational, semantic and technical interoperability. In the period 2010–2015, the ISA recommendations were oriented more towards implementation of G2G services. However, the goal of ISA² is to pay more attention to the end-users outside the public administration i.e. citizens and businesses. The effectiveness of the programme and also the implications of EU Directives and policies on national ICT systems is constantly observed and measured by the Commission itself (e.g. the *National Interoperability Framework Observatory* activity) and/or with the help of independent consulting companies. Thus, in the report “*Open Data Maturity in Europe*” (see Table 1), that contains evaluation of the maturity of national policies promoting Open Data as well as an assessment of the features made available on national data portals, three different maturity levels have been identified: Beginners, Followers and Trend Setters. One of the conclusions in this report is that there is a substantial difference between the EU28+ and the candidate countries (Bosnia and Herzegovina, Albania, Serbia, Kosovo, Montenegro and Turkey) in terms of the Open Data Maturity.

2.2 e-Government Case Study

In this case study we present the process of integration of the Open Data from Serbia in EU data space. In order to use uniform solutions for accessing and re-using data coming from different publishers, the user (see right of the Fig. 1) will need standardized services to access the data (e.g. through a CKAN catalogue), as well as descriptions of the data. The ISA programme foresees using the JOINUP repository as storage of descriptions of schemes used in the datasets, as well as services that enable access/retrieval of data.

The main question that we want to answer is: *What do we need for efficient data sharing and re-use of statistical datasets?*

¹ <http://ec.europa.eu/isa/isa2/>.

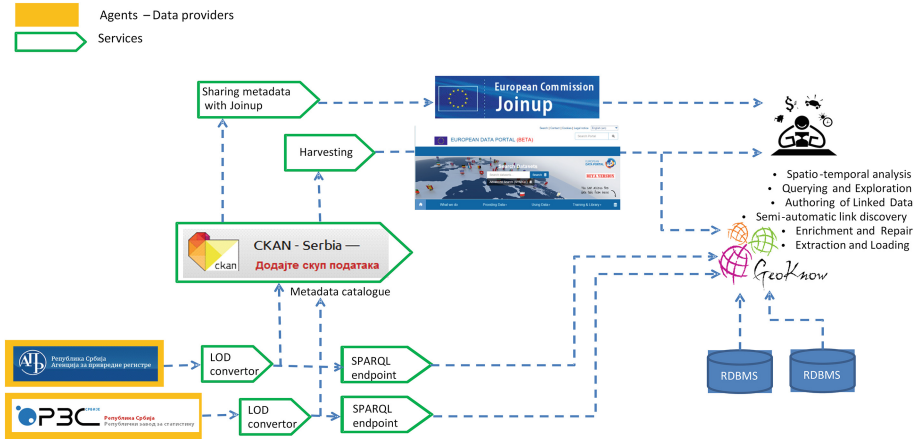


Fig. 1. Integrating public data from Serbia in EU data space

Other questions that appeared during our work on this Case Study are:

- Is it possible to fuse heterogeneous data and formats used by different publishers and what are the necessary steps? Are there standard approaches/services for querying government portals?
- What is the quality of the data/metadata, i.e., do we have a complete description of the public datasets? Does the publisher make track changes on data and schema level? Is the publisher reliable and trustful?

In order to make the use of open data more efficient and less time-consuming, the standardized approaches and tools are needed. Therefore we have explored the potentials of the Linked Data approach.

2.3 Linked Data Approach for Sharing Data

The Linked Data principles were defined back in 2006 [4]. Nowadays the term Linked Data is used to refer to a set of best practices for publishing and connecting structured data on the Web [5]. These principles encourage using URIs as names for things, typed links to other URIs and a simple graph-based data model for publishing structured data on the Web – the Resource Description Framework (RDF). Linked Data approach has been adopted by an increasing number of data providers over the past five years, leading to the creation of the global data space that contains many billions of assertions - the Linked Open Data cloud². The government data represent a big portion in this cloud [6].

² <http://lod-cloud.net>.

As a part of the ISA programme, the European Commission has accepted a set of standard vocabularies that should be used in building public administration services [7]. Additionally, the EU Commission provides support to the development of tools that cover different aspects of the Linked Data life cycle [8]. The following platforms are already in place for building Linked Data applications: the *Linked Data Stack*³ [9], fluidOps Information Workbench⁴, Graphity Platform⁵, Ontos Linked Data Information Workbench⁶ and others. Common to these platforms is the fact that data is represented by using the World Wide Web Consortium (W3C) “Linked Data” standards⁷ and that the developed applications can run both as cloud services or enterprise applications.

3 Analysis of Best Practices for PSI Directive Implementation

This research has two main parts. The first part is related to our work in the SHARE-PSI consortium and delivery of Best Practices to be adopted by EU Member states (see the middle layer of Fig. 2, Activities in a form of chevron). The second part is connected with our experience of developing tools for publishing statistical data in the Linked Data format (see the bottom layer of Fig. 2, Activities in a form of chevron). These two research activities are interrelated, because the experience gained in developing and testing Linked Data tools in Serbia has been proposed for approval and acceptance in the SHARE-PSI Best Practices collection⁸ (see the middle layer of Fig. 2, icon with oval form).

3.1 SHARE-PSI Best Practices

Financed by the EU Competitiveness and Innovation Framework Programme 2007–2013, in the last two years, the SHARE-PSI project partners⁹ were involved in the analysis of the PSI Directive implementation across the Europe. The network is composed of experts coming from different types of organizations (government, academia, SME/Enterprise, citizen groups, standardization bodies) from many EU countries. Through the series of five public workshops organized within the project in 2014 and 2015, the experts were involved in (1) presenting and discussing EU policies and case studies; and (2) consensus building on best approaches for implementing the PSI Directive. As a result, a collection of Best Practices was established as valuable sources of information for public authorities and businesses. As agreed on the beginning of the project, SHARE-PSI documents addressed the organizational and policy issues, while technical issues of PSI implementation were elaborated by the W3C Data on the Web

³ <http://stack.linkeddata.org/>.

⁴ <http://www.fluidops.com/information-workbench/>.

⁵ <http://graphityhq.com/technology/graphity-platform>.

⁶ <http://www.ontos.com/products/ontosldiw/>.

⁷ <http://www.w3.org/2013/data/>.

⁸ <https://www.w3.org/2013/share-psi/bp/>.

⁹ <http://www.w3.org/2013/share-psi/>.

Working Group¹⁰. As a result, just few SHARE-PSI Best practices directly or indirectly referred to the Linked Data technologies.

As a part of this research we report on our findings and conclusions related to the use of Linked Data approach across EU.

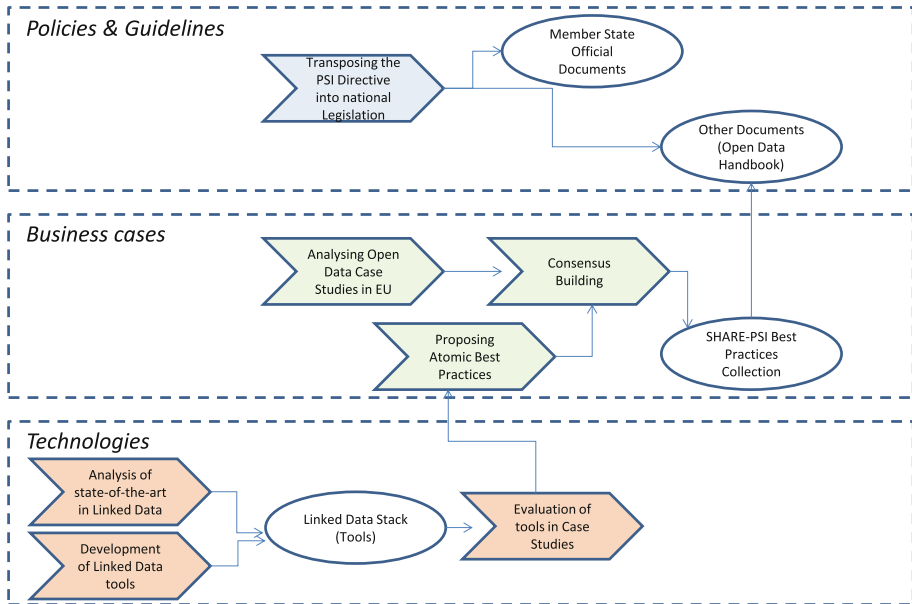


Fig. 2. Research framework

3.2 Findings Related to Metadata Management

The most common definition of metadata is “data about data.” Metadata, or structured data about data, improves discovery of, and access to such information. Metadata management can be defined as “as a set of high-level processes and tools for structuring the different phases of the lifecycle of structural metadata including design and development of syntax and semantics, updating the structural metadata, harmonisation with other metadata sets and documentation”. Analysing the metadata management requirements and existing solutions in EU Institutions and Member States, the authors [10] have found that ‘activities around metadata governance and management appear to be in an early phase’. The effective use of metadata among applications, however, requires common conventions about semantics, syntax, and structure. Hence, the RDF can be used for this purpose taking into consideration that it enables the encoding, exchange, and reuse of structured metadata. Examples of W3C metadata vocabularies

¹⁰ <http://www.w3.org/TR/dwbp/>.

are considered for adoption in future government services are RDF Data Cube Vocabulary, Data Catalogue Vocabulary, Organization Vocabulary and others.

Re-using ISA Vocabularies for Semantic Asset Repositories: The ISA programme supports the development of tools, services and frameworks in the area of e-Government through more than 40 actions¹¹. In the area of metadata management, the programme recommends using Core Vocabularies (Core Person, Registered organisation, Core Location, Core Public service) as *‘simplified, re-usable and extensible data models that capture the fundamental characteristics of an entity in a context-neutral fashion’*. These vocabularies should support the description of the base registries that are maintained by EU public administrations (i.e. *a base registry is a trusted, authentic source of information under the control of an appointed public administration.*) Moreover, they should support harmonization of base registries across Europe, as well as additional registries [11].

Findings: Looking at the user requirements in many available Case Studies, all users need to access a central repository of assets that contain metadata/descriptions of the meaning of the published or retrieved data. According to our research, there are differences in the effort of establishing semantic repositories on country level (see e.g. Germany XRepository, <https://www.xrepository.deutschland-online.de/>, Digitaliser.dk, <http://digitaliser.dk/>, and Estonian RIHA, <https://riha.eesti.ee/riha/main>), as well as in the amount of resources that are published and shared with other member states via the JoinUp platform (see federated repositories on this link <https://joinup.ec.europa.eu/catalogue/repository>). Currently in the EU, still ongoing is the adoption of the ISA Core Vocabularies and Core Public Service Vocabulary on national level (see e.g. implementation in Flanders, https://www.openray.org/catalogue/asset_release/oslo-open-standards-local-administrations-flanders-version-10 or Italy, Ciasullo et al., 2015 [12]) and the exchange of data inside a country (see e.g. Estonian metadata reference architecture, <http://www.w3.org/2013/share-psi/workshop/berlin/EEmetadataPilot>).

Federation of Data Catalogues: The DCAT-AP is a specification based on the Data Catalogue vocabulary (DCAT) for describing public sector datasets in Europe. Its basic use is to enable cross-data portal search for data sets and make public sector data better searchable across borders and sectors. This can be achieved by the exchange of descriptions of datasets among data portals. There are two extensions to this vocabulary: GeoDCAT-AP¹² is an extension for describing geospatial datasets, dataset series, and services, while StatDCAT-AP¹³ aims to enhance interoperability between descriptions of statistical data sets within the statistical domain and between statistical data and open data portals.

Findings: Nowadays, an increasing number of EU Member States and EEA countries are providing exports to the DCAT-AP or have adopted it as the national interoperability solution. The European Data Portal¹⁴ implements the DCAT-AP and thus

¹¹ http://ec.europa.eu/isa/ready-to-use-solutions/index_en.htm.

¹² https://joinup.ec.europa.eu/asset/dcat_application_profile/asset_release/geodcat-ap-v10.

¹³ https://joinup.ec.europa.eu/asset/stat_dcat_application_profile/.

¹⁴ <http://www.europeandataportal.eu/>.

provides a single point of access to datasets described in national catalogues (376,383 datasets retrieved on January 5th 2016). The hottest issue regarding federation of public data in EU is the quality of metadata associated with the national catalogues [13].

3.3 Findings Related to Prioritization of Datasets

The categories of data that should be made public are recommended in the PSI guidelines. It is also recommended that “the responsible public authorities assess in advance, preferably with feedback from the relevant stakeholders, which data sets should be released as a priority”. In Norway, for example, the public administration introduced the Traffic Light System [12] as a way of increasing the understanding of the value of open data within the public sector. In Czech Republic, through a transparent process, the authorities conducted supply/demand and legislation analysis [15].

As a result of “Prioritization of datasets” exercises that were conducted in many EU countries, questions have been raised related to the true understanding of the term “Open Data”, the mechanisms that ensure continuous publication of the data (including updates of the datasets), the quality of the published data and the possibility to improve the quality with the users feedback, the impact of the “Open Data” on the users performance (the possibility to develop new businesses) and the types of end users.

Findings for geospatial data: Geospatial data including postcodes, national and local maps (cadastral, topographic, marine, administrative boundaries, etc.) is a category of the highest priority (“Guidelines on recommended standard licences, datasets and charging”, 2014) along with other high-value datasets such as earth observation and environment, transport data, statistical data, company and business registers. From the Linked Data approach viewpoint, an alternative to the public administration sources are the crowdsourced efforts such as the OpenStreetMap, <https://www.openstreetmap.org>, or its Linked Data version, the LinkedGeoData, <http://linkedgeodata.org/>. Spatial information from these sources can be used to create geographic visualisations of the available data. Along with many benefits of opening geospatial data that influence the development of different smart mobile applications, during the SHARE-PSI Workshops, representatives from EU countries discussed as well the unintended consequences of Open Data Publication especially related to the geographic information. Some countries, such as Germany, have indicator levels for aggregation of geographic information. Therefore, risk assessment (“Unintended Consequences”, 2015) and value-based prioritization of Government Data prior to publishing is needed [16].

Findings for statistical data: Statistical data are often used as foundations for policy prediction, planning and adjustments, having a significant impact on the society (from citizens to businesses to governments). Linked Data paradigm has opened new possibilities and perspectives for the process of collecting and monitoring socio-economic indicators as well as real-time events. By linking the available information e.g. coming from the Statistical Office with geo-coordinates and/or polygons, the powerful intelligent services have been proposed, see the *Intelligent fire risk monitor based on Linked Open Data* [17].

4 Re-using SHARE-PSI Best Practices

The question that we would like to answer here is related to the adoption of the SHARE-PSI Best practices e.g. by countries that have not implemented them yet. As an example, we will take Serbia that has been an associated EU country since 2012.

Example: The main political driver for Open Data in Serbia is the Ministry of Public Administration and Local Self Government. The Ministry has recognized that open data needs to be a prominent part of the next Open Government Partnership Action Plan¹⁵ [16]. The Serbian e-Government Strategy (Directorate for Electronic Government, 2015) [19] for the period 2015–2018 foresees implementation of the PSI Directive, where the eUPRAVA portal¹⁶ is a central point of access to e-services for all Serbian citizens (G2C), businesses (G2B) and employees (G2G) in public administration. Currently, more than 500 services are available on the portal, and about 130 bodies has announced their services there. Analysing the applicability of the SHARE-PSI Best Practices (that have been implemented in several EU countries) in Serbia, we mapped the SHARE-PSI recommendations with the actual Action Plan for implementation of the eGovernment Strategy 2015–2016 (see Table 2). Two types of actions can be distinguished: related to organizational issues (ORG) and technology oriented actions (TECH).

4.1 Organizational Challenges

One of the SHARE-PSI Best Practices indicates that “... it is not sufficient to just make the data open, i.e. simply making data available to the public isn’t enough to make that data useful.” [21]. This report, as well as other open data advocates [22] point out the need to establish an *Open Data Ecosystem* that will enhance coordination between public and private sector in PSI re-use and will ensure that data publishers are listening to all stakeholders and interested parties. Instead of looking on the PSI Directive in a top down manner (a mandatory action), *Open Data Ecosystem* concept calls for a bottom-up approach to implementation of an open data program. Therefore in Table 2, based on the SHARE-PSI Best Practices, we propose Actions to be considered for implementation in Serbia in the next period.

4.2 Technological Challenges

According to our analysis, the greatest challenge in implementing the PSI Directive in Serbia will be to open and express the description (metadata) about the available data/services on the eUPRAVA portal or elsewhere, in a compliant machine-processable format as is required for federation with other EU portals. Technical requirements for federation include [20]:

¹⁵ <http://www.opengovpartnership.org/country/serbia>.

¹⁶ <http://www.euprava.gov.rs/>.

Table 2. Challenges related to Open Data in Serbia (ORG/TECH), their linkage to SHARE-PSI recommendations [21] and status of activities in June 2016

Establish an Open Data Ecosystem, Develop and Implement a Cross Agency Strategy	
ORG	A crucial role in the implementation of Serbian open data program (Zylstra, 2015) is establishment of an Open Data Working Group (ODWG). It is envisioned that key stakeholders are represented in the group. Based on the Action Plan [19], activities should be further specified in details and responsibilities should be clarified e.g. an open data official can be designate in each agency <i>Status:</i> Envisioned in the Strategy [19], first activities during 2016
TECH	The ODWG will need a technical infrastructure for managing meetings/notifications and storing documentation
Identify what you already publish	
TECH	This inventory building activity can be performed automatically or semi automatically. It is also part of the National Interoperability Framework (NIF) where an asset repository will be build <i>Status:</i> NIF was adopted in 2014, but no inventory of public datasets exist [23]
Enable feedback channels for improving the quality of existing government data	
TECH	Data publisher could extend the existing services and collect different feedbacks from end users. <i>Status:</i> Feedback is collected by e-mail
Encourage crowdsourcing around PSI	
ORG	In order to improve civil engagement, different promotional activities that raise awareness should be run. <i>Status:</i> First such activities in 2015 [24]
TECH	Government can develop new services/applications that enable integration of crowdsourced and public data
Support Open Data Start Ups	
ORG	Policies needed that envision e.g. incentives for start-ups <i>Status:</i> Different activities coordinated by the Ministry of Economy
TECH	Data that will be used in innovative applications should be open <i>Status:</i> Some of them open on the publisher site
Dataset Criteria, Publication Plan, Categorise openness of data	
ORG	Additional acts needed that specify the criteria for ‘high-value datasets’ and help government to understand which datasets to prioritize for publication
Publish overview of managed data	
TECH	Automatic services needed for extracting and publishing the metadata <i>Status:</i> Under development
Establish Open Government Portal for data sharing, Develop a federation tool for open data portals	
TECH	eUPRAVA portal could follow the best practices reported in other EU countries
Standards for Geospatial Data	
TECH	The Geodetic Authority, responsible for national geodata infrastructure, should extend the existing processes to meet inter-governmental demand (i.e. EU INSPIRE guidelines). <i>Status:</i> National framework for geodata exist since 2010 [25]

(Continued)

Table 2. (Continued)

Enable quality assessment of open data	
ORG	Additional acts needed that will specify the use of open licenses and vocabularies for describing datasets. <i>Status:</i> Does not exist in the moment of analysis
TECH	Quality assessment tools and services needed <i>Status:</i> Few tools exist [26]

Table 3. Specific examples of tools, datasets and applications

Tool	Interlinked datasets	Scenarios/Benefits
RDF Validation Tool [26]	Statistical indicators on different domains retrieved from different national institutions, see http://rs.ckan.net/ or demo http://geoknow.imp.bg.ac.rs/ESTA-LD	Validation of quality of metadata, enrichment of datasets with metadata definitions and improving the interoperability of datasets according to ISA standards [30]. The tool is available for download at https://github.com/GeoKnow/DataCubeValidation
ESTA-LD [27]		Building visualizations on top of interlinked data, analysis of social-economic indicators, identification of trends The tool is available for download at https://github.com/GeoKnow/ESTA-LD
GEM [28]	Open data retrieved from publicly available sources	Motive-based search, route planning, exploration of open data. The tool is available for download at https://github.com/GeoKnow/GEM
Mobile SCD [29]	Private and public resources	Tracking suppliers, orders, and shipments and interlinking private data with public resources (weather stations, news feeds, etc.). See video at http://geoknow.imp.bg.ac.rs/mobile-scm/videos/

- Access to the harvested sites (login account or CKAN-API, FTP)
- DCAT Application Profile (DCAT-AP) for the government open data portal that will enable exchange of descriptions of datasets in eUPRAVA with other portals, as well as aggregation of and search for datasets across data portals in Europe

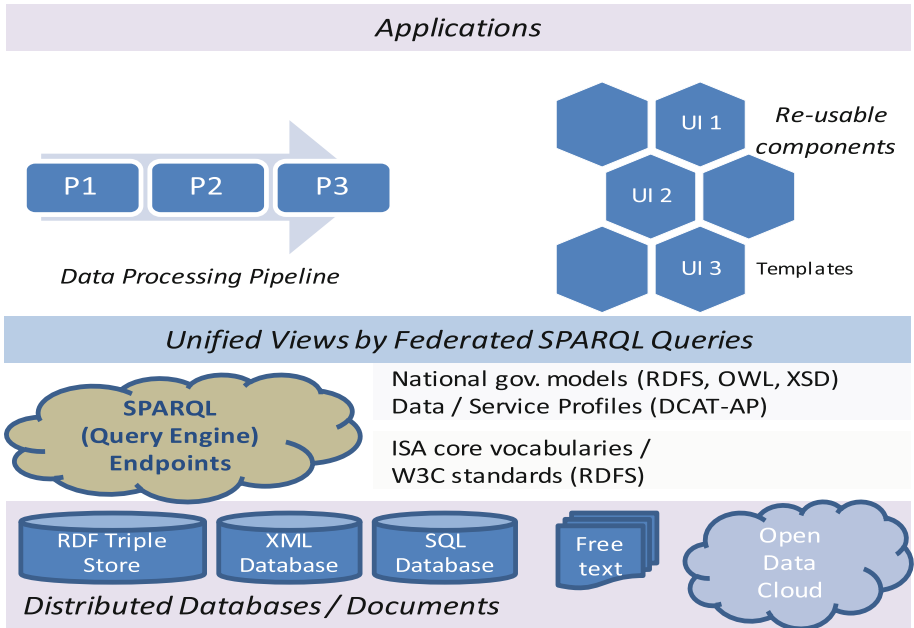


Fig. 3. Simplified illustration of integration of Linked Data tools

- Establishment of a Semantic Asset Repository and interlinking it with the JoinUp platform (Publication of the core vocabularies, code lists, INSPIRE metadata for geospatial data, etc.).

Once this metadata layer is established, innovative services that interlink datasets from different domains (e.g. statistical data with environmental online real data) can be implemented.

4.3 Examples of Linked Data Tools

Since 2011, the Mihajlo Pupin Institute (PUPIN) has been involved in two projects (LOD2 and GeoKnow) that, as a result, delivered the Linked Data Stack¹⁷ [9]. In this period, the PUPIN team contributed open-source tools [27–29] and worked on several scenarios that directly support the EU strategies for scalable and interoperable Open Government Data ecosystem. Table 3 points to datasets, examples of potential use, as well as the expected benefits from using open data.

¹⁷ <http://stack.linkeddata.org/>.

5 Conclusions

The goal of our research is to analyse the technical aspects related to the PSI Directive such as techniques for opening data, formats, platforms/tools, and quality issues and examine the innovativeness of approaches that are followed across Europe. The Directive envisions publishing of the public/private datasets in machine readable format, thus, making sharing, using and linking of information easy and efficient. In this process, metadata plays an important role as it provides a way to describe the actual contents of the dataset which can then be published on well-known portals and catalogues, thus allowing data consumers to easily discover datasets that satisfy their specific criteria (Fig. 3).

This paper introduces the latest open data and interoperability initiatives in the EU, including ISA recommendations, and points out to the Linked Data approach that could be used to publish open data on the Web in a machine readable format thus making the data easily accessible, and discoverable.

This study contributes to the state-of-the art in two ways. Firstly, in the period 2012–2015, we developed and integrated several tools for managing the statistical Linked Data lifecycle in the *Linked Data Stack*, as a state-of-the-art collection of Linked Data tools. Based on that experience we contributed to the SHARE-PSI Best Practices and recommendations (e.g. for innovative ways of managing Open Data) that were supposed to be wider adopted by national and local governments across Europe in future. Secondly, in addition to the analysis of technological aspects of PSI Directive implementation, we analysed also the actions needed at the organizational i.e. policy level and thus proposed a framework for implementing the PSI Directive. While technological solutions are fully re-usable, policy actions differ across countries and depend on the local context. The proposed actions in the last Section refer to a single country i.e. Serbia.

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