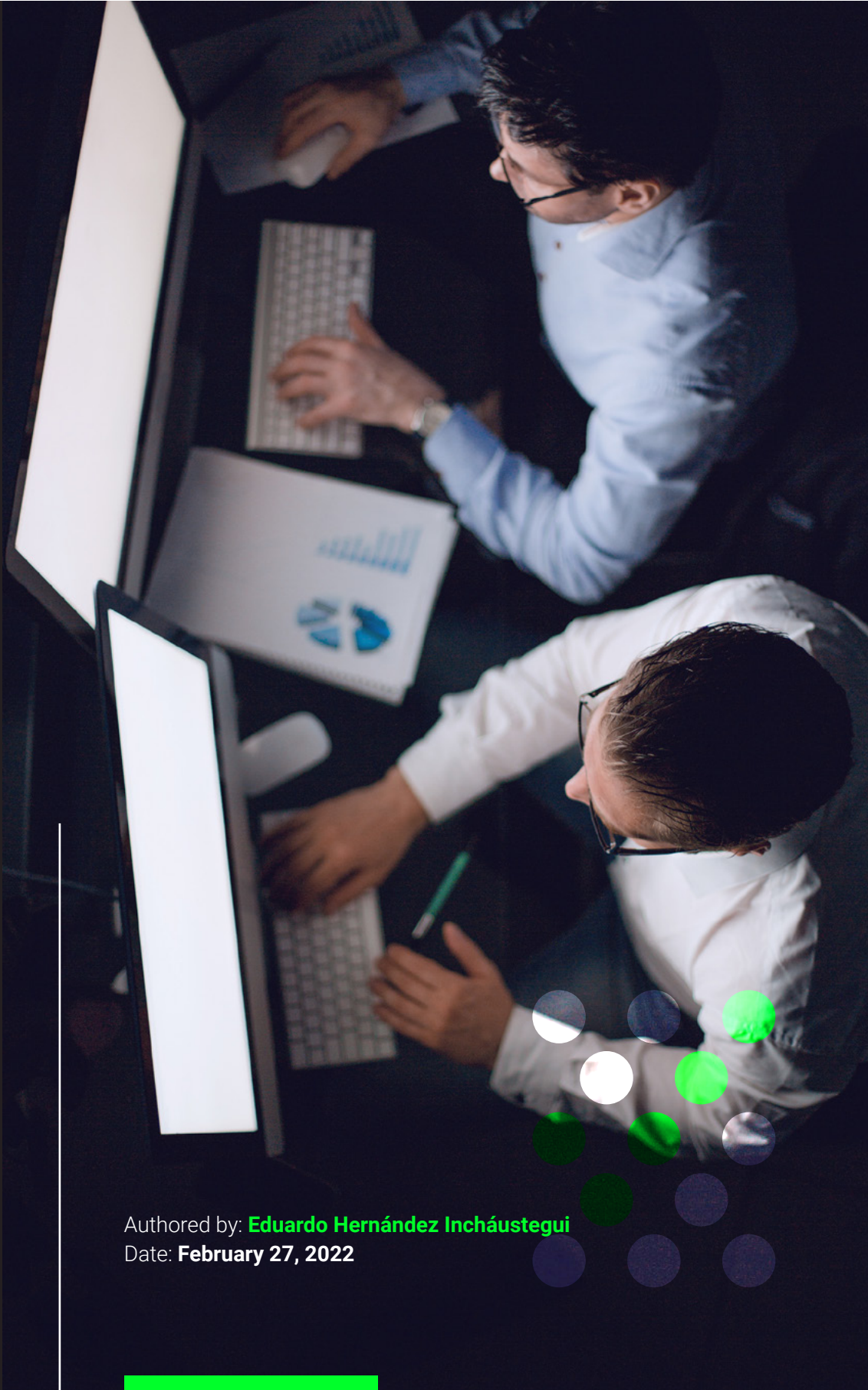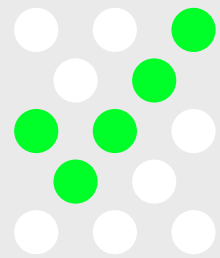VerDat™

WHITEPAPER

Authored by: **Eduardo Hernández Incháustegui**
Date: **February 27, 2022**

Acknowledgment

Contents

3

WHITE PAPER

Introduction

The Oxford Dictionary anointed the term 'post-truth' as the 'Word of the Year of 2016' (Bradner, 2017; Cillizza, 2017; BBC News, 2016). This was also during the era when the now famous 'alternative-facts', and 'fake-news' went mainstream.

If the world was then living through a reckoning with the nature of truth in reporting, or lack thereof, the global pandemic put the entire movement on overdrive. On February 2, 2020, the World Health Organization coined yet another term, declaring that the spread of the novel coronavirus, nCov-2019, was accompanied by an 'infodemic' described as "an overabundance of information—some accurate and some not" that was inhibiting the spread of trustworthy and reliable information (World Health Organization, quoted by Jamison et al., 2020).

VerDat

Researchers at the Technology and Social Change Team at the Harvard Shorenstein Center have found, Based on our research and domain expertise, that disinformation violates the right to freedom of expression and the right to information and truth in the following ways: (1) It makes it harder to access timely, relevant, and accurate information (2) it takes advantage of algorithmic amplification to intentionally mislead and (3) it silences its target victims through harassment, incitement of fear, and by crowding out their words, opinions, and other forms of expression (Donovan, Dreyfuss, Lim, Friedberg, 2021).

Altogether, these events led me to reflect on the nature of truth, facts, and media, and the idea for VerDat was born.

Hence, if one sets out to create a wide repository of datasets for the consumption of citizens to foment fact-based discussion, it follows that we start with Open Government Datasets (OGD), because they are widely available, but also the greatly underutilized (as we will see further in the research). They are mostly underutilized because for citizens, and for information brokers (journalists, activists, academics) OGDs can be difficult to handle, manipulate, and transform from often raw and barely processed data into real insights that lead to value-creation.

In the following pages, I will chronicle the perspectives from the research into Open Government Data (OGD) and OGD Portals, that form the theoretical underpinnings
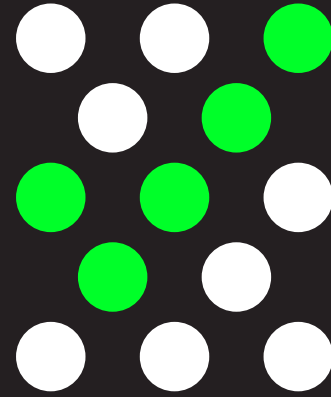
for the emergence of VerDat as a platform. Particular attention is paid to the research into the potential of OGD, the barriers to reaching its full potential, as well as the research centered around usability, features, and the future of OGD Portals as a whole. Then, I provide an overview of the institutional framework for Open Government Data in the Dominican Republic. In the second part, I share some insight into the business objectives of VerDat, and provide detail about the design methodology employed in the creation of VerDat, with transcripts from user interviews conducted during the wireframing process. I believe that these interviews will serve to enrich the literature on usability, ideal features and design of OGD Portals, from the perspectives of the four subjects: lawyer, journalist, business consultant and technology journalist. **Finally, I conclude with a guided tour of VerDat functionality, and share some of the features in the backlog that we hope to implement in the near future.**

Why VerDat: Perspectives from the Research

Disinformation and Freedom of Expression

According to scholars at the Shorenstein Center at Harvard, the process known as disinformation consists of "The human right to freedom of expression includes the right to have such expression. Increasingly, that access is threatened by social inequalities and the access to technological systems that hold the world's information. Within the fragmented media ecosystem of the 21st century, opaque algorithms, policies, and enforcement mechanisms determine what information is available to whom. These crucial information distribution systems from search engines to social media, from messaging apps to legacy news publications are vulnerable to abuse by people wishing to inject false inject false or mislea ding information into the ecosystem, to cause harm, or further their own agendas." (Donovan, Dreyfuss, Lim, Friedberg, 2021). Disinformation and its effects run counter to a properly functioning democratic society,

Fundamentals of Information & Democracy

One important underlying condition of a properly functioning democracy is access to information (Harrison & Sigit, 2014). Informed citizens are better able to contribute to democratic processes, better able to understand and accept the basis of decisions affecting them and better able to shape the situations in which they live (Birkinshaw, 2006; Meijer Curtin & Hillebrandt, 2012).

The Importance of Transparency in the Public Sector

Transparency in the public sector is one of the most important topics of the current debates on accountable, participatory, and responsive governance, and an open government addresses these major topics and aims to encourage the relationships and flows of information between involved stakeholders (Lnenicka & Nikiforova, 2021).

Definition of Transparency in the Public Sector

Transparency in the public sector is defined as the availability of information about an organization or actor that allows external actors to monitor the internal performance of that organization (Grimmelikhuijsen & Meijer, 2014).

Open Government & Transparency by Design

According to Wirtz and Birkmeyer (2015), open government can be defined as "a multilateral, political, and social process, which includes in particular transparent, collaborative, and participatory actions by government and administration." In view of this, Janssen, Matheus, Longo and Weerakkody (2017) proposed the concept of "transparency-by-design", according to which transparency should be considered as the main requirement for the development of the system aiming to disclose government data to the public.

Democracy and Information Technology

New information technologies should consider how best to build network infrastructure that allows individuals and communities to engage in ways that promote democratic participation and prioritizes authenticity, legibility, and accuracy (Donovan, Dreyfuss, Lim, Friedberg, 2021).

The Role of Open Government Data Portals in Democracy

- Governments and high level policy makers have realized the potential of publishing public sector information as the last stand of earning back citizens' trust, as well as the importance of the national context on government information and knowledge sharing (Gharawi & Dawes, 2010; Dawes, Gharawi, Burke & Knowledge, 2011).

- Governments all around the world have started to make their datasets available to the public with high expectations of benefits to society (Dawes, Vidiasova & Parkhimovich, 2016; Susha, Grönland & Janssen, 2015).

- A key benefit of these platforms is that they make it easier for citizens to articulate their opinions and interact with public administrators and political representatives on societal issues (Wijnhoven, Ehrenhard & Kuhn, 2015; Taylor, Jaeger, Gorham, Bertot, Lincoln, & Larson, 2014).

- Several scholars have pointed out that open data platforms aim to foster democratic processes by promoting transparency through the publication of government datasets and by providing the opportunity to actively participate in government processes such as decision-making, policy-making and solving public problems (Attard, Orlandi, Scerri & Auer, 2015; Verhulst & Young, 2016; Lourenço, 2015; Dawes & Helbig, 2010; Janssen, 2011).

- Open data platforms are also aimed at stimulating innovation, economic growth and at improving service delivery (Verhulst & Young, 2016; Janssen, Charalabidis & Zuiderwijk, 2012; Huijboom & Van den Broek, 2011).

- Lupi et al., propose the concept of actionable open data, whose working definition is Open Data produced for enabling individual and collective actions that are generated, supported, or mediated through the access, manipulation and use of data by local governments, public agencies, businesses, non-profit organizations and research institutions (Lupi, Antonini, DeLiddo & Motta, 2020).

WHITE PAPER

VerDat

Who are the Open Government Data Users?

- There are multiple users of OGD, and reaching new audiences beyond the traditional users of specific datasets is an important benefit of OGD (Safarov, Meijer & Grimmelikhuijsen, 2017; Susha, Grönland & Janssen, 2015, Gascó-Hernández et al., 2018). Each type of user has different interests and intended use.

- First, government employees may use the data to improve public services as well as decision and policy making processes (Martin & Begany, 2017).

- A second category of users is innovators, which include individual programmers and developers as well as established businesses. They use the data with innovation purposes: usually, these data users develop a new information product or service and commercialize it (Safarov, Meijer & Grimmelikhuijsen, 2017).

- A third type of users encompasses researchers, data journalists, and activists seeking to use OGD to create knowledge in different formats: researchers may use OGD for pilot studies, to advance the literature, or to apply basic or advanced analytics to better understand a problem; data journalists may be interested in analyzing large data sets to identify potential news stories; and activists may aim at using the data to promote transparency or accountability, or to assess and influence policy (Graves & Hendler, 2014; Safarov, Meijer & Grimmelikhuijsen, 2017).

- Citizens are a fourth category of users who almost never consume OGD directly, but instead most commonly use data through one or more mediators. By providing citizens with an essential window into the functioning of government, OGD enables citizens to be informed, hold their governments accountable, and engage in participation processes (Dawes, Vidiasova & Parkhimovich, 2016; Harrison, Pardo & Cook, 2012; Reggi & Dawes, 2016; Ruijer et al., 2017).

The Challenges of Open Government Data Portals

- Scholars broadly agree that the actual use of open government data is lagging behind (Attard et al., 2015; Dawes, Vidiasova & Parkhimovich, 2016; Hossain, Dwivedi, & Rana, 2015; Janssen, Charalabidis & Zuiderwijk, 2012; Safarov, Meijer & Grimmelikhuijsen, 2017; Wang, & Lo, 2016).

- The realization of the 'Open Government' paradigm, in general, seems to be a demanding and complex task, requiring combined efforts of multiple actors, from both the public and the private sector, and gradual development of 'open government ecosystems' (Harrison, Pardo & Cook, 2012).

- Ruijer, Grimmelikhuijsen and Meijer (2017) argue that current open data platforms do not take into account the complexity of democratic processes that result in overly simplistic approaches to open data platform design, advocating instead, for context-sensitive open data design that facilitates the transformation of raw data into meaningful information constructed collectively by public administrators and citizens.

- The under use of Open Data had been extensively studied, identifying the key barriers preventing their broad use, the most important being: the lack of self-evident uses and value of the available data, the inaccuracy and obsolescence of information, the lack of standardized metadata or significant information complementing the datasets, as well as the format of files often requiring specific software to be explored (Barry & Bannister, 2014; Beno, Figl, Umbrich, & Polleres, 2017; Janssen, Charalabidis & Zuiderwijk, 2012).

- Researchers have noticed the barriers that citizens encounter in using OGD, such as a lack of awareness of its benefits, low data literacy, technical barriers, and insufficient incentives (Gurstein, 2011). This result aligns well with Lourenços (2015) observation that many data portals are "simple repositories of data".

- Despite the rapid proliferation of open data platforms, the accessibility and ease of use of data portals is low. This factor prevents citizens and civil society organizations from exploiting open data for their goals. The poor usability of the current generation of open data platforms could be attributed to the fact that these platforms were not designed for non-technical users. They are typically software products developed "by programmers for programmers or technical users" (Agarwal, & Venkatesh, 2002).

- In recent years, the growth in the number of portals and the amount of information available has increased users' difficulty in obtaining useful information for conducting analyzes or studies. In a majority of portals, the datasets are distributed across selected topics or categories. As such, users may take some time to understand the organization of the datasets in each portal they browse, which hinders a comprehensive and effective access to information (dos Santos Pinto, Bernardini, & Viterbo, 2018).

Areas for Improvement in Open Government Data Portal Design

- The results of Thorsby, Stowers, Wolslegel, and Tumbuan (2017) research into the features and content of open data portals in American cities indicate that overall, portals are in a very early stage of development and need a great deal of work to improve user help and analysis features as well as inclusion of features to help citizens understand the data, such as more charting and analysis (Thorsby et al., 2017).

- Most portals only allow users to simply download the available data with no possibility of exploring them directly through visualization tools (Máchová, & Lněnička, 2017).

- As stated by Lourenço (2015), portals should be designed in such a way that even ordinary citizens without specialized technical skills may use them to find data.

- The basic assumption of open data is that data can be used for every purpose and that patterns of usage cannot be predicted (Janssen, 2011). This assumption, however, may actually impair usage since there may not be a 'match' between context-specific user requirements and data provision, and therefore, attention to context-specific user requirements may contribute to the usage of open data (Ruijer, Grimmelikhuijsen, Hogan, Enzerink, Ojo & Meijer, 2017).

- Several scholars have analyzed barriers to open data usage (Barry & Bannister, 2014; Conradie & Choennie, 2014; Dawes, Vidiasova & Parkhimovich, 2016; Huijboom & Van den Broek, 2011; Janssen, Charalabidis & Zuiderwijk, 2012; Zuiderwijk & Janssen, 2014a, 2014b). They stress the importance of a user centered approach thereby identifying user requirements such as understandability, availability, quality, timeliness, but also value and usefulness (Lourenço, 2015; Zuiderwijk & Janssen, 2014a, 2014b). Their results show that, overall, portals perform well in terms of providing access, but not so well in helping users understand and engage with data, which offers an opportunity for future improvement.

- Research findings indicate room for improvement in multiple areas and suggest potential roles for information professionals as data mediators (Zhu & Freeman, 2019). The question remains as to whether data providers should concentrate on providing clean data, or on encouraging the development of data mediators. To help users understand and engage with data, cities may decide if OGD portals should provide tools to advance data literacy and user education, or opt to leave these issues to data intermediaries (Zhu & Freeman, 2019).

VerDat

- Specifically, in the context of open data and DeLone & McLean (2003), the authors argue that open data platform's qualities and the quality of the open data it maintains will significantly impact end-user satisfaction.

- Realistically, ordinary citizens might not possess the necessary skills or willingness to directly access and analyze the information disclosed. Instead, citizens may rely on information brokers such as journalists, NGOs or even academic researchers (Heald, 2003). Information brokers may therefore be considered as the direct users of public entities' websites and portals. Regardless of the actual users, portals should be designed in such a way that even ordinary citizens, without specialized technical skills, may use them to find data.

- Even though data literacy is often listed as a requirement for and means of benefiting from open data, surprisingly, there is limited, if any, mention of open data as a resource for developing data literacy in schools. Data publishers could address this issue by supporting data literacy initiatives in schools. This could involve including school and education relevant datasets in their portal as well as making resources understandable for nonprofessionals (Gebre & Morales, 2020).

- Datasets do not 'speak for themselves' because they require context for analysis and interpretation. Suggesting much more should be done in portal design and implementation to provide contextual descriptions and meta-data (Gebre & Morales, 2020).

Statistics from the GovLab
(Young, 2018)

31%

Percentage of respondents who say they lack access to usable and relevant data.

25%

Percentage of respondents who think they don't have sufficient technical skills to use open government data.

20%

Percentage of respondents who feel the number of OGD apps available is insufficient, indicating an opportunity for app developers.

The State of Open Government Data in the Dominican Republic

Institutional Basis

- **Constitutional Basis**: The Dominican Republic 's Constitution, promulgated on July 10th, 2015, enshrines Transparency as one of the Principles of Public Administration in Article 138: "The Public Administration is subject in its actions to the principles of efficiency, hierarchy, objectivity, equality, transparency, economy, publicity and coordination, with full submission to the legal system of the State."

- **Legal Basis**: Dominican Republic 's Law of Freedom of Access to Public Information, Number 200-04, approved on July 28, 2004, Promulgated by President Hipólito Mejía and the Regulation for the Implementation of Law 200-04, Decree No. 130-05, Issued by President Leonel Fernández on February 25, 2005

» The Dominican Republic's Law of Freedom of Access to Public Information, Number 200-04, approved on July 28, 2004, establishes the protection of the rights of citizens to access information, and creates an obligation for the Government to implement the necessary systems to make public administration transparent.

» Of particular relevance to VerDat's mission are Article 5, which mentions the requirement of publishing public information on the "Internet", and Article 6 of the law, which outlines the type of Information that must be published, whose paragraph mentions financial information and public budget information, as follows:

» Article 5. The computerization and incorporation into the internet communication system or any other similar system that may be established in the future, of all the centralized and decentralized public agencies of the State, including the National District and the municipalities, with the purpose of guaranteeing through this a direct access of the public to the information of the State. All the powers and agencies of the State must implement the publication of their respective "Web Pages" for the following purposes:

  + **Dissemination of information**: Structure, members, operating regulations, projects, management reports, database;

  + **Center of exchange and attention to the client or user**: Queries, complaints and suggestions;

  + **Bilateral procedures or transactions**. The information referred to in the preceding paragraph will be freely accessible to the public without the need for prior request.

» Article 6. The Public Administration, both centralized and decentralized, as well as any other body or entity that exercises public functions or executes the public budget, and the other entities and bodies mentioned in Article 1 of this law, have the obligation to provide the information contained in written documents, photographs, recordings, magnetic or digital media or in any other format and that has been created or obtained by it or that is in its possession and under its control.

Paragraph. For the purposes of this law, any type of financial documentation related to the public budget or from private financial institutions that serves as the basis for a decision of an administrative nature, as well as the minutes of official meetings, will be considered as information.

» Furthermore, Chapter IV of the Regulation for the Implementation of Law 200-04, Decree No. 130-05, in the "Public Information Service" Section, Article 21, mandates that:

VerDat

The Dominican State as a whole, with the agencies, institutions and entities described in Article 1 of the LGLAIP, must make available and divulge ex officio information referring to:

1. Structures, members, operating regulations, projects, management reports and databases.

2. Center of exchange and attention to the client or user: Inquiries, complaints and suggestions.

3. Bilateral procedures or transactions.

4. Budgets and calculations of approved resources and expenses, their evolution and state of execution.

5. Programs and projects, their budgets, deadlines, execution and supervision.

6. Call for bids, contests, purchases, expenses and results.

7. Lists of officials, legislators, magistrates, employees, categories, functions and remuneration, and the sworn statement of assets when their presentation corresponds by law.

8. List of beneficiaries of assistance programs, subsidies, scholarships, retirement, pensions and withdrawals.

9. State of accounts of the public debt, its maturities and payments.

10. Laws, decrees, resolutions, provisions, regulatory frameworks and any other type of regulation.

11. Indices, statistics and official values.

12. Legal and contractual regulatory frameworks for the provision of public services, conditions, negotiations, rate schedules, controls and sanctions.

13. All other information whose availability to the public is provided for in special laws.

14. Projects of regulations that they intend to adopt through regulations or acts of a general nature, related to requirements or formalities that govern relations between individuals and the administration or that are required of individuals for the exercise of their rights and activities.

15. Projects of regulation, regulation of services, acts and communications of general value, that determine in some way the form of protection of the services and the access of the people of the aforementioned entity.

All the information mentioned in this article will be freely accessible to everyone, without the need for prior request and must be published on the Internet, it will be presented in a simple and accessible way and it will be permanently updated.

The highest authorities of the aforementioned agencies, institutions and entities must establish, within a period of 60 business days from the date of this regulation, a program for the implementation of this information service that determines a detailed schedule of its implementation. , without prejudice to the obligation to make immediately available, through the Internet, all information that has already been prepared, published and/or systematized.

In all cases, the definitive implementation of the information service cannot exceed one year from the date of these regulations.

- **International Level**: In 2011, government leaders and civil society advocates came together to create the Open Government Partnership, a unique partnership that combines these powerful forces to promote transparent, participatory, inclusive and accountable governance. Seventy-eight countries and seventy-six local governments — representing more than two billion people — along with thousands of civil society organizations are members of the Open Government Partnership (OGP) toay. The Dominican Republic formally expressed its interest in joining the Open Government Partnership in October of 2011, and belongs to the second group of countries that entered the partnership, with the first ones being the eight founding countries.

- **Operational Framework**: The Open Data Publishing Policies of the Dominican Government (NORTIC A3:2014), established jointly by the Directorate General for Ethics, Integrity in the Government and the Government (then Presidential) Office for Information Technology, spell out the guidelines on the publication of open data, by which every organization governmental organization must abide by. The Legal Framework comprises all the laws, decrees and regulations relevant to the Open Government system. The NORTICs were conceived in order to normalize, standardize and provide an audit tool for the effective use and implementation of ICTs in the Dominican Government, in order to achieve complete homogeneity among government agencies.

Transparency Portals

+ Institutional Open Data portals of individual public entities

Case Study:
Creating VerDat

Business Case

Vision:

Friendly open government data to inform citizens.

Mission:

To visually represent open government datasets to facilitate their understanding and utility to citizens.

Problems are:

- Open government data is disparate, hard to understand, and compare across different data sources
- Current data visualizations are clunky, have bad UX, and make it hard for the everyday person to use
- Data from different sources
- Manipulating large datasets requires specialized technical skills
- Machine readability
- Taxonomy incongruencies & anomalous numbers

Our solution is to:

- Extract, transform and load open government datasets
- Offers civilians a user friendly way to search and filter through a variety of different government databases
- Allows users to easily create visualizations
- Allows users to easily share visualizations through social media and other mediums

Target users: Citizens

1. Academics
2. Business people
3. Journalists
4. Public officials

Target product to users.

Public interest information is found in disparate datasets. Some files are large and cannot be manipulated without specialized skills. We are going to aggregate databases to facilitate insight and display with visualizations.

Design Methodology: Usability-Testing

In a usability-testing session, a UX designer asks a participant to perform tasks, usually using one or more specific user interfaces. While the participant completes each task, the researcher observes the participant's behavior, asks questions, and listens for feedback.

In this modified version of a usability testing session, we will be giving the users task scenarios to complete and following up with some short questions about the data and design of the web application. Each session will take approximately 60 minutes.

Following each session, we will analyze the results from the test and use them to provide UX/UI design suggestions.

Our Goals

- Inform design decisions
- Identify usability issues and find solutions for the problems

User Goals

- View and understand data visualizations of budgetary spending
- Creating and saving data visualizations
- Learn more about budgetary spending and why it's important
- Find relevant, educational and trustworthy articles focused on budget and open government data related stories
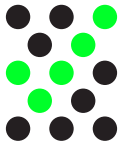
Metrics

- Successful completion rates (did they complete the task at all?)
- Error rates (# of errors/task)
- Task Completion Time (time it took to complete the task)
- Usability Problems

Testing Script

Time frame: 30-60 minutes

1. Interview Opener
2. Topic Introduction – Open Government Data in the DR
3. Prototype Testing
4. Testing Follow-Up Questions
5. Conclusion

Testing Notes #1: Lawyer

- Is a lawyer at <redacted> and does manage to see a lot of data.

- <redacted> is 37.

- Uses mostly desktop for work, and when traveling uses phone. Remarked that the phone is easy to use and portable. Usage is 75/25.

- If the perfect website for viewing, creating and sharing data visualizations existed, it would show where the money goes and how they are spending it. It would have an easy-to-use interface and offer full transparency, including information about companies that are favorites or prioritized in the transactions.

- Clicked on budgetary spending right away and then the view for total spending per institution.

- Thinks the budgetary spending page is too plain, wants it to be more attractive - to catch your eye. Interviewee thinks it looks too much like a budget report. Would like it to appear elegant and sleek and highlight certain aspects of the website to make it more visually appealing.

- There should be recent news articles higher up on the home page.

- Landing page should display the most recent info, i.e. something relevant or novel and viewable right away.
  - » If people are going to use this as a trusted source, people need to know you have the latest information available. What info do you have? When was the last time it was updated?

- Wants to see data on everything the government has and is spending for COVID. Would also like to see tax information.

- Used to seeing data in spreadsheets. Mostly uses excel to view raw data. Not usually visualizations via websites or blogs. Types of data interviewee interacts with are mostly financial, i.e. invoicing payments, etc.

- Table data: would like to make visible certain nuances with the different stages that the budget finds itself in and to know if it has been assigned to any area of the budget.
  - » Delta in budget execution.
  - » When you click on the actual numerical value, see what it has been spent on.
  - » What it's budgeted for and what it got spent on.

- We may have to account for different databases and how we display the table data.

VerDat

Opportunities for Improvement

a. Find a way to show which companies are favorited or prioritized

b. Find a way to make the main data pages, i.e. 'budgetary spending', more attractive. Perhaps using less words and more visuals. Highlight certain aspects of the page better, use more color, etc.

c. Move recent news higher up on the homepage to highlight recent updates and most recent updates in data to build trust and reliability.

d. With COVID being so relevant around the world right now, perhaps we can display data related to the pandemic too.

e. Make sure table data is interactive and detailed.

VerDat
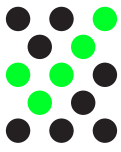
Testing Notes #2: Journalist

Specific Questions

- **Can you elaborate on what you do for work?**
  - » I am a journalist.

- **What is your experience creating data visualizations?**
  - » I create data visualizations with Flourish and Infogram mostly. I have tried DataWrapper but go for Flourish mostly now because of its feature set.

- **Would you be willing to create posts and become a contributor on verdat?**
  - » Yes, as long as I am comfortable with the source data. Where does the data come from? We will independently check the data to make sure it's correct, and if it's correct, then it can become a tool I use because time is of the essence in my job and anything that reduces or saves time is welcome.

- **What do you think would encourage you to do so and what would incline you to encourage others?**
  - » If the data is secure.

- **What times of functionality do you consider necessary for creating visualizations?**
  - » There needs to be a responsive embed option, and an option ideally to create a visualization with the branding of my news outlet.

- **Would you ever use this tool to extract data to create media or articles for other websites?**
  - » Would you trust this site to provide accurate data?
    - + You tell me!

- ⬚ **How do we get you to think of Verdat as the first resource you might use when in need of data or data visualizations?**
  - » As long as your data is correct, you can be a source. To become a means for visualizations we would need at least advanced responsive embed options in order to create and distribute the visualizations.

- **In your opinion, how can we make Verdat feel like a trustworthy and safe community for Journalists like yourself?**
  - » If your data is official from the government, or if they allow you to operate with their validation.

VerDat™
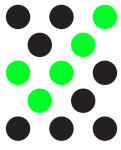
Testing Notes #3: Business Consultant

- For work, -- is a business consultant.
- Subject is 44.
- Mostly uses his phone. Usage is 70/30.
  - » If the perfect website for viewing, creating and sharing data visualizations existed, it would have a good search engine to become an engaging tool to access the data.
  - » The first thing he would try to do is start searching. Most likely, for public debt since it's a big topic right now. Maybe even procurements, open bids, and spending related to COVID.
  - » Secondarily, he might click on "Data" in the main menu.
  - » Would prefer not to create an account right away. Would like to use the site as far as it will take him without making an account.
    - + Might be willing to create an account to see detailed data.
  - » Not really interested in scrolling further down on the homepage.
    - + Not interested in why we are publishing the data. Instead, he already has an idea of something he wants to search for in mind.
  - » VerDat is like Google within the spending of the government. Gets a "Google Trends" feeling.
  - » When asked to find 2 different ways to open the glossary, he said he would click on "explore data" under the public debt section if he didn't understand the term. Then he might click on the little book next to the word.
    - + Did not seem to notice the "glossary" button on the side of the page.
  - » When asked to find the data page for budgetary spending, he found the page within 4 seconds. No errors observed.
  - » Next, we asked him to find the data visualization page for Total Spending per Institution, which took him approximately 10 seconds to access from the homepage. No errors observed.
  - » Next, we asked him to create a pie chart of the data, which took him approximately 10 more seconds to complete. No errors, but this task seemed to take longer than expected. This could be because we gave him a multi-task (2-part) scenario because he asked me to explain the second part again and once I repeated the task, he found it within 5 seconds.

VerDat

» When asked to create a bar chart and then apply filters for the visualization, it took him 12 seconds to complete the task. Observed one error.

+ After choosing the bar chart type, he navigated back to the income and expenses data page to try to find the filters.

+ Then navigated back to the Total Spending my Institution View and eventually found the filter menu.

+ He thought the filter icon was very small and hard to identify. He thinks it could be more obvious.

+ Says he was only inclined to click on the icon after seeing which elements on the page were clickable because InVision highlights them blue by default. Without the guidance, he wouldn't have clicked on it.

+ Suggested we move the filter in closer proximity to the chart type.

» Described his experience using the prototype as exciting. "The spark that is igniting curiosity in me".

» Felt the site was very promising. Makes it easy to access data that he didn't know was available in the first place, is hard to get and is easy to generate a graph.

» It is "mind-blowing". It's transparency in a click.

» Frustrated by the lack of search. Would love to dig deeper and see what data is being pulled and understand the scope to see what information is available and what is not.

» Used www.labdoor.com as an example of his "transparency tool".

+ Uses categories to find items and uses the sort feature.

+ Likes the rankings because it tells him which items have been evaluated.

+ The tool doesn't overpromise. He knows what is available and what isn't.

+ He loves being able to suggest and vote on new content for the site.

+ Maybe rankings on the data page.

» Thinks the data page is too wordy (-- also said this). Would like to see more visuals and icons.

» Too many words on the homepage.

+ Feels like he has to read too much.

+ Cannot tell what is and isn't available on the homepage.

+ Wants the homepage to tell subject clearly, what he can find.

- » Interviewee asked if -- was interested in viewing data because it's something the subject had been tracking over time or if it's because the subject was interested in something at the moment.
    - + -- replied that it's a mix of both.
- » -- used the national debt as an example of providing the entire story.
    - + Subject mentioned that the national debt used to be lower and now it's higher but just looking at that data, you wouldn't be able to understand why it has changed.
    - + He would love to be able to cross the national debt data with things like a quality of living index, life expectancy, mortality rate, and birth rates. National debt per capita?
    - + Wants the data to tell a story. Does an increase in national debt increase the quality of living?
    - + Wants the facts, to see the truth and hard data to challenge the information and make an objective political decision.
- » VerDat should be as objective as possible.
- » Confused by the charts representing different views. We should consider making unique charts for the next iteration of the prototype.
- » Would like to see everything in the data. So rather than just views have a version of the data (raw) that we can view and manipulate.
    - + Feels like we are not being transparent if we are not showing all the data. For example, who are all the institutions who make up the total expenditures? What data do we and don't we have?
- » "You are the truth. Disclaim what information you have and do not have."
- » Include this raw data in a table and allow people to filter. (like www.viridig.com)
- » The more variables of the data that people can compare, i.e. national debt X quality of life, the more conversations people will be having. The stories and conversations happen on the basis of the information that you have.

VerDat

Opportunities for Improvement

a. Heavier focus on mobile usability. Does not need to be mobile-first but we should have some idea of if/how this will work on mobile.

b. Search should be able to search primarily data but should also show pages and articles that match the keyword.

c. Avoid forcing users to sign up to do things like viewing data, creating visualizations, sharing, etc. Sign up should be reserved for critical tasks like tying a user to something posted publicly on the website.

d. Ensure the filter icon and menu is easily visible and associated with the chart. Perhaps move it over with the other chart elements and functionalities.

e. News should focus on recent updates, developments, and insights. It should enforce relevance and promote trust and transparency.

f. Perhaps we could display ranked data, i.e. Top 5 Contracts, Top Spending by Ministry, etc.

g. When searching for data, seeing it categorized and being able to sort and filter to find what they want to see would be useful. This can be done via views, faceted, search, etc.

h. Ability to users to suggest new data to add. How can users give us feedback and tell us what they want more of?

i. Data page is too wordy and should have more visualizations and icons to draw interest.

j. We should offer an entire data set for users to filter down; this will be how we are "most transparent".

k. Ability to users to cross-compare different variables, i.e. National debt YOY vs. Mortality Rate. Necessary for users to get a bigger picture of the situation and understand the whole story.

VerDat
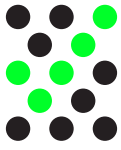
Testing Notes #4: Tech Journalist

Testing Notes

- For work, -- solves problems, working with communication, strategy, business strategy, analyzing data (social media, business data, what people think about a brand).

- -- is 28.

- -- uses his desktop for work and when traveling, uses his phone. Said phone is easy to use and portable. Would say his usage is about 50/50.

- If the perfect website for viewing, creating and sharing data visualizations existed it would have:

  - » A personalized dashboard

  - » Allow you to select information you want to use/see insights about

  - » Tools that I can use to personalize and select data.

- Call to action on the homepage should be a sentence that easily explains what the user can do with the search. "Here you can search for data by country, district, etc."

- Rather than the value propositions, VerDat can do a survey about a topic....give an example of how VerDat works and what the user can achieve through using VerDat. Use SIL as the example.

- Would add more explanation of the data on the visualization page.

- Not a big fan of tables - reminds him of excel. Expects to have a more visual experience.

- When downloading data, wants the full .csv data set and wants to be able to filter all the data.

- For filter first time use, teach them to use the filters (progressive onboarding).

- Assumed that the filter drawer was not a part of the graph. Maybe put it with chart types (second user to mention this)

- Understands what views are. Got hung up on the graphs though. (Second person to say this. Consider replacing with unique graphs for each view for the next prototype).

- Adjust height of "date" value in views so they are on the same Y axis.

- Interested in the following data: what sectors have internet, speed of internet, crime data. How they are spending the money, where they are spending the money.

VerDat

- Took him approximately 5 seconds to find the page for budgetary spending from the home page after being asked to do so. He located it using the 'Explore Data' button in the budgetary spending category. It took him approximately another 6 seconds to choose a view to explore after skimming the page. Without similar task data to compare this to, it's hard to say whether or not that could be improved. However, from my observation, this was not a difficult task for him to complete and he made no errors when completing the task.

- Once on the data visualization page, he tried to click elements in the legend to view that data.

- For comparing budgetary spending data (budget vs. actual) in the bar graph, he would like to see the bars skinnier and closer in proximity based on fiscal year.

- When asked to apply a filter to the data visualization, he tried to use the chart types. Ultimately, he did not complete the task. When he finally found the filter side drawer, he noted that it felt like the filter icon didn't have anything to do with the visualization because it was separated from the other chart information (chart type, legend, etc.) and it was separated from the graph by a gray line. He recommended we move the filter to the same location as the other chart information (currently to the right of the chart).

Opportunities for Improvement

a.   Heavier focus on mobile usability. Does not have to be a mobile-first design but we should account for how users will be able to interact with the visualizations on mobile, if at all.

b.   Can we display recent or relevant data depending on the visitor on the homepage, similar to a personalized dashboard? If we cache what they view, can we display dynamic data?

c.   Make more clear what users can use search for on the homepage

d.   Replace value propositions with specific examples of what you can use VerDat for and find in the data. Perhaps display data visualizations and insights? Use SIL as an example.

e.   Ensure we have clear visualizations and explanations of the data on the data page.

f.   Tables should be easy to read and interactive - not to mimic excel.

g.   Implement progressive onboarding when the user first signs up to teach them how to use the filtering and visualization tools.

h.   Move the filter icon closer to other visualization tools so that it is better associated with modifying the visualization.

VerDat Beta Functionality

Your VerDat "Visualizer" has 3 components

1	Configuration Panel
2	Viewer
3	Provenance

LET'S LEARN HOW TO USE IT!

Here you select the dataset you are interested in exploring. At the moment, we only have the option of working with the Public Expenditure data set, which we have available from the year 2014, to the date of August 2021.

CONJUNTO DE DATOS

Gasto Público

On the "X" axis, or on the horizontal part of the display, you can choose the budget classifier (according to the Budget Classifiers Manual) and the corresponding level to display the amount of spending on the "Y" axis for that classifier. The VIEWER automatically shows all the entries corresponding to the chosen classifier/level.

With this function of the VIEWER you can adjust the elements of the Classifiers on the "X" Axis to only show those that are of interest to you.

In the VIEWER, you can build the 'Series' of data that will be taken into account when tabulating the amount to be represented on the "Y" Axis, depending on what you have selected as your X Axis," as well as the type of graph you have selected. being able also to add more than one series, and assign a Name to the Series, which is the one that will appear in the Legend of the graph.

In the Public Expenditure Data Set, you can select between the Budgeted Amount and the Earned Amount.

You can add filters to the data that make up the series for any Budget/Sub-Level Classifier, even for more than one, (as it is possible to do in a 'Pivot Table'), to view specific aspects of interest.

The VIEWER allows you to view more than one Series, to make comparisons of interest, repeating steps 4-6.

In that section you can set the period of time you want to visualize.

You can add a visualization and be able to compare between visualizations.
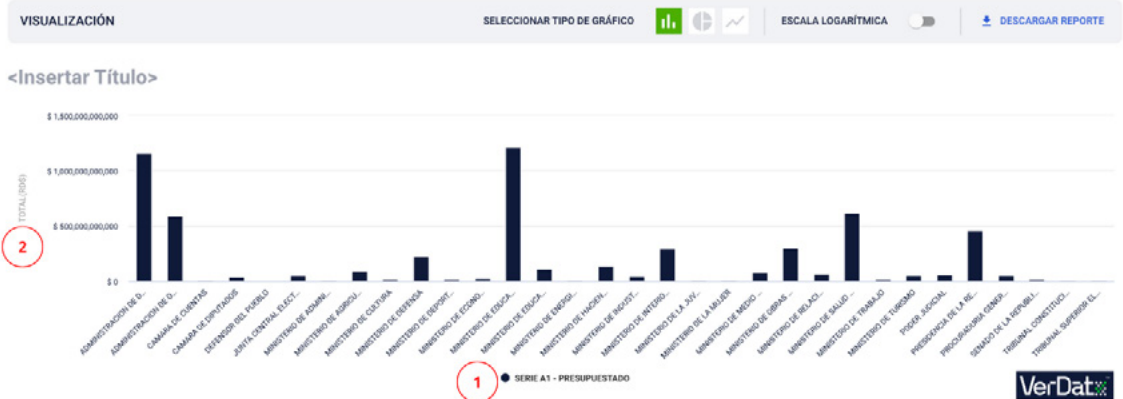
In the 'X' Axis, you can see the selection of inputs in the 'X' Axis Configurator, and the amount displayed corresponds to the Series Configured in the Series Builder. If there is more than one Series, it is displayed as follows:

The "Y" Axis expresses the amounts of the Series in Dominican Pesos.

VISUALIZACIÓN 4 SELECCIONAR TIPO DE GRÁFICO 5 ESCALA LOGARÍTMICA 6 DESCARGAR REPORTE

<Insertar Título> 3

7 **VerDat**

---
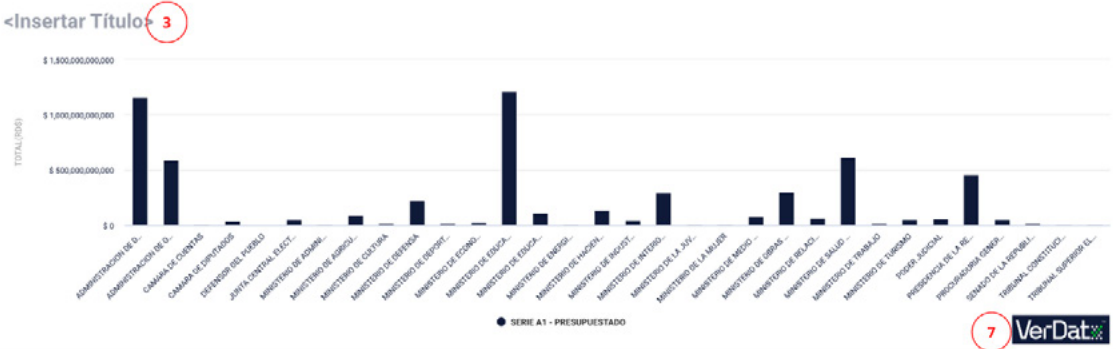
3 You can create the title that best describes the Visualization you have created.

4 The Visualizer has three types of graphs to make your visualization: columns, pie-chart and line, which you choose here.

5 For cases where there is a lot of variability in the data, the Visualizer allows you to represent the graph on the logarithmic scale, normalizing the values and facilitating its understanding.

6 The Visualizer allows you to download a complete report of the Visualization together with the parameters used in the configuration of the Axes, as well as with all the information of the Data Origin, as a mechanism to have a widely supported source.

7 We include the VerDat Logo in this section so that it is easy for the User to take a screenshot of the Visualization and be able to share it through their social networks, while indicating the source of the information.

DETALLE

⬇ DESCARGAR DATOS FILTRADOS (.CSV)

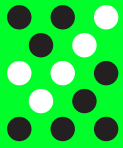| CLASIFICADORES	SERIE A1 - PRESUPUESTADO
ADMINISTRACION DE DEUDA PUBLICA Y ACTIVOS FINANCIEROS	$ 1,158,683,969,867
ADMINISTRACIÓN DE OBLIGACIONES DEL TESORO NACIONAL	$ 589,065,158,049.43

1 All the exact amounts that make up your Visualization are broken down in this Table that accompanies it and is dynamically updated.

2 All the applied filters that make up your Visualization are broken down in this section of the VIEWER.

FILTROS DE LAS SERIES

SERIES	NIVEL DE CLASIFICADOR	VALOR DE CLASIFICADOR
Serie A1 - Presupuestado	Todos	Todos

3 The Data Provenance Section clearly delimits the source consulted for the Data Set, as well as a technical detail of how the process of downloading, cleaning, and uploading the Data Set to the VerDat database is.

FUENTE

	TÍTULO	DESCRIPCIÓN	VÍNCULO
1.	Dirección General de Presupuesto (DIGEPRES)	Información presupuntaria publicadas en tablas dinámicas con frecuencia mensual	https://docs.google.com/document/d/1vMg6amuLKTbR3Vxp4L3xPkV/...
2.	Proceso de descarga y limpieza de datos	La información extraída de las tablas dinámicas es transformada a base de datos con los clasificadores presupuestarios utilizados por la plataforma a través de la extracción en formato tabular, con etiquetas repetitivas y sin subtotales.	https://docs.google.com/document/d/1oDqAPq6X0Op0iAdXuFVNrVbJ4uPfp/...

Feature Backlog

- MORE Open Government Datasets!
- User account creation for visualization creation and storage
- Greater tools for sharing visualizations on social channels
- Auto generation of visualizations from user queries linked to the data

Conclusion

In their report, titled "The Emergence of a Third Wave of Open Data", the authors explain that in contrast to its predecessors, the emergent "Third Wave" adopts a more purpose-driven approach; it seeks not simply to open data for the sake of opening, but to focus on impactful re-use, especially through inter-sectoral collaborations and partnerships, while paying at least as much attention to the demand as to the supply side of the data equation; and the way its use impacts the public-at-large.

VerDat's vision of a value proposition within the context of the Third Wave is to provide a platform that facilitates impactful-reuse of OGD by end-users, via tools for increased understanding and manipulation at the "Engagement Layer" of Tim Davies' "OGD Portals as an Hourglass" approach (Verhulst, Young, Zahuranec, Aaronson, Calderon, & Gee, 2020).

We are approaching VerDat as an open research project, and intend to have an open line of communication with our users and the broader community of practitioners of OGD by providing updates and insights learned throughout our journey. Furthermore, while not discussed at length in this paper, the role of VerDat's social media channels will be critical to provide context to datasets on VerDat, as well as to promote data literacy, and open government data awareness, in support of the broader enterprise of VerDat's vision of fomenting a culture of debate and exchange of opinions, grounded on facts. Finally, on our road to 'going live', we added the feature of a 'WhatsApp' assistant, to which users can ask questions about the data, as a means to bridge any technical gaps between the content and users on the platform.

Finally, it is our hope that VerDat can successfully make a contribution towards the broader mission of fighting disinformation and fomenting a culture of debate grounded on facts, and that in some years in the future, we can look back the Oxford's Word of The Year in 2016 - 'post-truth' -, as something of the past.

To get in touch with the author and learn more about VerDat and ways in which you can get involved and support our mission, please contact: **eduardo@verdat.com.**

Bibliographic References

Agarwal, R. & Venkatesh, V. (2002). Assessing a firm's Web presence: A heuristic evaluation procedure for the measurement of usability. Information Systems Research, 13(2), 168–186.

Attard, J., Orlandi, F., Scerri, S., & Auer, S. (2015). A systematic review of open government data initiatives. Government Information Quarterly, 32(4), 399–418.

Balaam, D. N. (January 23, 2022). Political Economy. Britannica. Recovered from https://www.britannica.com/topic/political-economy

Barry, E., & Bannister, F. (2014). Barriers to open data release: A view from the top. Information Polity, 19(1, 2), 129-152.

BBC News. (November 16, 2016). 'Post-truth' declared word of the year by Oxford Dictionaries. Recovered from https://www.bbc.com/news/uk-37995600#:~:text=Oxford%20Dictionaries%20has%20declared%20%22post,public%20opinion%20than%20emotional%20appeals.

Beno, M., Figl, K., Umbrich, J., & Polleres, A. (2017). Perception of key barriers in using and publishing open data. Je DEM-e Journal of e Democracy and Open Government, 9(2), 134-165.

Birkinshaw, P. (2006). Transparency as a Human Right. In: British Academy: Proceedings, Oxford University Press, Oxford, 47-58. Recovered from https://doi.org/10.5871/bacad/9780197263839.003.0003

Bradner, E. (January 23, 2017) Conway: Trump White House offered 'alternative facts' on crowd size. CNN Politics. Recovered from https://edition.cnn.com/2017/01/22/politics/kellyanne-conway-alternative-facts/index.html

Cillizza, C. (October 26, 2017). Donald Trump just claimed he invented 'fake news'. CNN Politics. Recovered from https://edition.cnn.com/2017/10/08/politics/trump-huckabee-fake/index.html

Conradie, P., & Choennie, S. (2014). On the barriers for local governments releasing open data. Government Information Quarterly, 31, 10–17.

Dawes, S., & Helbig, N. (2010). Information strategies for open government: Challenges and prospects for deriving public value from government transparency. Electronic Government, 6228, 50–60.

Dawes, S., Gharawi, M., & Burke, B. (2011). Knowledge and information sharing in transnational knowledge networks: a contextual perspective. In: Proceedings of the 44th Hawaii International Conference on System Sciences, 1-10. IEEE. Recovered from https://ieeexplore.ieee.org/abstract/document/5718632/

Dawes, S., Vidiasova, L., & Parkhimovich, O. (2016). Planning and designing open government data programs: An ecosystem approach. Government Information Quarterly, 33(1), 15-27. Recovered from https://doi.org/10.1016/j.giq.2016.01.003.

DeLone, D.H., McLean, E.R. (2003). The DeLone and McLean model of information systems success: a ten-year update. J. Manag. Inf. Syst. 19(4), 9–30

Dos Santos Pinto, H., Bernardini, F., & Viterbo, J. (2018). How cities categorize datasets in their open data portals: an exploratory analysis. In Proceedings of the 19th Annual International Conference on Digital Government Research: Governance in the Data Age (1-9). Recovered from https://doi.org/10.1145/3209281.3209377

Gascó-Hernández, M., Martin, E. G., Reggi, L., Pyo, S., & Luna-Reyes, L. F. (2018). Promoting the use of open government data: Cases of training and engagement. Government Information Quarterly, 35(2), 233-242.

Gebre, E. H., & Morales, E. (2020). How "accessible" is open data? Analysis of context-related information and users comments in open datasets. Information and Learning Sciences, 121(1/2), 19-36. Recovered from https://doi.org/10.1108/ILS-08-2019-0086

Gharawi, M., & Dawes, S. (2010). Conceptualizing knowledge and information sharing in transnational knowledge networks. In: Proceedings of the fourth International Conference on Theory and Practice of Electronic Governance (ICEGOV 2010).

Graves, A., & Hendler, J. (2014). A study on the use of visualizations for Open Government Data. Information Polity, 19(1, 2), 73-91.

Grimmelikhuijsen, S. G., & Meijer, A. J., (2014). Effects of transparency on the perceived trustworthiness of a government organization: evidence from an online experiment. J. Public Admin. Res. Theory, 24(1), 137–157. Recovered from https://doi.org/10.1093/jopart/mus048.

Gurstein, M. B. (2011). Open data: Empowering the empowered or effective data use for everyone? First Monday. Recovered from https://doi.org/10.5210/fm.v16i2.3316

Harrison, T. M. & Sigit Sayogo, D. (2014). Transparency, participation, and accountability practices in open government: A comparative study, Government Information Quarterly, 31(4), 513-525. Recovered from https://doi.org/10.1016/j.giq.2014.08.002.

Harrison, T. M., Pardo, T. A., & Cook, M. (2012). Creating open government ecosystems: a research and development agenda. Future Internet, 4, 900–928.

Heald, D. (2003). Fiscal transparency: concepts, measurement and UK practice. Public administration, 81(4), 723-759.

Hossain, M., Dwivedi, Y., & Rana, N. (2015). State-of-the-art in open data research: Insights form existing literature and a research agenda. Journal of Organizational Computing and Electronic Commerce, 26(1–2), 14–40.

Huijboom, N., & Van den Broek, T. (2011). Open data: An international comparison of strategies. European Journal of ePractice, 12, 1–13.

Jamison, A. M., Broniatowski, D. A., Dredze, M., Sangraula, A., Smith, M. C., & Quinn, S. C. (September 9, 2020). Not just conspiracy theories: Vaccine opponents and proponents add to the COVID-19 'infodemic' on Twitter. Recovered from https://misinforeview.hks.harvard.edu/article/not-just-conspiracy-theories-vaccine-opponents-and-pro-ponents-add-to-the-covid-19-infodemic-on-twitter/

Janssen, K. (2011). The influence of the PSI directive on open government data: An overview of. Government Information Quarterly, 28, 446–456.

Janssen, M., Charalabidis, Y., & Zuiderwijk, A. (2012). Benefits, adoption barriers and myths of open data and open government. Information Systems Management, 29, 258–268.

Janssen, M., Matheus, R., Longo, J., & Weerakkody, V. (2017). Transparency-by-design as a foundation for open government. Transf. Govern.: People, Process and Policy, 1 (1), 2–8. Recovered from https://doi.org/10.1108/TG-02-2017-0015.

Lnenicka, M. & Nikiforova, A. (2021). Transparency-by-design: What is the role of open data portals? Telematics and Informatics 61, 101605.

Lourenço, R. P. (2015). An analysis of open government portals: A perspective of transparency for accountability. Government Information Quarterly, 32(3), 323–332. Recovered from https://doi.org/10.1016/j.giq.2015.05.006.

Lupi, L., Antonini, A., DeLiddo, A., & Motta, E. (2020). Actionable open data connecting city data to local actions. The Journal of Community Informatics, 16, 3-25.

Máchová, R. & Lněnička, M. (2017). Evaluating the Quality of Open Data Portals on the National Level. Journal of theoretical and applied electronic commerce research, 12(1), 21-41.

Martin, E. G., & Begany, G. M. (2017). Opening government health data to the public: benefits, challenges, and lessons learned from early innovators. Journal of the American Medical Informatics Association, 24(2), 345-351.

Reggi, L., & Dawes, S. (2016). Open government data ecosystems: Linking transparency for innovation with transparency for participation and accountability. In International Conference on Electronic Government (74-86). Springer, Cham.

Ruijer, E., Grimmelikhuijsen, S., & Meijer, A. (2017). Open data for democracy: Developing a theoretical framework for open data use. Government Information Quarterly, 34(1), 45-52. Recovered from https://doi.org/10.1016/j.giq.2017.01.001.

Ruijer, E., Grimmelikhuijsen, S., Hogan, M., Enzerink, S. Ojo, A., & Meijer, A. (2017). Connecting societal issues, users and data. Scenario-based design of open data platforms. Government Information Quarterly, 34(3) 470-480. Recovered from https://doi.org/10.1016/j.giq.2017.06.003

Safarov, I., Meijer, A., & Grimmelikhuijsen, S. (2017). Utilization of open government data: A systematic literature review of types, conditions, effects and users. Information Polity, 1–24.

Susha, I., Grönland, A., & Janssen, M. (2015). Organizational measures to stimulate user engagement with open data. Transforming Government: People, Process and Policy, 9(2), 181–206.

Taylor, N., Jaeger, P., Gorham, U., Bertot, J., Lincoln, R., & Larson, E. (2014). The circular continuum of agencies, public libraries, and users: A model of e-government practice. Government Information Quarterly, 31, 18–25.

Thorsby, J., Stowers, G. N. L., Wolslegel, K., & Tumbuan, E. (2017). Understanding the content and features of open data portals in American cities. Government Information Quarterly, 34(1), 53–61. Recovered from https://doi.org/10.1016/j.giq.2016.07.001

Verhulst, S. G., Young, A., Zahuranec, A. J., Aaronson, S. A., Calderon, A., & Gee, M. (2020). The Emergence of a Third Wave of Open Data. Recovered from https://opendatapolicylab.org/images/odpl/third-wave-of-opendata.pdf

Verhulst, S., & Young, A. (2016). Open Data impact, when demand and supply meet. Key finding of the open data impact case studies. Opgehaald van. Recovered from thegovlab.org http:// odimpact.org/key-findings.html

Wang, H., & Lo, J. (2016). Adoption of open government data among agencies. Government Information Quarterly, 33(1), 80–88.

Wijnhoven, E., Ehrenhard, M., & Kuhn, J. (2015). Open government objectives and participation motivation. Government Information Quarterly, 32(1), 30–42.

Wirtz, B.W., & Birkmeyer, S. (2015). Open government: origin, development, and conceptual perspectives. Int J. Public Admin. 38(5), 381–396. Recovered from https://doi.org/ 10.1080/01900692.2014.942735.

Young, A. (2018). The GovLab Index: Open Data – 2018 Edition. Recovered from https://blog.thegovlab.org/post/open-data-index-2018-edition.

Zhu, X., & Freeman, M. A. (2019). An evaluation of U.S. municipal open data portals: A user interaction framework. Journal of the Association for Information Science and Technology, 70(1), 27-37.

Zuiderwijk, A., & Janssen, M. (2014a). Barriers and development directions for the publication and usage of open data: A socio-technical view. In M. Gasco-Hernandez (Ed.), Open government. Public administration and information technology. New York: Springer Science and Business Media.

Zuiderwijk, A., & Janssen, M. (2014b). Open data policies, their implementation and impact: A framework for comparison. Government Information Quarterly, 31, 17–29.

Zuiderwijk, A., Janssen, M., & Parnia, A. (2013). The complementarity of open data infrastructures: an analysis of functionalities. In: Proceedings of the 14th Annual International Conference on Digital Government Research, pp. 166–171. ACM

36

VerDat™

References Consulted

Alexopoulos, C., Diamantopoulou, V., Charalabidis, Y. (2017) Tracking the Evolution of OGD Portals: A Maturity Model. In: M. Janssen et al. (eds). Electronic Government. EGOV 2017. Computer Science, 10428. Recovered from https://doi.org/10.1007/978-3-319-64677-0_24

Alexopoulos, C., Loukis, E. & Charalabidis, Y. (2014). A platform for closing the open data feedback loop based. JeDEM-eJ. eDemocr. Open Gov. 6(1), 62–68

Alexopoulos, C., Loukis, E., Mouzakitis, S., Petychakis, M., & Charalabidis, Y. (2015). Analysing the characteristics of open government data sources in Greece. J. Knowl. Econ. 6, 1–33

Anastasiu, I., Foth, M., Schroete,r R., Rittenbruch, M. (2020). From Repositories to Switchboards: Local Governments as Open Data Facilitators. In: Hawken S., Han H., Pettit C. (eds). Open Cities | Open Data. Palgrave. Macmillan, Singapore. Recovered from https://doi.org/10.1007/978-981-13-6605-5_15

Bauer, F., & Kaltenböck, M. (2012). Linked Open Data: The Essentials—A Quick Start Guide for Decision Makers. Vienna: Monochrom Editions.

Beck, K., Beedle, M., Van Bennekum, A., Cockburn, A., Cunningham, W., Fowler, M., ... & Thomas, D. (2001). Manifesto for Agile Software Development. Agile Alliance. Recovered from https://moodle2019-20.ua.es/moodle/pluginfile.php/2213/mod_resource/content/2/agile-manifesto.pdf

Berners-Lee, S. T. (2015). Star Open Data. 5 Star Deployment Map for Open Data. Recovered from https://5stardata.info/en/

Beyer, H., Holtzblatt, K., & Baker, L. (2004, August). An agile customer-centered method: rapid contextual design. In Conference on extreme programming and agile methods (pp. 50-59). Springer, Berlin, Heidelberg.

Bovaird, T. (2007). Beyond engagement and participation: user and community coproduction of public services. Public Adm. Rev. 67(5), 846–860

Charalabidis, Y., Ntanos, E., Lampathaki, F. (2011). An architectural framework for open governmental data for researchers and citizens. In: Janssen, M., Macintosh, A., Scholl, J., Tambouris, E., Wimmer, M., Bruijn, H. D., Tan, Y. H. (eds.) Electronic Government and Electronic Participation Joint Proceedings of Ongoing Research and Projects of IFIP EGOV and ePart, pp. 77–85. Springer, Berlin, Heidelberg.

Colpaert, P., Joye, S. M. P., Mannens, E., and Van de Walle, R. (2013). The 5 Stars of Open Data Portals. Proceedings MeTTeG, (7), 61-67. Recovered from https://www.researchgate.net/publication/265140938_The_5_stars_of_open_data_portals/link/54be0b8c0cf27c8f2814dba5/download

Davies, T. (2018). 5-Stars of Open Data Engagement? Tims Blog, 2 Dec. 2018. Recovered from https://www.timdavies.org.uk/2012/01/21/5-stars-of-open-data-engagement/

Davies, T. (2021a). Evidence and insights: other findings from research. Data Portals and Citizen Engagement. Retrieved from https://dataportals.pubpub.org/pub/wvlaxe44

Davies, T. (2021b). The pressure on portals: an hourglass approach. Data Portals and Citizen Engagement. Retrieved from https://dataportals.pubpub.org/pub/qk1untv2

Degbelo, A., Granell, C., Trilles, S., Bhattacharya, D., & Wissing, J. (2020). Tell me how my open data is re-used: Increasing transparency through the open city toolkit. In S. Hawken, H. Han, & C. Pettit (Eds.), Open Cities | Open Data: Collaborative Cities in the Information Era (pp. 311-330). Palgrave Macmillan. Recovered from https://doi.org/10.1007/978-981-13-6605-5_14

DeLone, D.H., & McLean, E.R. (1992). Information systems success: the quest for the dependent variable. Inf. Syst. Res. 3(1), 60–95

Dirección General de Ética e Integridad Gubernamental. (2014). Ley General de Libre Acceso a la Información Pública, Ley No. 200-04. Recovered from https://presidencia.gob.do/sites/default/files/statics/transparencia/marco-legal/leyes/Ley-200-04.pdf

Dirección General de Ética e Integridad Gubernamental. (2014). Ley General de Libre Acceso a la Información Pública, Ley No. 200-04. Recovered from https://presidencia.gob.do/sites/default/files/statics/transparencia/marco-legal/leyes/Ley-200-04.pdf

ENGAGE. (2011). Analysis Report of Public Sector Data and Knowledge Sources (D7.7.1). Recovered from http://www.engage-project.eu/engage/wp/wp-content/plugins/download-monitor/download.php?id=4. Accessed 12 Dec 2012

European Commission. (2003). Directive 2003/98/EC of the European Parliament and of the Council of 17 November 2003 on the Re-use of Public Sector Information. Recovered from http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:345:0090:0096:EN:PDF

Folmer, E., Beek, W., Rietveld, L., Ronzhin, S., Geerling, R., & den Haan, D. (2019). Enhancing the Usefulness of Open Governmental Data with Linked Data Viewing Techniques. In Proceedings of the 52nd Hawaii International Conference on System Sciences (pp. 2912-2921)

Gascó-Hernández, M. & Gil-Garcia, J. R. (2018). The Role of Management in Open Data Initiatives in Local Governments: Opening the Organizational Black Box. JeDEM - eJournal of eDemocracy and Open Government, 10(1), 1–22.

Heo, J., Ham, D.H., Fossick, P., Wong, W., Park, S., Song, C. & Bradley, M. (2009). Conceptual Framework and Models for Identifying and Organizing Usability Impact Factors of Mobile Phones. Interacting with Computers, 21(4), 263–275.

Hogan, M., Ojo, A., Harney, O., Ruijer, E., Meijer, A., Andriessen, J., … & Malandrino, D. (2017). Governance, transparency and the collaborative design of open data collaboration platforms: understanding barriers, options, and needs. In Government 3.0–Next Generation Government Technology Infrastructure and Services (pp. 299-332). Springer, Cham.

Hsu, J., Ravichandran, R., Zhang, E., & Keung, C. (2021). Open Data Standard and Analysis Framework: Towards Response Equity in Local Governments. Equity and Access in Algorithms, Mechanisms, and Optimization, Association for Computing Machinery, 1–8.

Hutter, K., Fuller, J., & Koch, G. (2011). Why citizens engage in open government platforms? Informatik, 11–25.

ISA Programme. (2011). Interoperability Solutions for European Public Administrations, "Towards Open Government Metadata". Recovered from https://joinup.ec.europa.eu/sites/default/files/towards_open_government_metadata_0.pdf

Jaeger, P.T., Bertot, J.C. (2010). Designing, implementing, and evaluating user-centered and citizen-centered e-government. Int. J. Electron. Gov. Res. 6(2), 1–17

Jetzek, T., Avital, M., & Bjorn-Andersen, N. (2013a). The generative mechanisms of open government data. In: Proceedings of the 21st European Conference on Information Systems (ECIS), Utrecht, The Netherlands.

38

WHITE PAPER

VerDat

Jetzek, T., Avital, M., & Bjorn-Andersen, N. (2013b). Generating value from open government data. In: Proceedings of the 34th International Conference on Information Systems (ICIS), Milan, Italy.

Kippers, W. B., Poortman, C. L., Schildkamp, K., & Visscher, A. J. (2018). Data literacy: what do educators learn and struggle with during a data use intervention? Studies in educational evaluation, 56, 21-31. Recovered from https://doi.org/10.1016/j.stueduc.2017.11.001

Lee, G., & Kwak, Y. H. (2012). An open government maturity model for social media-based public engagement. Gov. Inf. Q., 29(4), 492–503.

Máchová, R., Hub, M., & Lnenicka, M. (2018). Usability evaluation of open data portals: Evaluating data discoverability, accessibility, and reusability from a stakeholders' perspective. Aslib Journal of Information Management, 70. Recovered from https://www.emerald.com/insight/content/doi/10.1108/AJIM-02-2018-0026/full/html

Maruping, L. M., Venkatesh, V., & Agarwal, R. (2009). A control theory perspective on agile methodology use and changing user requirements. Information Systems Research. 20(3), 377–399.

Meijer, A. (2015). E-governance innovation: Barriers and strategies. Government Information Quarterly, 32, 198-206.

Meijer, A.J., Curtin. D., & Hillebrandt, M. (2012). Open government: connecting vision and voice. International Review of Administrative Sciences, 78(1), 10-29. Recovered from doi:10.1177/0020852311429533

Norman, D. & Ortony, A. (2003). Designers and Users: Two Perspectives on Emotion and Design. Symposium on Foundations of Interaction Design. 1–13.

OECD. (2007). Working Party on the Information Economy: Participative Web: user-created content. In: DSTI/ICCP/IE (2006)7/FINAL. Recovered from https://www.oecd.org/sti/38393115.pdf

Osagie, E., Waqar, M., Adebayo, S., Stasiewicz, A., Porwol, L., & Ojo, A. (2017). Usability Evaluation of an Open Data Platform. In Proceedings of 8th Annual International Conference on Digital Government Research, Staten Island, NY, USA. Recovered from http://dx.doi.org/10.1145/3085228.3085315

Patricio, L., Fisk, R., & Cunha, J. (2008). Designing multi-interface service experiences. Journal of Service Research, 10(4), 318–334.

Pieterson, W., Ebbers, W., Dijk, J. (2005). The opportunities and barriers of user profiling in the public sector. In: Wimmer, M.A., Traunmüller, R., Grönlund, Å., Andersen, K.V. (eds.) EGOV 2005. LNCS, 3591, pp. 269–280. Springer, Heidelberg.

Schudson, M. (1998). The good citizen: A history of American civic life. New York: The Free Press.

Seffah, A., Donyaee, M., Kline, R.B., & Padda, H.K. (2006). Usability measurement and metrics: A consolidated model. Software Quality Journal, 14(2), 159–178.

Shaping Europe's digital future (2021). Digital Agenda Assembly: Report from the workshop "Open Data and re-use of public sector information", Brussels 16–17, June 2011. Recovered from http://ec.europa.eu/information_society/events/cf/daa11/item-display.cfm?id=5963

Shukair, G., Loutas, N., Peristeras, V., & Sklarß, S. (2013). Towards semantically interoperable metadata repositories: The asset description metadata schema. Comput. Ind. 64(1), 10–18.

Urbach, N., & Mueller, B. (2012). The updated DeLone and McLean model of information systems success. In: Y. Dwivedi, M. Wade, & S. Schneberger (eds.), Information Systems Theory-Explaining and Predicting Our Digital Society. Springer, New York.

Wood, D. (ed.). (2011). Linking Government Data. Springer, New York-

Xia, W., & Lee, G. (2005). Complexity of information systems development projects: conceptualization and measurement development. Journal of management information systems, 22(1), 45-83.

Zuiderwijk, A., Jeffery, K., & Janssen, M. (2012). The potential of metadata for linked open data and its value for users and publishers. JeDEM-eJ. eDemocr. Open Gov., 4(2), 222–244.

Zuiderwijk, A., Janssen, M., & Jeffery, K. (2013). An e-infrastructure to support the provision and use of open data. In: International Conference for eDemocracy and Open Government 2013 (CEDEM 13), 22–24, Krems, Austria.

Zuiderwijk, A., Janssen, M., Choenni, S., Meijer, R., & Alibaks, R. (2012). Socio-technical impediments of open data. Electronic Journal of e-Government, 10(2), 156–172.

Zuiderwijk, A., Janssen, M., Davis, C. (2014). Innovation with open data: essential elements of open data ecosystems. Inf. Polity 19(1, 2), 17–33.