

**Utilizing Open Data for Positive Social Change in a Developing Context**  
**An Internship at Open Data Durban**

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### **Abstract**

The aim of this internship was to explore how government data is opened, how opened data can be used to incite positive social change, and how impactful engagement in society can be fostered through open data. For five weeks, I worked at a non-profit civic technology lab called Open Data Durban (ODD). The Mission of ODD is to drive civic engagement in eThekweni through open data tools. They advocate for open data and open government as well as data-driven policy and decision making. During my time there I worked on their Data Science/Technology team. As a member of this team, I contributed to three projects which promoted positive social change in eThekweni. My primary role was to write code for ongoing projects but I also participated in idea creation and attend staff meetings to learn more about the organization.

## **Introduction**

For five weeks, I worked with Open Data Durban (ODD) as an intern on the development (dev) team. My objective in this internship was to explore how open data can be used to incite positive social change in a developing context while gaining hands-on experience using technical and non-technical skills at an NPO that strives to create positive social change. During this internship I aimed to contribute to an open data project that promoted positive social change, to understand the limitations and possibilities of open data, and to learn how to create solutions and tools for underserved and historically marginalized users.

In order to better understand the climate for open data in South Africa as well as ODD's approach to civic technology, I conducted four individual interviews with four of the seven ODD team member: Happiness Maphumulo (Community Lead) Matthew Adendorff (Chief Data Scientist), Nkululeko Mthembu (Programming Lead), and Richard Gevers (Founder). These interviews provide insight into methods that ODD employ to reach their goals and reveal each team members beliefs about the potential for open data to incite positive social change. This paper seeks to express my findings about the use of open data for positive social change through my internship at ODD. I will also provide contextual background for the work that ODD does in South Africa, analyze the organization's approach to civic technology, and analyze my work with the organization.

## **The Potential of Open Data**

### *Open Data and Open Government Data*

In democratic societies, most government data is public domain, but only recently has the 'openness' of government data become the focus of international societal improvement initiatives. Barack Obama, the former president of the United States of America, initiated the Open Government movement in 2009 after issuing a series of memorandums which declared open governance as one of his administration's the primary goals. Since the United States began implementing Open Government initiatives, many other countries have followed suit. Individual countries, as well as international initiatives such as the Open Government Partnership (OGP),

have taken on the task of promoting transparency, strengthening civil society, and fighting corruption. Within two years of its founding, the OGP boasted a membership of 58 countries.<sup>1</sup> This number grew to 65 participating countries by 2016 and the Open Government movement had reached third of the world's population.<sup>2</sup>

Every two years, nations participating in the OGP must express their commitments to open governance in a National Action Plan. Of the 2,000 commitments that have been made by governments in their National Action Plans, open data has been amongst the most popular.<sup>3</sup> The Open Data Handbook defines open data as "data that can be freely used, re-used and redistributed by anyone." Open data must be available and accessible in a convenient and modifiable format, provided under terms that allow re-use and redistribution without "limitations based on the user's identity or intent."<sup>4</sup> Open Government Data (OGD) is data which is "produced or commissioned by government or government controlled entities" which has been 'opened' to meet the specifications of open data.<sup>5</sup> Advocates of OGD often call for their governments to publish raw public datasets in an effort to enhance citizen participation, often through digital innovation.<sup>6</sup> Open Data and OGD are believed to have the potential to create societal value through the empowerment of citizens to make data-informed decisions, government transparency, and an increase in democratic participation.

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<sup>1</sup> Nataša Veljković, Sanja Bogdanović-Dinić, and Leonid Stoimenov, "Benchmarking open government: An open data perspective." *Government Information Quarterly* 31, no. 2 (2014): 278-290.

<sup>2</sup> Peter Timmins, Amanda Lawrence, and Swinburne APO, "Open Government Partnership needs a little more time and attention." *Policy* (2016).

<sup>3</sup> Tim Davies, and Fernando Perini, "Researching the emerging impacts of open data: revisiting the ODDC conceptual framework." *The Journal of Community Informatics* 12, no. 2 (2016).

<sup>4</sup> "Open Data Handbook." Open Knowledge International. Accessed March 20, 2017.

<sup>5</sup> Thorhildur Jetzek, Michel Avital, and Niels Bjorn-Andersen. "Data-Driven Innovation through Open Government Data." *Journal of Theoretical and Applied Electronic Commerce Research* 9, no. 2 (2014): 100-120.

<sup>6</sup> Jo Bates, ""This is what modern deregulation looks like": co-optation and contestation in the shaping of the UK's Open Government Data Initiative." *The Journal of Community Informatics* 8, no. 2 (2012).

### *The Potential Value of Open Data*

In recent years, many e-governments have shifted their focus away from exploiting technology in order to improve service delivery, to utilizing technology as an enabler of public sector transformation, citizen participation in the democratic process, government transparency and accountability, and effective governance.<sup>7</sup> This is the focus of open government. Many hope that OGD will be a "vehicle for increasing transparency, citizen participation, and innovation in society."<sup>8</sup> In an analysis of OGD within contemporary capitalist processes, Joe Bates argues that OGD initiatives are the result of a new 'bloc' of historical actors who are frustrated with the digital divide and the great disparities in data access.<sup>9</sup> Although there has been little sustained empirical work on the impact of open data and OGD on societies, few would challenge the notion that opened data benefits society.

The terms 'innovation,' 'citizen empowerment,' and 'transparency' are often invoked in discussions about 'openness,' but how do these concepts bring positive social change to democratic societies? Tim Davies outlines the way that these three categories have been suggested to create societal impact:

- Transparency and accountability: Open data will bring greater transparency to governments which in turn will bring greater accountability to governments and key actors
- Innovation and economic development: Open Data will enable innovators to improve public services and create social and economic value
- Inclusion and empowerment: Open data will alleviate power imbalances which have resulted from asymmetrical information and provide marginalized groups with greater leverage in the creation of rules and policy<sup>10</sup>

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<sup>7</sup> Veljković, "Benchmarking Open government."

<sup>8</sup> Thorhildur. "Data-Driven Innovation through Open Government Data."

<sup>9</sup> Bates. ""This is what modern deregulation looks like.""

<sup>10</sup> Tim Davies, and Fernando Perini, "Researching the emerging impacts of open data: revisiting the ODDC conceptual framework." *The Journal of Community Informatics* 12, no. 2 (2016).

Open data does not guarantee societal value or empowerment. In the early years of the Open Data and Open Government movements, myths about the value of open data acted as barriers to positive social change. Raw data holds little value on its own, but many believed that the publication of data would automatically produce societal benefits and that open data will lead to open government.<sup>11</sup> In a study of data-driven innovation, Thorhildur Jetzek, Michel Avital, and Niels Bjorn-Andersen analyze the ways that data is transformed into value through various mechanisms. They assert that democratic societies with higher rates of citizen participation will experience superior social outcomes. Many advocates for open government data often use participation mechanisms to create social value from OGD by enabling and encouraging the public to contribute their ideas and skills to society. Government data can create economic value for societies by providing private and public organizations and individuals with access to free data. Collecting data can be an expensive task, especially for a nonprofit organization or an individual. Government data is funded by taxpayer money and has been collected for a specific purpose, but its potential value can extend beyond that purpose.<sup>12</sup> Access to data alone does not create substantial value, but it does create a potential for value to be created.

### **Open Data Durban**

Open Data Durban (ODD) is a non-profit civic technology<sup>13</sup> lab that works to drive civic engagement in eThekweni. They advocate for open data and open government within the eThekweni Municipality and develop data-driven civic technology tools and solutions. ODD aims to create positive social change which helps transform Durban into a more inclusive, productive, and happy city that is better governed. The organization was founded in 2015 by former economic consultant Richard Gevers. As an economic consultant that focused on

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<sup>11</sup> Marijn Janssen, Yannis Charalabidis, and Anneke Zuiderwijk, "Benefits, Adoption Barriers and Myths of Open Data and Open Government." *Information Systems Management* 29, no. 4 (2012): 258-268

<sup>12</sup> Thorhildur, "Data-Driven Innovation."

<sup>13</sup> Civic technology: technology that enhances citizen communications, improves government infrastructure by enabling public engagement or participation



development planning, Gevers grew frustrated with the inefficiency of data collection and sharing in the development process. Because of bureaucracy and the supply chain process, data was vital to create real change that would develop and improve South African's lives was often inaccessible.<sup>14</sup>

In its first iteration, ODD was a meet-up group for innovative citizens who were interested in creating tools for positive social change using open data. After receiving an enthusiastic response from the Durban community, ODD began to pivot into a non-profit organization. Gevers organized a steering committee of community members to explore the potential of open data and lay the foundation ODD in its current form. Gevers wanted to ensure that ODD was going to serve the eThekweni community according to their needs and desires, not his own. The committee spent four months developing the founding principles and constitution for ODD.

As the first city facing civic technology lab on the continent of Africa, ODD gained the attention of established organization such as Code for Africa and OpenUp. Code for Africa is a non-profit organization that seeks to "build active citizenry by creating new avenues for civic engagement to help shape better public governance and public service" on the continent of Africa. They support 'citizen labs' in 9 countries and major projects in 15 countries including Cameroon, Ethiopia, Ghana, Kenya, Nigeria, Sierra Leone, South Africa, Tanzania, and Uganda.<sup>15</sup> OpenUp, formerly know as Code for South Africa, is a non-profit organization that advocates for open data, co-governance, and active citizenry. With the support of these two organizations, ODD was able to secure core funding from the Indigo Trust and bring the open data movement to eThekweni. Today, ODD continues to work closely with both Code for Africa and OpenUp, collaborating often on open data initiatives. ODD also works closely with the eThekweni Municipality, Innovate Durban, urbanEarth, The Maker Space, and Green Door.

ODD is funded through a combination of core funding, project funding, and partner funding. They receive core funding from the Indigo Trust, a charitable trust that supports organization in Africa that use technology for social change. ODD first received core funding

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<sup>14</sup> Richard Gevers, Interviewed by Joanna Simwinga. Personal Interview. Durban, April 26, 2017.

<sup>15</sup> Code for Africa. Accessed 20 April 2017.

while still in its first iteration. This funding allowed the organization to grow into the registered 8 person team that it is today. The majority of the organization's funding comes from project funding. They also receive partner funding when they take on initiatives with partner organizations such as Code for Africa or OpenUp.

## **Open Data in South Africa**

### *The Open Government Partnership*

In 2011, South Africa co-founded the Open Government Partnership (OGP), an international initiative that is made up of over 65 countries which have committed to open governance. The OGP emphasizes partnership collaboration between governments, civil society, and citizens.<sup>16</sup> Before a country may join the OGP, they must demonstrate that they meet the initiative's minimum requirements for fiscal transparency, citizen access to information, public official asset disclosure, and citizen engagement.<sup>17</sup> Once a country has become a member of the OGP, they must develop a National Action Plan biennially to express their commitment to promote transparency, empower citizens, fight corruption, and harness new technologies to strengthen governance.<sup>18</sup>

South Africa became a co-chair of the OGP four years later in 2015. In the same year, the South African Department of Public Service and Administration (DPSA) released the South African National Data Portal (SANDP). The DPSA developed this data portal in conjunction with the nation's third Open Government Partnership Action Plan to demonstrate their commitment to strengthening citizen-based monitoring. Through this action plan, the South African government has expressed its intent to provide citizens with improved access to government information and data.<sup>19</sup> This national data portal was one of first projects that ODD undertook. They worked in collaboration with OpenUp and the South African government to

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<sup>16</sup> Gabriella Razzano, "Connecting the dots: the coordination challenge for the Open Government Partnership," Open Democracy Advice Centre (2016).

<sup>17</sup> Elizabeth Mills "'You Have to Raise a Fist!': Seeing and Speaking to the State in South Africa." *IDS Bulletin* 47, no. 1 (2016).

<sup>18</sup> Timmins, "Open Government Partnership needs a little more."

<sup>19</sup> "Open Government Partnership" South African National Data Portal. Accessed March 27, 2017.

produce a data portal that now boasts over 400 datasets which contain information about human settlements, education, healthcare, the economy, and employment.<sup>20</sup> ODD began its involvement with the portal by researching open data portals, open data policies, and best practices for the city of Durban through a fellowship with OpenUp.<sup>21</sup> Nkululeko Mthembu said that the portal was a "Durban built solution." He along with other members of ODD and OpenUp assisted the government with collecting data sets and building the data portal.<sup>22</sup>

Despite the South African government's declared commitment to OGD and open government, their National Action Plans and data portal have received criticism for being ineffective. In an ethnographic study of activists living Khayelitsha, Elizabeth Mills analyzes the disjuncture between the South African government's political rhetoric and practice of open government. In the 2015 OGP Action Plan, South Africa pledged not only to make data open through the SANDP, but also to strengthen public integrity by improving public services, create safer communities, effectively manage public resources, and increase governmental accountability. Mills found that South Africa had failed to deliver on one of the OGP's core values: dignity. Residents of Khayelitsha were living without sanitation services, safe toilets, or affordable electricity. Mills asserts that there is danger in "dislocating 'open governance' policy language from people's everyday encounters with the state, or its absence."<sup>23</sup> While the South African government's OGP Action Plan can be assessed by its provision of government data, Mills argues that it is important to also assess open governance by the everyday experiences of citizens as the goal of open governance and opening government data is to create positive change in a society and in the daily lives of its citizens.

When asked about the OGP, members of the ODD team found both successes and shortcomings with South Africa's involvement in the OGP. ODD team members felt that the impact of OGP in SA has been positive because it has introduced the open data, open knowledge,

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<sup>20</sup> Ayanda Dlodlo. "Address by the Deputy Minister For Public Service And Administration" Address, Cape Town, May 5, 2016. Department of Public Service and Administration.

<sup>21</sup> Richard Gevers, Personal Interview.

<sup>22</sup> Nkululeko Mthembu, Interviewed by Joanna Simwinga. Personal Interview. Durban, April 20, 2017.

<sup>23</sup> Elizabeth Mills, "'You Have to Raise a Fist!'"

and open technology to prominent stakeholders in society as well as the national government. Internationally, the OGP has placed topics of open data onto the agendas of national governments and ministers. This is something that the ODD team members found to be powerful. The environment that the OGP created has facilitated connections between the civic technology sector in South Africa and the South African government. In that sense, it has made an impact. One team member expressed their thoughts on the limitations of the OGP by stating, "I think if you expected OGP to create real change in people's lives, I think it would only be indirectly."<sup>24</sup> The ODD team also found shortcomings with the national data portal. According to Mthembu, the national data portal faced data related barriers. While he was working on the portal, it was limited to the data sets that were readily available which often meant that the data was dated, irrelevant, or subject to prejudice and inaccuracy.<sup>25</sup>

When asked about the impact of the national data portal, Richard stated, "The national data portal that came out of South Africa is a data portal. A data portal is not a very useful thing without other things involved." OGD is thought to create value in society by empowering citizens to make informed decisions, increasing participation in government, making government decisions and actions transparent, and allowing for new knowledge to be created from the interpolation of datasets. The introductions of government data portals in South Africa has provided citizens with easier access to *some* social sector data, but access to data does not automatically add value to society. The concept that simply publishing data will result in open government is a myth has hindered the potential of open data. On its own, data holds little value. Data only adds value to society when it is used in an interesting and thoughtful way.<sup>26</sup>

### *The Role of Civic Technology*

Open data has great potential to create positive social change in democratic societies. When utilized correctly, data can be an invaluable tool to agents of social change. The

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<sup>24</sup> Richard Gevers, Personal Interview

<sup>25</sup> Nkululeko Mthembu, Personal Interview

<sup>26</sup> Marijn Janssen, Yannis Charalabidis, and Anneke Zuiderwijk, "Benefits, Adoption Barriers and Myths of Open Data and Open Government." *Information Systems Management* 29, no. 4 (2012): 264-266.

interpolation of data sets can provide new insights into social issues and aid policy writers in informed decision making. Intermediary organizations and individuals play a crucial role in the open data ecosystem. Intermediaries are agents who are positioned at some point in the data supply chain. They often are organizations which "help users access information that is publicly available by locating these resources, integrating various sources on a specific top, structuring these findings into a form understandable by interested users and disseminating it to them."<sup>27</sup> These intermediary organizations remove the barriers to value creation and to expose the potential value of data.

Members of the ODD team discuss the development of the open data movement in three waves. The first wave was rooted in one of the 7 myths of open data.<sup>28</sup> At the inception of the open data movement, many people believed that simply opening data would incite social change. During this first wave, many governments created large open data portal and assigned value to the number of datasets they could publish. Matthew Adendorff expressed ODD's core belief that open data must be accessible, not just available.<sup>29</sup> In regard to the open data portal that came out of the first wave, Gevers said, "I don't think people saw any real connection or any real change happening just because data was opened ... people realized that it actually has to be able to be used... I don't think that the national open data portal has any more impact than any other open data portals, but I don't think that any of the data portals have any impact without programs and other things that drive usage."<sup>30</sup> In the second wave of open knowledge, people began to transform data into visualizations, but according to Adendorff, these visualizations were more aesthetically pleasing than they were useful.<sup>31</sup>

In the third wave of the open data movement, information for information's sake is not enough, Information has got to fit a need in order to create societal value. The third wave of open

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<sup>27</sup> Francois Van Schalkwyk, Michael Canares, Sumandro Chattapdhyay, and Alexander Andrason, "Open Data Intermediaries in Developing Countries." *The Journal of Community Informatics* 12, no. 2 (2016). 10.

<sup>28</sup> Marijn Janssen, "Benefits, Adoption Barriers and Myths."

<sup>29</sup> Matthew Adendorff, Interviewed by Joanna Simwinga. Personal Interview. Durban, April 13, 2017.

<sup>30</sup> Richard Gevers, Personal Interview.

<sup>31</sup> Matthew Adendorff, Personal Interview.

knowledge focuses on active citizenry, democracy in action, and user-centered design. User-centered design is user-centered development where the user's needs are central to every step of the development process. Before the ODD team begins a project, they believe that you must first identify a need. Once the user and the need have been established, they will then seek out data to solve whatever problem their user is facing. Adendorff stated that "just opening data for data sake is not enough and a pretty picture is worth nothing if you don't know who you are presenting it to... some people respond better to a bar graph, some people might respond better to a couple lines on a page, some may prefer a cartoon." It is necessary to fit a need and a user when it comes to the visualization and the presentation of information.

In a study called "Open Data Intermediaries in Developing Countries," researchers found that there are a set of barriers that are prevalent in developing countries which prevent data from being transformed into societal value. These barriers include the cost of providing user-focused context for complex data sets, an absence of legal and policy frameworks, a lack of capacity to implement and sustain open data practices, and the cost of converting data into open data. Intermediary organizations utilize their own social and technical capital to transform data into value even when governments do not have the resources or skills to expose data's potential.<sup>32</sup>

Intermediary nonprofit organizations such as Code4Kenya employ their technical capital to develop applications to increase the effective use of data while organizations such as Arghyam in India utilize their cultural capital to spread awareness about and share solutions for water problems. Multiple types of capital are necessary to effectively transform data into value, but few intermediaries possess all or most types. When dealing with data, Van Schalkwyk found that technical capital was especially pertinent to value creation, but technical capital alone is not enough to create value. Code4Kenya is an example of an intermediary that relies too heavily on their technical capital. Research has shown that their application development has made little impact. Arghyam, on the other hand, uses their social capital to work with other nonprofits, corporations, the media, and volunteers to create value.<sup>33</sup> Van Schalkwyk warns that technical

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<sup>32</sup> Francois Van Schalkwyk, Michael Canares, Sumandro Chattapdhyay, and Alexander Andrason, "Open Data Intermediaries in Developing Countries." *The Journal of Community Informatics* 12, no. 2 (2016). 10.

<sup>33</sup> Ibid.

capital should not be overemphasized, as it is often social capital which opens the doors to data in the first place.<sup>34</sup>

Gevers stated that, "the problem with civic technology is that the ultimate outcome of civic technology is technology"<sup>35</sup> The first aspect of user-centered design is identifying a user and then asking them what they need. It is important to ODD to ask why they are trying to open data and why they are trying to build technology. Adendorff said, "One of the big things that we are trying to push at ODD is to not have tech arrogance...Technology is great if technology will help, but if a piece of paper is more useful, let's just use that" In order to find out what the best medium is, ODD asks the users. "There's no use in doing something if you don't ask."<sup>36</sup> ODD is trying to open knowledge to help people and to solve societal, city, and community challenges. They take a bottom-up approach to solving these problems, starting with a person or group with a problem. A project is not complete until the initial problem has been sustainably solved. Creating a piece of technology has no value unless that technology is solving a problem.<sup>37</sup> It is much more challenging to solve problems than it is to release data and civic tools, but that is ODD's mission.

#### *Collaboration with the South African Government*

In a study on the coordinating challenges of the OGP in South Africa, researchers found that an active civil society that is invested in open data can be a great asset to the government's implementation of their open data goals.<sup>38</sup> ODD tries to work closely with the eThekweni Municipality to further the city's open data and open knowledge initiatives. Gevers thinks that the city has a very positive approach to open data. One of the major success of ODD has been the amount that they have been able to engage with local government. "That engagement is starting

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<sup>34</sup> Van Schalkwyk. "Open data intermediaries in developing countries."

<sup>35</sup> Richard Gevers, Personal Interview

<sup>36</sup> Matthew Adendorff, Personal Interview

<sup>37</sup> Ibid.

<sup>38</sup> Gabriella Razzano, "Connecting the dots."

to turn into real projects and programs."<sup>39</sup> The eThekweni Municipality has been open to collaborating and partnering with ODD. The organization has helped to create an action plan for using open data in city water management. ODD has also collaborated extensively with Innovate Durban, an organization that was started in the city's economic unit. Last year, ODD collaborated with Innovate Durban on a youth innovation challenge where they focused on teaching design thinking, civic technology, and user-centered design. ODD also spoke at the city driven Innovation Summit.

Collaborating with the Municipality is integral to ODD's mission. They try to collaborate with the government and understand their problems. "If you try to see the government as users, like anyone else, like citizens, you will see things like under-capacitated departments and (lack of resources)."<sup>40</sup> ODD not only wants to further the municipality's open data goals, they also work to close the gap between government and citizens by providing citizens with more access to knowledge and tools. Through open data and collaboration, they hope that the government will be able to better understand the needs of citizens and provide citizens with better services. "Our approach is to wait for the city, let them get credit for creating open data policies, help them build a portal... and then they will understand the associated benefits of having open knowledge... Hopefully (this) leads to there being an easing of mechanisms and a breaking down of silos that lead to longer term, bigger change."<sup>41</sup>

Adendorff felt that eThekweni had an overall positive attitude toward open data while Mthembu believed that the South African government needed further educated about open government. Adendorff expressed empathy with the government, "I think there has been a lot of unfair criticism of the government... it will take a very long time for the ripples of apartheid to cease being felt, but I think what has happened is that there has been a huge of amount of criticism of the government."<sup>42</sup> ODD hopes that citizens will use their access to knowledge and tools to better understand the government's responsibilities and become better equipped to hold

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<sup>39</sup> Richard Gevers, Personal Interview

<sup>40</sup> Richard Gevers, Personal Interview.

<sup>41</sup> Ibid.

<sup>42</sup> Matthew Adendorff, Personal Interview.



their local government accountable. Happiness Maphumulo believes that open data helps users to better understand the city. Open data has the ability to clarify the misconceptions that people have about the government and help people to make better-informed decisions.<sup>43</sup>

### **Creating Social Change with Open Data**

#### *Hopes for a More Inclusive City*

ODD hopes to create positive change that makes Durban and the eThekweni Metropolitan area a more inclusive and cohesive entity. When asked about their hopes for ODD, each team member responded differently, expressed a desire for their community to reap the benefits of transparency and accountability, innovation and economic development, and/or inclusion and empowerment. Gevers hopes that ODD will incite real change that spreads to other metros and cities in South Africa and Southern Africa. To Gevers, real change in means Durban becoming a more inclusive, productive, and happy city that is better governed. Adendorff hopes that ODD is able to help open up the city to those that have been most disenfranchised. Mthembu hopes that ODD will spark interest around open data and inspire individuals to be more active in their communities while Happiness hopes that citizens will be able to solve problems their communities with the tools and skills that can come from open data.

#### *Measuring Impact*

ODD is continually re-evaluating their intentions and actions to ensure that they continue to create positive social change. At the beginning of the year, ODD focused on how to create metrics to measure their impact on eThekweni. Because of the varied and complex nature of their projects and initiatives, ODD tailors their metrics to each project. For example, in order to measure the impact of Durban Answers, a civic platform that will provide citizens with information specific to city services, rights, and citizenship in eThekweni, they would track usage metrics and user demographics to assess the reach of the website. They ask who is asking the question that they will answer and who can access the question. “Are we getting people from

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<sup>43</sup> Happiness Maphumulo, Personal Interview.

Umlazi and people from across the whole of Durban to engage with they system?”<sup>44</sup> “Is it in a language that I can access? Is it telling me where there is a Woolworths or is it telling me where I am on a housing list?”<sup>45</sup> It is simple to measure how many people are looking at their digital tools, but it is much more difficult to measure how the information that people are accessing is impacting people’s lives.

Each member of the ODD team expressed the difficulty of measuring real change. ODD tries not to measure ‘impact’ but instead, they focus on potential outcomes. The potential outcome or impact of a citizen attending a Durban Lab is that they are able to use the tools and information that they have learned to solve a problem in their community, essentially using the skills that they have learned to create that change.<sup>46</sup> In the case of Ezolwaluko, a tool to provide Xhosa initiates with healthcare information about safe circumcision, the ODD team asks: "was someone able to potentially prevent a maiming or death through engaging with the website?"<sup>47</sup> That is something that is important to ODD to measure, but it is difficult to track whether a death was prevented because a citizen found information on the website in advance to their initiation. ODD relies heavily on feedback and case studies in order to understand their impact on the communities that they serve.

### *Creating Positive Social Change*

The ODD team believes that there is a chance for real social change to come from open data if it utilized correctly. Open data can create transparency around issues that are widely known but not openly discussed. It can also be used to remedy historical inequality if initiatives are led by citizens needs and participated in by marginalized groups of people. Gevers believes that if people who are disempowered see open data as a way to be empowered and if solutions are developed in a way that reflects the need of the community instead of deciding what the need is, there is a chance for real social change. "In Durban, I think certain parts of the population see

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<sup>44</sup> Matthew Adendorff, Personal Interview.

<sup>45</sup> Richard Gevers, Personal Interview.

<sup>46</sup> Happiness Maphumulo, Personal Interview.

<sup>47</sup> Richard Gevers, Personal Interview.

change as us becoming a city that is like a city in America or the UK, I don't think that's true development or change... I think that carries out and perpetuates again something that has caused all of the problems.”<sup>48</sup> Open data has the ability to empower citizens to hold their governments accountable and incite real change. “Through demonstrations, we have come to understand that we do have an active citizenship, I think it’s now giving them the tools to make those decisions based on facts.”<sup>49</sup> ODD continuously re-evaluates their mission, impact, and actions. It is clear that ODD is thoughtful about their actions as a non-profit organization, they are well aware of their limitations but aim to have a positive impact on eThekweni. “If we get it right then I think there is a chance for there to be real change and if we get that wrong, we just perpetuate colonialism.”<sup>50</sup>

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<sup>48</sup> Richard Gevers, Personal Interview.

<sup>49</sup> Nkululeko Mthembu, Personal Interview.

<sup>50</sup> Richard Gevers, Personal Interview

## Internship Experience

My first assignment on the development team was to create a widget<sup>51</sup> for the Mpumalanga Civic Media Initiative (MCMI). MCMI is a digital journalism initiative that aims to help the Ehlanzeni District Municipality improve journalistic quality and strengthen citizen voices through the introduction of data journalism techniques. This project is made up of four sub-phases: assessing needs among partner newsrooms, training partner newsrooms on selected digital tools, producing editorial content using new tools and techniques, and developing customized technical tools and digital resources for newsrooms. The Write News Agency is the project lead and editorial coordinator for this project and ODD provides data tool training and technology support for this project while GIZ South Africa and Code for Africa fund the initiative. After assessing the 5 partner newsrooms, ODD began to create a website template for the newsrooms which includes widgets and tools for the public.<sup>52</sup>

These tools and widgets which have been being created by ODD and OpenUp include but are not limited to:

- WAZImap: a series of ward level profiles that provide census related demographic data
- Municipal Money: a series of infographics using Treasury data that monitor municipal finances. ex: fruitless expenditure, cash balance, the ratio of capital vs recurrent expenditure
- Living Wage: a look-up tool that allows users to check if they are paying their household workers a living wage
- Tender Blacklist: a look-up tool to check if companies or business people have been blacklisted by State authorities
- Property Valuations: a look-up tool to check who owns what properties and what the government has valued properties

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<sup>51</sup> widget: a module on a website, in an application, or in the interface of a device that allows users to access information or perform a function

<sup>52</sup> Open Data Durban, The Write News Agency. *Mpumalanga Civic Media Initiative Project Pilot Report*. Code for Africa and Deutsche Gesellschaft für Internationale Zusammenarbeit, 2017.

- Find Your Ward Councillor: a look-up tool that allows users to find information about their ward councilor
- Dodgy Doctors: a look-up tool that allows users to check if their doctors is registered and in good standing
- Medicine Prices: a lookup tool that allows users to check what price they should be paying for their medications based on government price guidelines

I built the medicine prices tool during my first two weeks at ODD. This tool allows users to look up the government regulated prices for their prescribed medications and then compare those prices with the prices of medications with the same active ingredients. Over-priced medicines have been reported as a major issue in informal or poorer settlements in Mpumalanga. This tool has the potential to empower these citizens to make data-informed decisions and increase their ability to purchase medications at fair prices. This widget pulls data from an API built by OpenUP. Because medicine prices in South Africa are regulated through the Single Exit Price Mechanism, the Department of Health regularly publishes medicine prices to the South African Medicine Price Registry.<sup>53</sup> This information has the potential to be of great value to citizens, but it is published in a format that is difficult to access and understand. OpenUp's API allows for intermediaries to create applications such as my medicine price widget or their own medicine price registry website to query the Department of Health's database and provide users with useful information.

The potential flow of information from the Department of Health's datasets to these medicine price web applications is an example of how value can be created from open data. On its own, the data opened and published by the Department of Health holds little value. Its size and format as a 15,000 line spreadsheet prevent casual users from being able to benefit from the information that it provides. By building an API, OpenUp expanded the potential and value of the database by making it accessible for intermediaries to utilize. Then by building an interface for casual users, OpenUp and ODD are expanding the value of the data even more. The data is now in a format that is friendly and useful to the public. This widget was created for the MCMI

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<sup>53</sup> "South African Medicine Price Registry" Department of Health. Accessed 20 April 2017.

partner newsrooms to embed onto their websites so that their user base will have access to this information, but ODD also hopes to make these widgets available to the general public, widening the reach of the tool.

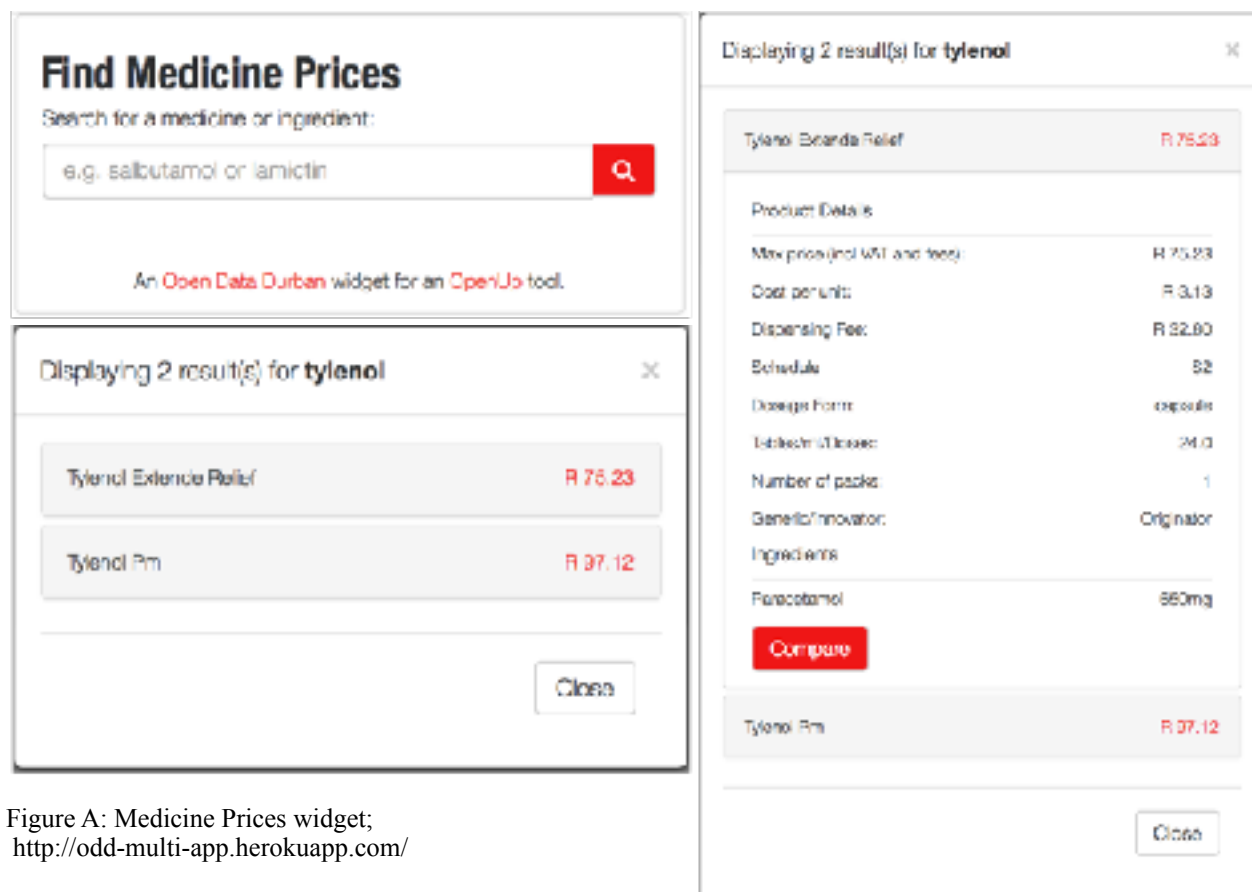


Figure A: Medicine Prices widget;  
<http://odd-multi-app.herokuapp.com/>

During my last three weeks at ODD, I worked on the Ask Durban campaign with the Communications and Outreach team. Ask Durban is a crowdsourcing campaign for a larger project called Durban Answers. Durban Answers is a civic platform that will allow users to ask questions that are specific to eThekweni. On the Durban Answers website, people will be able to find answers to their questions about city services, rights, and citizenship. This project aims to bridge the gaps in knowledge to make the city more inclusive and accessible to citizens and residents. Through Durban Answers, ODD hopes to provide citizens, especially those who are most underserved, with access to information that can help them to participate in their community, city, and democracy. Through the Ask Durban campaign, ODD hopes to collect

questions from the people of eThekweni so that they can fill the Durban Answers website with relevant and valuable information before it is released to the public. My roles in the Ask Durban campaign included building and designing the campaign's website and assisting with outreach ideation.

We wanted the website to be simple, eye-catching, and user-friendly especially on mobile devices. We published the first iteration of the website on 18 April, the launch date of the campaign. To promote the campaign, the communications/outreach team attended the Digitize Africa Conference and Exhibition at the Durban ICC on April 18 and 19. I was able to attend the conference on 19 April where we promoted Ask Durban in the exhibition hall. We were also able to crowd-source questions during Nkululeko's presentation on Africa's practical innovation skills. After engaging with members of the South African digital community, we were able to see the shortcomings of the campaign and had a meeting the next day to embark on the next iteration of the project.

This project allowed me to observe how the ODD team practices the Agile Model. The agile model is a combination of "iterative and incremental process models with a focus on process adaptability."<sup>54</sup> In the first iteration of the campaign, the communications and outreach team created a campaign strategy which included building a website to collect questions from citizens and promoting the campaign at the Digitize Africa Conference and Exhibition. After user testing the website at Digitize Africa and receiving internal and external feedback, we realized that it was time to move into the next iteration of the project. The next day, we met to discuss the ways that the website could be more intuitive and inclusive. We decided to refigure the website with new and clearer information, and include a project timeline for Durban Answers to provide context for the campaign. One of our main concerns was to overcome the barriers that were preventing us from reaching people throughout Durban. We decided to create promotional posters to hang up on UKZN and DUT campuses as well as organizations and businesses that ODD had previous relationships with such as the Green Bean, NSA cafe, and the Green Door. We also decided to send promotional documents to relevant organizations so that they could promote the campaign through their networks, newsletters, and publications. We also decided to

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<sup>54</sup> "SDLC - Agile Model," Tutorialspoint. Accessed 25 April 2017.

make all promotional items available in isiZulu. The website is now available in isiZulu, promotional posters will be printed in isiZulu, and tweets about Ask Durban will be tweeted in isiZulu. The campaign and website have gone through many iterations, and each iteration is the result of constant internal and external feedback.

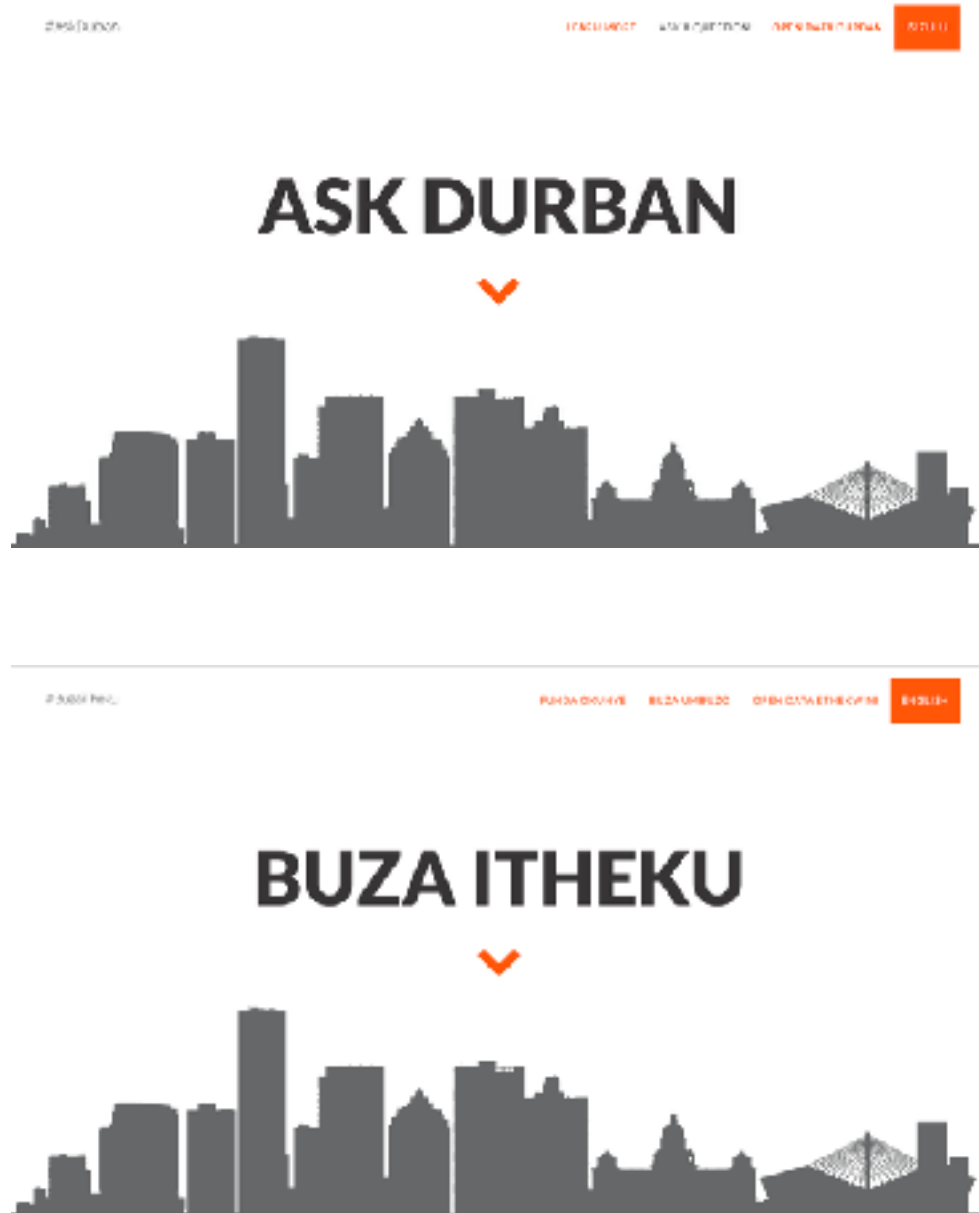


Figure B: The Ask Durban campaign website.  
<http://ask.answers.durban/>



## Conclusions

### *Analysis of Open Data Durban*

Open Data Durban has impressed me with both their approach to using open data for positive social change and their implementation of ‘open’ practices. Each team member has expressed great care in ensuring that they produce quality work that has a purpose and a potential to create positive change. The team members are aware of the organization’s limitations as a non-profit organization that produces technology. They work hard to ensure that they do not simply produce technical tools and are strive to create solutions for the citizens of eThekwin through whatever methods are most effective whether it be a piece of technology, a piece of paper, or a community event. ODD’s day-to-day operations serve as proof of the organization’s commitment to openness and collaboration. Team members stay in constant communication with each other about the progress and changes that have been made to the large stack of projects that they have taken on. By keeping channels of communication open to updates, feedback, critique, and encouragement, ODD has created a truly collaborative environment.

I would recommend that the organization continue to be self-critical and self-reflective. They are well aware of their positionally as a non-profit in eThekwin and the importance of representing the problems of the community instead of presenting the problems that they perceive. ODD employs both their technical and social capital to incite change and are careful to not rely too heavily on their technical capacity. The ODD team is made up of a group of people with a varied set of backgrounds and experience. This creates a rich environment where new ideas and approaches are always welcome. ODD seems to be very good at user-testing and involving key societal stakeholders in the testing of their projects, but there seems to be a lack of direct engagement with the general population of Durban. It would be nice to see ODD directly engaging and interacting with citizens in more projects like the youth innovation challenge.

### *Personal Assessment of Performance*

I feel proud of the work that I did with ODD and I feel that I learned even more than I had hoped to when I set out. For those reasons, I would call this internship a success. In this internship, I set out to learn about the utilization of open data for social change and gain

experience using my technical and non-technical skills for positive social change. I feel that this internship has been successful at fulfilling the objectives and goals that I had outlined. ODD gave me the opportunity to contribute to the MCMI initiative, the Ask Durban campaign, and the Durban Answers project. Working on these projects has been an invaluable experience. I not only feel that I have increased my technical capacity as a computer scientist, but I also feel that I have learned a great deal about the ways that a non-profit organization can utilize technology in a thoughtful and effective way. My other objectives in this internship included gaining experience of working with government data, learning how to create tools and solutions for a South African user based (especially those who are underserved) and understanding the limitations and possibilities of open data.

One of the most important lessons that I learned was how to separate ego from the broader mission. Because ODD's agile methodology, every project is dependent on iteration and open and continuous communication. It does not matter how much time or effort you put into a project if internal and external feedback reveal that changes need to be made to your work. In order for the best outputs and outcomes to be produced, you must be flexible and ready to adapt whatever you have been working on to fit the most recently discovered needs of the user. ODD highly values open communication. Critique of a project is not a critique of an individual but instead, is intended to further the work that is being done. By continuously evaluating their work, their projects, and their intentions ODD is always adapting and challenging themselves. They are always ready for the next iteration. This internship has been successful at fulfilling my objectives. It has changed the way that I think about 'openness' and taught me about the importance of open knowledge and collaboration in the effort to create positive social change.

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## **Appendices**

### **A. Outline of Tasks Performed**

**Position:** Software Development Intern

**Organization:** Open Data Durban

**Job Summary:**

Work with development team with ongoing civic technology projects through the development and theming of applications and websites. Assist communications and outreach teams with technical aspects of project as well as idea development.

**Qualifications:**

Front-end and back-end development experience

Working knowledge of Python, HTML, CSS, Javascript

Understanding of coding/software development principles

**Duties:**

Assist development team with ongoing projects

Assist Communications and Outreach teams with technical needs

Produce 2 blog posts about internship experience

**Expectations:**

Attend daily stand-up

Attend weekly development team meeting

Meet with supervisor for one-on-one meeting once a week

**Work Period:**

April 4 - May 3

Monday - Friday, 9am - 5pm

**Mentor:**

Richard Gevers

**Supervisor:**

Matthew Adendorff (development), Sophie McManus (communications/outreach)

## **B. Acronyms**

**API** - Application Programming Interface

**OGP** - Open Government Partnership

**OGD** - Open Government Data

**ODD** - Open Data Durban

### C. Glossary of commonly used technical terms as defined by Open Knowledge International<sup>55</sup>

**API:** Application Programming Interface. For data, this is usually a way provided by the data publisher for programs or apps to read data directly over the web. The app sends the API a query asking for the specific data it needs, e.g. the time of the next bus leaving a particular stop. This allows the app to use the data without downloading the whole dataset, saving bandwidth and ensuring that the data used is the most up-to-date available.

**Citizen Engagement:** Actively involving the public in policy and decision-making. Citizen engagement is a central aim of open government, with the aims of improving decision making and gaining or retaining citizens' consent and support. Open data is an essential tool for ensuring informed engagement.

**Data Portal:** A web platform for publishing data. The aim of a data portal is to provide a data catalogue, making data not only available but discoverable for data users, while offering a convenient publishing workflow for publishing organizations. Typical features are web interfaces for publishing and for searching and browsing the catalogue, machine interfaces (APIs) to enable automatic publishing from other systems, and data preview and visualization.

**Open Data:** Data is open if it can be freely accessed, used, modified and shared by anyone for any purpose - subject only, at most, to requirements to provide attribution and/or share-alike. Specifically, open data is defined by the Open Definition and requires that the data be A. Legally open: that is, available under an open (data) license that permits anyone freely to access, reuse and redistribute B. Technically open: that is, that the data be available for no more than the cost of reproduction and in machine-readable and bulk form.

**Open Government:** Open government, in line with the open movement generally, seeks to make the workings of governments transparent, accountable, and responsive to citizens. It includes the ideals of democracy, due process, citizen participation and open government data. A thorough-going approach to open government would also seek to enable citizen participation in, for example, the drafting and revising of legislation and budget-setting. See OGP.

**Open Government Partnership:** The Open Government Partnership, a partnership of national governments launched in 2011 with the aim of promoting open government in the member countries and collaborating on multi-lateral agreements and best practice. At the time of writing (2014) there are 64 participating countries.

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<sup>55</sup> "Open Data Handbook." Open Knowledge International. Accessed March 20, 2017.