

Priceless?

*A new framework for
estimating the cost of open
government reforms*

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Executive Summary

The Open Government Costing initiative, seeded with funding from the World Bank, was undertaken to develop a practical and actionable approach to pinpointing the full economic costs of various open government programs. The methodology developed through this initiative represents an important step towards conducting more sophisticated cost-benefit analyses – and ultimately understanding the true value – of open government reforms intended to increase citizen engagement, promote transparency and accountability, and combat corruption, insights that have been sorely lacking in the open government community to date.

The Open Government Costing Framework and Methods section (Section 2 of this report) outlines the critical components needed to conduct cost analysis of open government programs, with the ultimate objective of putting a price tag on key open government reform programs in various countries at a particular point in time. This framework introduces a costing process that employs six essential steps for conducting a cost study, including (1) defining the scope of the program, (2) identifying types of costs to assess, (3) developing a framework for costing, (4) identifying key components, (5) conducting data collection and (6) conducting data analysis. While the costing methods are built on related approaches used for analysis in other sectors such as health and nutrition, this framework and methodology was specifically adapted for open government programs and thus addresses the unique challenges associated with these types of initiatives.

Using the methods outlined in this document, we conducted a cost analysis of two case studies: (1) ProZorro, an e-procurement program in Ukraine; and (2) Sierra Leone's Open Data Program. The objectives of these case studies are twofold: to provide validation of the Open Government Costing Framework and to provide an estimate for costs for these two open government programs. These particular cases were chosen to validate the framework across different types of open government reforms. ProZorro is an e-procurement program that rose from the ground up through

voluntary work and heavy involvement of the private sector and civil society organizations. In contrast, Sierra Leone's Open Data Program is a top-down intervention initiated by government and multilateral partners. Both cases are also well known programs of their type and therefore form a strong baseline for similar types of programs. For both cases, the availability of program history and costing data was a key factor in selection.

Both case studies reveal important information regarding the specific costs of these two programs as well as lessons for those seeking to undertake similar costing analyses of different open government programs. Ultimately, the total cost estimate for ProZorro was identified to be approximately €4.69 million Euros, which included costs from the inception of the program in 2014 through its implementation in 2017; the total cost across Sierra Leone's Open Data Program is estimated to be \$558,688 USD. While both estimates are likely underestimates of the full economic costs of these programs, they provide an important initial baseline with which to gauge the cost-effectiveness of these open government programs, as well as provide context for future open government reforms in other countries.

For both these case studies, costing analysis was conducted using the Open Government Costing Tool. This tool is a Microsoft Excel-based application designed to support the collection and calculation of the cost of open government programs. The costing tool outlines the key cost elements included in an open government program, presents the results in a variety of ways (from highly detailed, micro-level information to very summarized, more macro-level information) and is built on an easy-to-use interface that allows the user to input key program elements by program activity and by cost category. In this case, the tool was used to cost conduct a historic costing of existing programs but can be easily adapted to model costs when planning a program or monitoring and tracking program expenditure. In conjunction with the costing tool, Results for Development developed a user guide to inform the use of the

Open Government Costing Tool. Chapter 5 of this report details how the Open Government Costing Tool can be used and adapted to estimate costs of other open government reforms.

With this package of materials, government reformers, donors, and the broader open government community will have new and practical tools with which to continue identifying the full costs associated with undertaking open government reforms. Identifying these costs is essential to better understanding the types and amount of resources needed to successfully implement open government reforms around the world, especially in contexts where financial resources are scarce. When used as a resource for planning, budgeting and advocating for open government, this work has the potential to vastly improve the design and implementation of open government programs as well as the sequencing and rationalization of reform efforts. Further, when paired with information on the downstream impact of open government programs, costing analyses of this type can provide invaluable information regarding the return on investment from such programs.

These case studies and the Open Government Costing Tool reveal important lessons regarding the methodology itself, cost trends for those designing

and implementing open governance reforms, and paths for a next generation of research to which costing analysis can contribute. For researchers interested in conducting similar research, costing the cases highlights the importance of identifying hidden labor costs and accurately defining the scope of the target reform. This begins when initially choosing a case study and ensuring the program offers a rich variety of data sources, including key informants familiar with diverse elements of the program, budget documents, and literature that can help verify the program's history, fill in knowledge gaps, and pinpoint any areas that may need additional attention during the costing exercise. For open government donors and implementers, the costing analyses reveal some of the major cost drivers of open government reforms as well as potential mechanisms for cost savings and offsets. Finally, for those seeking to make a better case for the spread of open government reforms, we highlight two major paths forward for this research – (1) increasing the pool of costing cases to answer additional key questions regarding cost and value of open government reforms and (2) taking the next step by pairing cost estimates with impact evaluations (like those highlighted in the World Bank Open Government Global Solution Group mapping from 2016) to highlight the potential value of these reforms.

1. Introduction

“Open government” is built on the idea that citizens have the right to access government information, to actively participate in government decisions that affect their livelihoods, and to hold government officials and/or service providers to account when they fail to govern properly (Heller, 2012; McGee and Edwards, 2016). Open government reforms aim to make government more transparent, more accountable, and more responsive to its own citizens, with the ultimate goal of improving the quality of governance, as well as the quality of services that citizens receive (OGP, 2015). The umbrella of open government programs and reforms includes initiatives such as open data systems, 311 systems for reporting service delivery complaints, e-procurement, participatory budgeting, citizen scorecards and citizen audits, as well as many other adjacent reform efforts.

According to the World Bank Group, when embraced, open government reforms can contribute to the twin goals of ending extreme poverty and promoting shared prosperity in low- and middle-income countries (GGP, 2016) in several ways. First, open government reforms can help increase the effectiveness of both domestic and donor-funded development spending, thereby improving the allocation and use of public resources (UN, 2008). Second, open government reforms can facilitate more inclusive decision-making processes and more effective management of public resources, and in so doing improve the delivery of government services, which are disproportionately used by the poor (Grandvoinnet, Aslam, and Raha, 2015; Rocha, Menocal and Sharma, 2008). Finally, open government reforms can increase trust between government and citizens; such social capital is crucial for the success of a wide range of public policies (Brix, Lust, and Woolcock, 2015).

A review of the extant literature, however, raises more questions than answers as to whether these three statements hold in practice and the extent to which the potential gains associated with open government reforms are greater than the costs of implementing them. In particular, there exists a large

gap in understanding of the value for money of specific subtypes of open government reforms. Low- and middle-income governments are now expected to use the “billions” in official development assistance and development resources to attract, leverage, and mobilize “trillions” in investments of all kinds (Badré, 2015). However, analysis on the specific costs needed for implementation of specific government reforms, as well as the return on investment of these reforms, has yet to be conducted.

Given the reality of increasingly limited development resources from external funders, being able to weigh the full costs of open government initiatives is critical to ensuring that governments are allocating and using resources in the most efficient and effective manner possible. **Priceless? A New Framework for Estimating the Cost of Open Government Reforms** presents and tests a methodology for doing just that. This report highlights work led by Results for Development and supported by the World Bank between August 2016 and June 2017 that has sought to overcome a major gap in understanding the value of open government programs globally.

This work began with an extensive review of existing literature and practices from the health, education and nutrition sectors as a foundation for building a new costing approach that addresses the specific challenges and characteristics associated with open government reforms. The result of this early phase of work is the **Open Government Costing Framework and Methods** (Section 2). The framework presents a set of common components that should be considered and assessed as part of any costing of an open government program. The methodology then delves into a detailed and actionable set of steps that can be followed by researchers seeking to conduct their own costings; these are accompanied by lessons from experiences testing this approach on three real-life open government reforms. To support the use of this costing methodology more widely, we have created an Excel-based tool and user manual that facilitates the use of this method for other programs.

Sections 3 and 4 present two important case studies in which the research team tested the costing framework and methodology on two actual open government reforms to provide costing information on these specific programs as well as to assess the effectiveness and adaptability of the framework and methodology. Section 3 presents the case of **ProZorro**, an e-procurement platform in Ukraine, highlighting unique challenges with costing this program and how these were mitigated; these unique challenges include issues such as how to cost the extensive use of volunteer time and pro bono resources in building the system. The final cost estimate (described in more detail in the section on ProZorro) is approximately €4.69 million Euros which included costs from the inception of the program in 2014 through its implementation in 2017¹.

A second case study, of the **Open Data Program in Sierra Leone**, is presented in Section 4. Sierra Leone's Open Data Program provides important lessons specific to open government reforms that are implemented in post-conflict or post-disaster environments across multiple phases of (often interrupted) effort. Based on extensive interviews with key stakeholders and reviews of expense and budget documents, the total cost across both phases of Sierra Leone's Open Data Program is estimated at \$558,688 USD. Section 4 presents details from this specific reform but also reveals important lessons related to how to address challenges of limited data availability and reconciling expenses across different phases of work.

While not presented as a separate case study, Results for Development also attempted to conduct a costing analysis of a third open government program – the **EDE Este 311 program** in the Dominican Republic. After extensive effort to obtain data and follow the methodology, it became clear that it would be impossible to develop a usable

cost estimate for this program with the information available. Despite the lack of an aggregate cost estimate, this exercise did provide critical lessons regarding the potential use (and ultimately limits) of the costing framework and methodology. As such, we have included examples from the EDE Este case in boxes throughout Section 2 to provide information to those seeking to use the costing methodology for programs in which researchers confront data gaps and/or a reliance on a single source of cost data. Lessons include key factors to look for when choosing a costing case study, how to fill gaps in data and best practices when conducting a costing of open government reforms.

The report ends with conclusions from the experience of developing the costing framework and methodology and from testing this methodology on three different open government reforms, two successfully and one that was ultimately unsuccessful. These conclusions focus on how best to conduct such costing analyses of open government programs, but also speak to higher level issues around why costing studies are critical to achieving improvements in this field. A better understanding of which open government reforms can be achieved for what price can be used to tailor and sequence open government efforts to the specific needs of low- and middle-income countries, particularly within the context of striving towards fulfillment of the Sustainable Development Goals. Analysis of the total costs of implementing open government reforms also provides a first step towards conducting cost-benefit analyses of open government reforms; understanding the costs and potential returns on investment associated with open government reforms is an important next step towards making the case for why opening up government matters for instrumental gains as well as normative agendas.

¹ Due to fluctuations in the exchange rates and incomplete information regarding the timing of all spending, we have kept the estimates for the ProZorro platform in Euros. Using the average yearly exchange rates based on data from the United States Department of Internal Revenue Services, the value in US dollars can be estimated as between \$4.98 million and \$5.98 million USD.

2. Open Government Costing Framework and Methods

Introduction and Purpose of Open Government Costing Framework and Methods

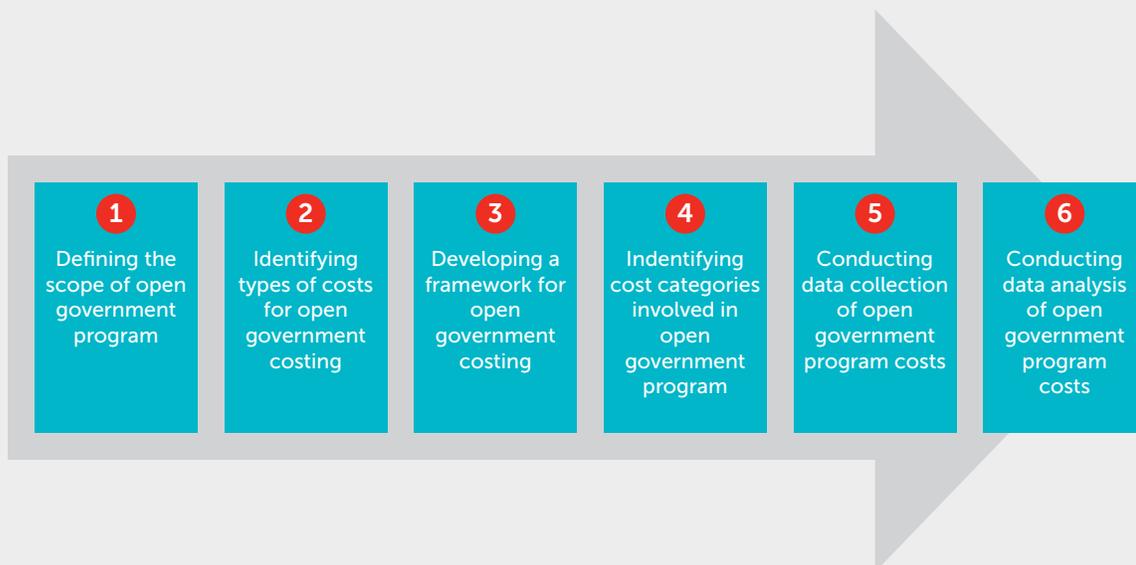
This open government costing framework outlines the critical components needed to conduct cost analyses of open government programs, with the ultimate objective of putting a price tag (or at least a cost range) on key open government reform programs in various countries. As the methodology takes a high-level, conceptual approach to costing, we believe it can be adapted to cost open government programs of many types and potentially other governance programs.

This framework is based on a high-level costing process employing essential steps for conducting a cost study, including defining the scope of the program, identifying which costs to assess, developing a framework for costing, identifying key

components and outlining each line item by inputs and activities (Figure 1 below). In the sections below, we present the costing process in more detail, as well as the general methodology and detailed guidance for each of the steps within this construct.

In addition to information about the methodology itself, each sub-section includes examples from three case studies that were undertaken to test the validity and adaptability of the framework: the ProZorro e-procurement program in the Ukraine, the open data program in Sierra Leone, and the EDE Este 311 program in the Dominican Republic. These are valuable cases as standalone costing analyses; at the same time, they provided important information regarding the challenges and complexities of utilizing this methodology on actual open government initiatives. Ultimately, the first two cases were completed and developed into individual reviews, and these cases are presented in their full form in Sections 3 and 4 of this report. The final case (EDE Este) was not completed due to challenges that we outline in the sections below. The experience of all

Figure 1: Step-wise Breakdown of Costing Process



three examples provides valuable lessons to those seeking to undertake such work in the future; as such we have included lessons from each of these cases in boxes throughout the subsequent sections.

It is important to note that while this document presents a general methodology for costing many types of open government programs, one of the biggest challenges in creating an adaptable framework is the variation in context and reforms in different country settings. Given the diverse range of open government initiatives, each type of open government program may have different structures, key components and players, as well as different economic and financial requirements and costs. Furthermore, even within the same type of reform (e.g. two similarly-structured open contracting reform programs in two adjacent countries), implementation and structure of the reform may vary significantly from country-to-country and population-to-population. This framework is meant to present a modifiable, adaptable scaffold for open government cost analysis, but by no means is it all-inclusive. For certain programs, specific activities or components may take precedent and contribute far more significantly to total costs while others may be less relevant.

1. Defining the Scope of the Open Government Program

Defining the components and boundaries of the open government program one seeks to cost is a critical first step in conducting a costing analysis. One of the challenges faced in costing open government reforms (as opposed to other sector-specific reforms, in health, nutrition, or education) is that in many cases open government reforms are novel and experimental initiatives; therefore, the definition and purpose of the initiatives are often vague, broad, fluid, or even contested. The breadth of possible goals of open data initiatives is highlighted by the definition of such goals by Open Knowledge International (a leading open data proponent): transparency and democratic control, participation, self-empowerment, improved or new private products and services, innovation, improved efficiency of government services, improved effectiveness of government services, impact measurement of policies, and new knowledge from

combined data sources and patterns in large data volumes (Open Knowledge International, 2016). Suffice it to say that attempting to cost the full potential spectrum of impact ascribed to open data initiatives can quickly become a daunting task.

Determining Purpose and Perspective

When determining the scope of the program, it is essential to first outline the purpose and perspective of the cost analysis. The purpose encompasses the goal of the cost analysis: what will the cost analysis be used to accomplish? The answer should drive the design of the costing and help to limit the universe of elements to be costed. Here, examples include economic evaluation and priority setting, financial planning and resource requirement estimation, budgeting, and efficiency analysis (GHCC, 2016). The purpose of the study will often dictate the components and timeline of the program in question that should be included. For example, if the purpose of the cost analysis is budgeting for a program that is already in place, capturing earlier stages of the program or previously incurred sunk costs, such as one-off planning, may not be necessary for the costing exercise.

Perspective, or who the target or client of the costing study is, is also key to determining the scope of the cost analysis. The perspective of the study and the lens that the cost analysis takes could range from narrow to wide; the cost analysis could look at costs to society, costs to the provider of the service, costs to the recipient of the service, or costs to a specific funder of the service. If the purpose of the cost analysis is to estimate the cost to the government department implementing the program in question, this would likely suggest a narrower requisite scope for costing the program relative to estimating total costs to society, for example. In addition to determining the scope of the cost analysis, purpose and perspective also help determine the types of costs used in the analysis (as explained in the following section).

Defining Program Components and Boundaries

After determining the purpose and perspective, the next step is to describe the program. This comprises of asking key questions that fully describe the components of the open government program, including the who, what, when, and where of the program. The “who” involves identifying the key players: who is responsible for designing, managing and implementing the open government program, and who is the target client or beneficiary of the program. If we take for example the costing of an open data program, identifying the key players would mean identifying (1) the implementers of the program, (2) the funders of the program, and (3) the clients or users of the program (i.e. those utilizing the data that is now available through this program or engaging with the program itself).

The “what” component comprises the identification of the activities that make up the specific open government program. Referring again to the example of an open data program, those conducting the analysis would want to ask themselves questions such as: what are the key steps in implementing this program, and what platforms and systems must be in place for the open data program to function.

The “when” and “where” are key to defining the boundaries of the program, especially in a cost analysis. In many cases, the program may be ongoing; as such, defining the time-period of the analysis will be critical to determining which type of costs are included. The question of “where” is key to determining the reach of the program. In the example of an open data platform, “when” defines the timeline of the program that will be taken into account in the costing (such as one year of

Box 1. Defining the Scope: Example from EDE Este 311

The case of the EDE Este 311 program reveals important information about challenges that can arise in conducting costing studies that are so great that they ultimately prevent the completion of the analysis. We include information and lessons about the challenges associated with each component of the framework as guidance to those conducting their own costing studies.

In 2011, EDE Este (an electricity distribution company in the Dominican Republic) developed a customer service system in response to public outcry regarding the provision of services to ensure open communication channels between the company and its customers. In the scoping phase of the costing of EDE Este 311, many of components of the key activities were difficult to determine. The core issue in completing this component of the work was that there was ultimately only one source of data that we were able to access to complete the costing; despite conducting iterative interviews and reviewing program documents from the EDE Este online portal and provided by EDE Este to the World Bank, the only source of data was a single contact at EDE Este.

Lessons for Future Cases and Researchers

- The costing analysis is more likely to be successful if more than one source of cost data can be identified. Only having one source of data increases the potential that there are critical data gaps that cannot be filled and that estimates for different cost items cannot be verified and thus are more likely to be inaccurate. For the EDE Este 311 costing, we had only one key source of data, which presented a significant challenge to capturing all activities and costs of the program. While challenging, this is also not surprising; key informants for scoping the case and collecting data often have very little incentive to provide this information. As such, it is important to outline the benefits of and create buy-in for the costing study early in the processes.
- In addition to data sources, it is incredibly valuable to have descriptive literature and write-ups of program history. Access to documentation across the phases of the case supports the identification of timelines, key activities and players. When this information can be gathered from other sources, program literature can also validate the collected data and help close data gaps.
- Upon identifying all willing informants and available data sources, researchers should review the program component questions (who, what, where, when, and why) and consider if all of these prove challenging to answer. In the case of EDE Este, the single data source left us with significant questions regarding even basic elements of the program (such as timeline, the order of steps, and key implementing agents). As such, we were left without the full understanding of the program or program costs. We were also not able to reach other potential key informants who might have possessed important cost or activity data. In completing similar costing analyses of other programs, these early questions may be a sign that a full accurate costing will ultimately be difficult to complete.

Box 2. Defining the Scope: Example from the Sierra Leone Open Data Program

Establishing a timeline was one of the main challenges for the Sierra Leone case study. The complicated history surrounding Sierra Leone's Open Data Program, including the first portal's release, closure, and second portal's release, made it difficult to initially discern which events, and costs, were critical to either phase of the portal's operation and which were solely contextual. For the purposes of conducting the costing, we made the decision that events and activities that built support for open data in general but were not perceived by stakeholders as critical milestones for Sierra Leone's Open Data Program in particular would be considered contextual and thus not included in the costing scope.

Lessons for Future Cases and Researchers

- Researchers should prioritize establishing a timeline – including key events and activities – prior to gathering any cost data. When there are a variety of key players involved at different stages of the program, there may be different timelines and views of critical versus contextual events; collecting and cross-validating these different timelines through conversations across all key players and program documents can help to finalize the set of critical events and activities. In the case of the open data program, choosing to speak first with key players who had a good sense of the entire program's history helped us to identify the important events and additional key implementers with whom we should speak. These initial conclusions regarding timeline and critical activities could then be further validated using budget documents.

operation or alternatively the duration of the program from conception) while the “where” defines the country, state or county coverage that will be taken into account in this costing (which could include the geographic area covered by the open data or the area targeted for users of the data).

The answers to each of these questions will depend on the purpose and perspective described earlier in this section. Defining the components and boundaries is critical to describing the type of program, whether or not to cost the program, and then defining which specific cost elements to include in the analysis. It is important to note that even questions such as these that seem relatively straightforward can be difficult to answer; challenges in answering the question of “when” and how we dealt with this in the Sierra Leone Open Data Program case are shared in Box 2.

Identifying Goals

After defining the purpose, perspective, and components, it is critical to identify the goals of the program – i.e. the why. Why was the program implemented, and what does the reform need to accomplish to be successful? Determining the outcomes of the program is essential in this stage of analysis to set boundaries for the reach of the program. As highlighted by the definition of open data initiative goals above, government reforms often include broad, difficult to measure outcomes. For example, if the goal of an open data platform is to empower data users, determining when and

if this goal is reached due to this program would be very difficult and may be dependent on other program goals (such as participation). When defining outcomes of the program, it is essential that the goals included as part of the definition of the program are specific and measurable. Program goal definition is also critical before choosing to cost a particular open government program. Identifying the goals of the open government reform prior to selecting the program for costing helps target data collection during the analysis.

2. Identifying the Type of Costing

The design of any costing analysis should be driven by how the intended audience will use the analysis. Cost data can be used for budgeting, priority setting, resource allocation, improving efficient provision of goods or services, or economic evaluation of new programs. Depending on how the cost analysis will be used, policy makers and program planners may be concerned with different types of costs. Therefore, depending on the purpose and perspective of the cost analysis, those using the costing analysis may be interested in economic, financial, or fiscal costs. While typically the cost categories included across the three types of costs in the analysis do not change, the measurement and valuation of resources and inputs may vary depending on how the cost data will be used, as described in Table 1.

Economic Costing

Economic costs reflect the full value of all resources utilized in the production of a good or service. Included within economic costs are costs sometimes referred to as “opportunity costs” because they represent those resources that are consumed and thus prevent the opportunity to devote those resources to another purpose. In terms of personnel time, economic costs would include the total value of all staff time spent on the program, as well as the opportunity cost of any volunteers and unpaid staff members involved in the program. Economic costs are required for economic evaluations, such as cost-benefit analysis or cost-effectiveness analysis. They may also be useful for program planners when considering how a new program will affect current resources or how best to ensure sustained program implementation for long-term planning. Economic costs may also generate information regarding what it might cost to start a new program in other settings. For example, while volunteers in one country may be willing to conduct trainings free of charge, this may not be the case in another; thus, the full economic costs of the original intervention (including volunteer time) need to be factored into the final price tag. Economic costing of open government programs is most relevant when the researcher wants to assess

the full cost of the program, especially in programs where opportunity costs such as volunteer time were high. This type of costing is helpful in modeling anticipated total program costs when starting or scaling new programs.

Financial Costing

Financial costs reflect the total financial outlays for goods and services needed to carry out the open government program. However, in contrast to expenditure data, financial costs amortize capital expenditures and one-time startup costs over time. In addition, financial costs are usually measured for the entire good or service rather than reflecting a particular agent’s financial outlays. Financial costs include the total budget cost for the implementation of the program. For example, financial costs of staff time include the cost of time spent by existing staff as well as any consultant fees paid specifically for this program. Financial costing captures the full monetary cost of implementing the program to both the government and external stakeholders. Financial costing is most useful when planning open government program budgets; this costing is not all inclusive of full program costs, but captures the total

Table 1: Definitions of Cost Categories by Type of Cost

Cost Category	Economic Costs	Financial Costs	Fiscal Costs
Salaried Labor	Included to represent opportunity cost of time of existing staff involved in program (full-time and percentage of time) plus economic value of volunteer labor	Labor costs of new staff hired to accommodate program	Included if new staff need to be hired
Consultants	Labor costs of consultants hired to accommodate program	Labor costs of consultants hired to accommodate program	Included if new consultant needs to be hired
Contract	Full cost of contracted services	Full cost of contracted services	Full cost of contracted services
Venue	Included if additional cost of venue rental needed for program	Included if additional venue rental is needed for program	Included if additional venue rental is needed for program
Transport	Included	Included	Financial cost of fuel and other transportation
Per Diem	Included	Included	Included
Materials	Cost of all materials needed for program implementation and advocacy	Financial cost of additional materials needed for program implementation and advocacy	Financial cost of additional materials needed for program implementation and advocacy
Overhead	Cost of additional overhead for program	Cost of additional overhead for program	Cost of additional overhead for program
Equipment	Economic cost of technology including depreciation	Financial Cost of technology creation	Financial Cost of technology

anticipated budgetary cost of implementation of a new open government program.

Fiscal Costing

Fiscal costing is the most narrow of costing methodologies and reflects the financial outlay that an agent (e.g., government, donor or individual) spends during a period of time for goods and services toward a specific program. Fiscal cost can refer to the entire sum required, or it may pertain only to those outlays incurred by a subset of the organizations involved in delivering the service. Note that expenditure data are usually reported using the cash basis method of accounting; this means that no amortization to capital goods is applied and as such all capital goods expenditures are recorded in full as they are incurred. For example, in terms of staff time costs, only costs for consultant fees or personnel hired specifically for the implementation of this program would be included. Fiscal costs capture only additional costs to the funder for implementation of open government programs. As such, this costing is useful for planning new programs or scale-up of programs, particularly when the program will be added to existing departments or existing functions.

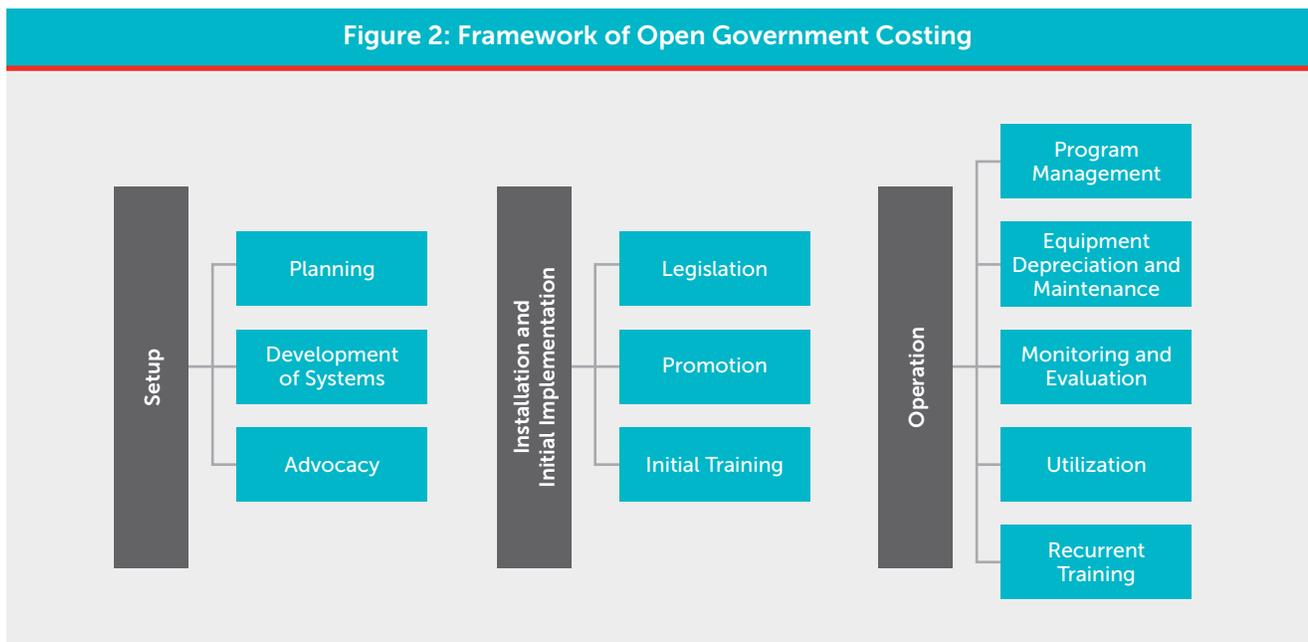
3. Framework of Open Government Costing

Key Program Phases

Conducting a cost analysis for any program can pose challenges for the analyst, and the challenges in costing open government programs are especially significant, given the vagueness in scope and the breadth of activities across many sectors and stakeholders that can comprise an open government initiative. One way to mitigate some of these challenges is to identify and segregate the activities, inputs and costs into discrete pieces. For the purposes of this costing methodology, we have adopted a program implementation framework (Fixsen et al., 2005) that considers three discrete phases: setup, implementation and operation (Figure 2 below).

- 1. Setup:** includes all exploration and adoption/ adaptation activities prior to implementation of the program. Key activities in this phase include planning, advocacy and any development of systems (hardware, software) or infrastructure investments needed for program implementation.
- 2. Installation and Initial Implementation:** includes all activities involved in putting the program in place. This is typically related to changes needed to support implementation of a new program, including with respect to skill levels, organizational mandate and capacity. Key activities would include

Figure 2: Framework of Open Government Costing



any one-off requisite legislation, training, and/or promotion required for success of the program.

- 3. Operation:** includes all activities associated with the running of the program once in place. Key activities include program management, maintenance of equipment, monitoring and evaluation, utilization and refresher trainings.

Definition of Activities and Resource Use

For each phase, researchers should identify key activities and types of resources required for successful execution of the open government reform. A list of the key activities and types of resources that we recommend for open government programs is detailed below. This is not an exhaustive list; depending on the program, there may be other activities that are not included below. Activities and resources should be identified on a case-by-case basis, as the example described in Box 3 below reveals.

Setup

- 1. Planning:** including staff, volunteer time and any meetings and events that took place to plan the implementation of the open government program. This would typically include one-time costs incurred at the beginning of the program.

- 2. Development of systems:** including costs of computer infrastructure, such as hardware and software programs for new platforms, websites, and other related costs. These costs may have both one-time capital costs, consultancies, services, licensing fees, as well as recurrent operational costs (such as air time and internet service provider costs).

- 3. Advocacy:** including staff, volunteer time and any meetings and events essential to advocacy efforts related to implementation of the open government program. This activity may also include the development of advocacy and awareness raising materials.

Installation and Initial Implementation

- 1. Legislation:** including staff, volunteer time, and any meetings involved in drafting and passing legislation (and/or regulatory changes) essential to the implementation of the open government program. These costs should only be included if the program could not have been successfully implemented without the passage of legislation or new/revised regulation.

- 2. Promotion:** including costs associated with advocacy, awareness raising, and social mobilization. The relevant costs may include the capital costs of developing media spots (such as TV, radio, or print), costs of events and productions related to the program, costs of

Box 3. Defining the Framework: Example from EDE Este 311

The EDE Este 311 case provides an important example of how attempting to employ the costing framework can reveal that an open government program is not a good candidate for costing. In the early scoping phases of EDE Este 311, we were unable to identify the key activities in the setup and implementation phase of EDE Este 311. Only program elements within the operation phase were identified. Further, even for those activities in the operation phase, we were only able to identify lump sum costs (such as total call center costs) and not components within these lump sums (such as the costs of training of call center staff). Due to the lack of the data, it was unclear which activities in the costing framework were relevant to the case.

Suggestions for Future Cases and Researchers

- As noted in the previous EDE Este 311 example (Box 1), costing analysis is more likely to be successful if more than one source of cost data can be identified. Even when there are multiple sources of data, it is ideal to have diverse data sources even within each phase to increase the likelihood that all activities across the timeline and within the scope of the study are captured in the analysis.
- In addition to having data sources that can speak to different phases of the program, it is also beneficial to have data sources across the different levels of program management. One of the challenges that prevented the complete costing of the EDE Este 311 program was the fact that there were some costs to which our single data source could not speak. Pairing information from high-level managers and directors of the program with data from staff members involved in the various activities in day-to-day operation can be very helpful in closing gaps in activity identification.

Box 4. Defining the Framework: Example from the Sierra Leone Open Data Program

The costing framework is an important starting point for data collection; however, the case of Sierra Leone reveals that the costing framework can and should be adjusted depending on the context. During our discussions with key stakeholders for the Open Data Program, we learned that users of the portal do not incur any cost. As such, we were able to remove the utilization costing category from the program-specific framework in this case.

Suggestions for Future Cases and Researchers

- Once the timeline and activities of the program are established, the researchers should identify if and how each of the activities in the timeline fit into the costing framework. Every case is different; some cases may not have all activities included in the framework while others may have key activities that are not present in the framework. Researchers should use the definitions of the various phases and activities presented in this chapter as a guide when categorizing relevant activities into the framework and should feel comfortable adapting this framework to the specific case they are analyzing.

distributing messages, and costs of any media equipment or staff time (such as payment of celebrity spokespeople). In addition, estimates should include the cost of air- and radio-time for messages, transportation costs associated with sensitizing communities, printing costs of flyers and posters, and other communications costs.

- 3. Initial Training:** including costs associated with orientation, training of staff and training of trainers. Initial training cost should be treated as a one-time cost until retraining is to take place; however recurrent training is included in a separate activity under Operation (below). Training costs include venue rental, per diems for participants, accommodation and travel for participants, cost of training materials development and cost of reproduction of materials.

Operation

- 1. Program Management:** including time and resources spent on managing and maintaining the program at various levels. The main costs here should include staff hours involved in management of various levels of the program itself as well as management of program staff. The key line item in this activity is often staff time as a direct and recurrent cost.
- 2. Equipment Depreciation and Maintenance:** including costs of additional equipment and personnel needed for maintenance of any technology or platform used for implementation of the open government program. This includes recurrent supply and labor costs.

- 3. Monitoring and Evaluation:** including staff and volunteer time for the monitoring of the program as well as any meetings regarding the planning, budgeting and management of the monitoring and evaluation of the program. This may include recurring supply, transportation and labor costs.

- 4. Utilization:** including costs to clients, partners and beneficiaries involved in the utilization of the platform, where relevant. For example, in an e-procurement program, this would include any cost to procurers and suppliers that ultimately use the system to bid on government tenders. Costs associated with this activity would include any fees for participation in the programs as well as costs in staff time and resources incurred by program users or beneficiaries. Fees should be considered capital costs if paid at one time and recurrent if payment is required at regular intervals. All other costs should be considered recurrent.

- 5. Recurrent Training:** including costs associated with training staff, clients, beneficiaries, and partners on the use of the program. Training costs include venue rental, per diems for participants, accommodation and travel for participants, and costs of reproducing developed materials. This should be considered a recurrent cost after the first year of the program, to accommodate staff turnovers, training new staff, refresher training and regular on-going training for clients, beneficiaries, and partners.

4. Identifying Cost Categories of the Open Government Program

Once the key activities and resources are identified as described in the previous section, costs can be further categorized by inputs, such as salaried labor and transport. Within a particular activity, there can be detailed line items for quantifying a resource use and valuing the resource to generate a cost per line item. While there are many ways to identify and categorize costs within a particular activity, we recommend identifying and describing these costs according to standard inputs that may be applicable to any activity. Table 2 provides an example of how to categorize unique, non-overlapping costs by implementation phase, input and activity.

In this section, we provide a list of key input cost categories found in open government programs. This is not an exhaustive list; depending on the open government program in question, there may be other key line items that should be considered that are not included in the list below. However, using this list as guidance may help researchers to take into consideration many of the costs that are associated with these types of programs.

- Salaried Labor:** the allocation of salaried labor to program-related activities including fringe and benefits, measured by the quantity of labor multiplied by appropriate average wage rates for different types of personnel.
- Consultants:** the cost of additional consultants hired and paid specifically and only for program activities.
- Contracts:** the cost of services contracted to external partners.
- Volunteer Labor:** the economic value of volunteer labor time spent on program activities, measured by the quantity of volunteer labor multiplied by relevant average wage rate for volunteers.
- Rent:** the cost of rental of venues used for program activities including trainings and meetings.
- Transport:** the cost of transport for program activities including meetings, training, and promotion. This includes costs of bus fare, plane travel, and the cost of vehicle depreciation, fuel, and maintenance for program-related activities.
- Per Diem:** the cost of allowances and honorariums given to salaried personnel and volunteers for program-related activities.
- Materials:** the cost of any printing or other production of materials used in the program such as training materials and manuals.

Table 2: Matrix of Cost Inputs by Program Activity

	Setup			Implementation			Operation				
	Planning	Advocacy	Platform Development	Training	Legislation	Promotion	Program Management	Platform Maintenance	Monitoring and Evaluation	Utilization	Recurrent Training
Salaried Labor											
Consultants											
Volunteer Labor											
Rent											
Transport											
Per Diem											
Materials											
Overhead											
Equipment											

9. **Overhead:** the portion of total overhead costs attributed to the program such as building maintenance, utilities, telephone, and internet connections.
10. **Equipment:** the value including depreciation for all equipment, such as computers, printers, and furniture, used for program-related activities.

5. Conducting Data Collection of Open Government Program Costs

After identifying which activities and cost input categories are relevant for a particular open government program (using Table 2 above as a guideline), researchers will then need to collect data on the relevant cost categories. There are a variety of cost data collection methods that can be used to estimate open government program costs. The choice of method will depend on two key factors: (1) the purpose and perspective of the costing and (2) the availability of data (specifically to what extent data are available from implementing agents, the resources available to collect data, and the timeliness of data needed to meet decision maker's objectives). Typically, cost data collection uses a mix of data collection methods, which we describe in this section. The two main approaches are gross-costing and micro-costing methods.

A gross-costing approach estimates all relevant costs and is typically a top-down approach that draws from the collection and analysis of program expenditure data. A top-down costing occurs through capturing expenditures on the program through reviewing expense reports and interviews with program managers. This type of data collection helps surface and capture costs that cannot be directly observed by an outside analyst, such as indirect costs or costs associated with already-completed program phases. In this approach, total costs may first be allocated to specific open government programs, and then unit costs would be estimated by dividing total costs by the number of outputs or outcomes associated with program impact. In the absence of detailed program expense data, gross costing may also be done using tariffs and fees.

Micro-costing methods focus on a more granular accounting of inputs associated with each program activity and collects the quantities and prices of

resources used for each activity. More often than not, micro-costing is a bottom-up process that relies on an ingredients-based (or activity-based) approach. Bottom-up costing captures costs through first defining each program activity and the main ingredients for each activity. Data collection then occurs through interviews and direct observations of people directly involved in program implementation. This level of costing is more accurate but significantly more time consuming.

In practice, these cost data collection methods (gross and top-down costing, micro-costing) are complimentary and will often be used together. For instance, some data are easily obtained from expense report records and provide either total costs or quantities and prices for key activities (such as costs of hardware installation, software development, advocacy, training or overhead administrative costs). For other inputs, such as personnel time used, it may be required to use micro-costing techniques to measure the quantity and value of labor time.

Collecting cost information requires both primary and secondary data about the program itself. When conducting a costing study, there are generally four main sources of cost data: budget and expense reports, planning documents, interviews, and observations; each is detailed below. While these are generally the data sources required for a full costing of an intervention or program, other sources may also be useful (or required) depending on the particular program in question. Before data collection methods are selected, it may be valuable to conduct a rapid assessment of the program itself and the amount and types of cost data available.

Budgets and Expense Reports

Budgets and expense report documents include any record of the financial inputs already incurred or planned for the program thus far. These budgets and expense reports can come from various sources; depending on the program, some may provide more information than others.

One key source of budget documents and expense reports is implementing agents. Typically, open government programs are funded by donors and implementing partners, such as non-governmental organizations (NGOs), working in partnership with key government partners. In low- and middle-income countries, it is unlikely that open government

programs are funded by existing government financing. Government agencies may receive additional funds from donors or NGOs to participate in activities, and these costs should be captured in the donor or NGO budget or expense reports. As such, a good starting point for capturing costs is the project or program specific budget and/or expense reports from the implementing donor or NGO. There may be a single report or multiple reports depending on several factors, including the number of implementing agents and whether costs are incurred at a single or multiple levels of the governance system.

If the initiative includes government partners, these agencies may also be contributing personnel time, infrastructure, vehicles, equipment and buildings to the program; as such, researchers should ensure that they are including information on the costs of shared government contributions (resources). These data may be included in the budgets and expense reports of the implementing agents, but if this is not the case, it should be captured using information from relevant government sources, budgets or expense reports. Ideally expenditure data will capture actual financial outlays; however, these data are not always available. In these cases, budget approval and budget request documents may provide useful information.

In the event that other donors or external stakeholders have provided critical services or made donations of goods and services, it will also be important to obtain budget or expense data on all donations. For example, if there is an organization

that was involved in developing systems or training materials used in the program but that was not directly paid a consulting fee by the government or donor funds, a share of the costs to develop those systems or training materials should also be included in the cost analysis. In the case of donations for which there is no data, market values may be used.

It is worth noting that even clear and comprehensive budget and expenditure reports may not capture accurate expenditures in the cost categories captured in those reports. An example of this challenge is detailed in Box 5 below.

Planning Documents

Planning documents include any documents that note key activities involved in the implementation of the program. Planning documents often include the budgets that were estimated before or during the setup phase of the program and are generally used in creating the primary request to the department of finance or donor for program funding. These documents are very useful in identifying the key activities involved in the program, including the Setup phase. They may also be particularly useful if the open government program being costed is not yet in place or if there are any changes to the program structure planned in the future, such as scale up. In the absence of program and other budgets, estimates found in these documents can be used as an estimate of costs.

Box 5. Conducting Data Collection: Example from the Sierra Leone Open Data Program

Fixed price contracts can be cost-effective for funders, though their total economic cost may be larger than anticipated. In conducting a costing analysis, it is critical to consider not just the contract value but also opportunity costs when vendors spend more time on the project than the cost allocated in the contract. In the case of Sierra Leone's first open data portal, the technical vendor's contract for portal development was fixed for 50 hours labor; however, the vendor spent far longer than that in back-and-forth discussions with the government and therefore lost money in the process. While this unexpected duration was not a cost for the donor, it was important for us to capture this cost to provide an accurate reflection of the economic costs associated with this program.

Suggestions for Future Cases and Researchers

- Often, looking at budget documents alone does not provide all costs incurred in the implementation of the program, especially when conducting an economic costing. Conversations with key players and managers can help identify key costs and resources that were donated, such as volunteer hours or other costs not captured in budget data. In this case, we noted these additional hours spent on portal development as an opportunity cost in the volunteer labor category. Future cases should keep in mind that fixed-price contract fees may also have hidden opportunity costs which may only come to light during discussions with participants.

Box 6. Conducting Data Collection: Example from ProZorro

A key lesson from the ProZorro case study is the importance of specific and granular interviews. In the case of ProZorro, we were very lucky to have contacts and key players who were bought into the study and willing to spend hours of time in conversation with us over the course of the study. As such, it was essential that our research team developed detailed and specific interview protocols to make these discussions as efficient and productive as possible, especially given that key players in open government programs often have little incentive to share timeline or cost data with the researcher and may be discussing activities conducted years prior to the study.

Suggestions for Future Cases and Researchers

- To make the time spent in interviews efficient, interview questions should be as specific as possible. In the scoping phase, the researcher should first identify any program documents that are available publicly or through key informants. After analyzing these documents when available, the first interview should be with a key player involved throughout the process to help validate the timeline established through the literature review. In this first conversation, it is often helpful to leave questions open ended and have the interviewee talk through the entire history of the program. After the timeline and scoping are established, interview questions should be more targeted to specific cost data. Questions such as “what was the frequency of meetings related to the platform,” “how many hours were each of these meetings,” and “how many people attended and from which organizations” will provide more precise answers than a question like “can you estimate how much time you spent in meetings for the portal’s management?”
- Often, it is difficult to keep conversations focused on cost data. For interviewees, it is often easier to focus on general activities or challenges rather than focus specifically on costs of activities. In the ProZorro case, we dealt with this issue by sending the timeline established in the scoping phase to interviewees ahead of time. This served to validate our timeline and help narrow conversation to specific activities within the timeline. Sending questions ahead of time also helped to keep the conversation focused using the interview questions as a guide and allowed the interviewee to reflect on the more granular level of cost data before the conversation with the researcher.
- Several interviews with volunteers in ProZorro were conducted with players who had not worked on the data portal in several years. This served as a reminder that some costs are reliant on participant memories. As such, interviewees may not be able to identify the exact number of hours they worked or the exact number of meetings attended and with how many participants. In these cases, the researcher should ask for an approximation of time and hours spent and then triangulate this approximation with others in the program.

Interviews

Interviews of key implementing agents and beneficiaries are essential for both context and costs. While budget and planning documents provide details on some of the key costs and components of the program, key informant interviews can help lay out the landscape of the program geographically, operationally and politically. Knowing this context and the various stakeholders involved in operating and financing the program is an important first step in costing analysis to determine the key activities for each phase of the program to be included in the costing framework. Interviews are also an important step in identifying who should be approached for budget and planning documents, both in terms of key government personnel involved in the program as well as external organizations involved in program implementation and funding.

In addition to providing important contextual information to help define scope and activities,

interviews are also crucial when estimating financial and economic costs. Interviews and the use of structured data collection forms may be the only way to capture information on the quantity of inputs used. This method is typically useful for capturing information on staff personnel time, equipment inventory and usage, and transportation modes and frequency of use. For example, interviews with key personnel may be one way to identify the number of hours or percentage of time spent on the implementation of a program. This is particularly key in identifying the percentage of time spent by upper management on the particular program versus other responsibilities and portfolios, an estimate that may be difficult to capture from budget or expenditure records. The same is true for staff that work across multiple programs, where the open government program may be one responsibility among many others. The value of this method of data collection is described in more detail in Box 6, highlighting the case of the ProZorro e-procurement platform in the Ukraine.

Observations

A final useful source of data is direct observation of the program and staff. Shadowing or following staff members involved in the implementation of the program at various levels can help identify the process of implementation, the key activities, and the line items to be included in the framework. Observation, unlike interviews, is often more accurate as it is not as susceptible to contamination bias, recall bias and other issues involved with gathering secondary data. Observations are also one of the best ways to assess percent of staff (or volunteer) time spent on a project. Following and noting the time spent on the program by various types of staff on an average day can provide an accurate estimate of labor costs, and without the biases that may be associated with interviews. It is worth noting that one major drawback to direct observation is that this process is often time and cost intensive as described in more detail in the case of the EDE Este 311 program (Box 7).

6. Conducting Data Analysis of Open Government Program Costs

After completion of the data collection, the final step of the costing methodology is the analysis of the data to produce final estimates. To implement the analysis, the researcher will need to input the key cost outcomes from the data collection, which will include measures such as total costs, incremental costs, and unit costs. After information and data are collected, they can be entered into excel worksheets and organized along costs by activity. To support researchers interested in conducting similar analyses of open government programs, we have developed an Excel tool that can be used to automatically generate costs. The costing tool is publically available for researchers to utilize; we have included figures from the costing tool in Annex 3.

Before inputting data into the costing tool, the researcher should assign input and activity codes to data obtained from various sources and various

Box 7. Conducting Data Collection: Example from EDE Este 311

Establishing costs broken down by cost category is essential for the application of this costing methodology because this allows the researcher to establish that all costs are being accounted for and no costs are being double-counted. However, in the case of EDE Este 311, we were unable to identify disaggregated costs of program activities. For example, EDE Este costs were identified by program component such as contact center, rather than cost of materials for the contact center. In this case, there were also sensitivities around this level of cost data because EDE Este is managed through a private company and therefore has less incentive to share budgets and disaggregated data. Ultimately we were unable to identify distinct input-specific costs and thus unable to verify the accuracy of cost estimates.

Suggestions for Future Cases and Researchers

- When available, the best sources for costs disaggregated by input are itemized budget or expenditure documents. These documents are likely to be easier to obtain when the program is run exclusively by the public sector. When the private sector is involved in the open government program, getting buy-in for the costing work early with high-level program managers increases the likelihood that the researcher will have access to the data they need to conduct the analysis.
- When total costs are not captured by budget documents and top-down interviews, one can employ a mixed-methods approach by supplementing top-down data with bottom-up data collection, such as direct observation of operational activities, number of staff hours on the activity, and equipment. This type of costing, however, is more time consuming and would require significant time and resources to observe program activities. Our work on this case did not afford us the time or financial resources to invest in observational research, which could have been at least partially effective in overcoming data access challenges that we faced.
- As discussed in Box 3, data collection through conversations with staff across the different levels of management of the programs can help isolate costs and activities at a granular level. In addition, there are often staff members who are dedicated to specifically manage the budget and finances of the program. These staff members often have the clearest insight into line item expenditures of the program and are a great source of data collection of disaggregated input costs.

organizations participating in open government initiatives to allow the data to be categorized by activity, input type, and funder. Researchers should expect to collect data from different levels of the system, as well as different implementing partners. In addition to coding costs by inputs and activities, all costs should be coded for the stages of implementation as shown in Figure 2. Ideally for data analysis, users will disaggregate quantities and prices of resources into separate line items when possible. In addition, data should be organized by level of program implementation (national, sub-national, community level) and by implementing organization. As the tool follows an ingredients-based methodology, the researcher should input costs as unit costs and number of units for each line item. Ideally, the cost data is already collected in this format. When that is not the case, unit costs can be estimated by dividing total costs by measures of project outputs and outcomes.

The second step is to clean and adjust costs for discounting, calculating capital depreciation, and annualizing and discounting one-time startup costs. At this stage, it is also critical to develop consistent allocation rules for shared program costs, such as salaried government labor and overhead costs. We provide guidance for cleaning and adjusting costs in Table 3 below.

The third step is to generate cost summaries by level and organization. Once the data is categorized into activity, cost category and number, the researcher can begin to generate total costs for each program activity and funder. In the Excel tool, these would be costs totals presented in as cost summaries in each of the input tabs.

The fourth step is to aggregate costs across organizations and levels by activity, input and stage of implementation to generate a full picture of total program costs. Here the researcher would bring

Table 3: Process of Calculation per Cost Category

Line Item	Units	Number of Units	Valuation
Salaried Labor	Estimate of salary and benefits	Percentage of time spent on program activity or average number of hours or minutes per activity	Gross salary or gross salary per hour
Consultants	Estimate of salary and benefits	Number of consultants and number of days worked per consultant	Consultant fee per day
Contract	Cost of services	Number of services procured	Value of contract
Volunteer Labor	Economic value of volunteer labor	Percentage of time spent on program activity or average number of hours per activity	Average wage rate or minimum wage
Rent	Venue rental per day	Number of rental days	Rental cost per day of venue
Transport	Cost of transport (costs of bus fare, plane travel, and the cost of fuel for program related transport)	Number of times transport used and/or number of trips or share of program vehicle allocated to open government program	Cost per transport per transport mode; Vehicle depreciation; Own vehicle costs related to fuel, maintenance, other per vehicle or trip
Per Diem	Cost of allowances and honorariums per day	Number of days	Per diem rates
Materials	Cost of printing per material	Number of material printed	Cost per material printed
Overhead	Total overhead costs such as building maintenance, utilities, telephone, internet connections	Percentage of time spent on the program	Total organizational overhead costs or overhead rate (in percent)
Equipment	Value of depreciation for equipment, such as computers, printers, furniture	Quantity, type, brand, useful life years of equipment	Replacement value of equipment, annualization factor or discount rate

together costs across all activities of the program to generate a total cost figure. Depending on the purpose of the study, it may be helpful to generate total costs through the sum of each activity of the framework, as well as through summation of each cost category of the program. Both sums should generate the same total cost of the program, but would allow the researcher to present costs disaggregated in different ways. This provides the researcher different insights into the cost drivers of the program.

3. Case Study – Costing of the ProZorro Program

While the Open Government Costing Framework and Methodology were built on the foundation of costing approaches for other sectors, they were developed to address unique challenges to costing open government reforms; thus it was critical that we test the methodology on real programs. This case study of the ProZorro e-procurement program in Ukraine presents the first of two costing case studies that were conducted (1) to provide validation of the open government costing framework and methodology detailed in Section 2 and (2) to provide an estimate for costs of the ProZorro program to establish a baseline of costs when advocating for adoption of similarly structured e-procurement programs. In addition, this costing provides the estimates for potential use in a cost-benefit analysis of e-procurement programs and more specifically ProZorro.

In conducting this costing, we followed a six-step process and methodology to estimate the economic costs of the program, described in more detail in Section 2 above. This case study provides an introduction and context for the ProZorro program, followed by a description of the ProZorro program costing process following the six steps of the methodology. The completion of each of these steps was augmented by interviews with key stakeholders of the ProZorro system including government officials involved in setting up and operating the program, stakeholders within the non-profit sector, and volunteers within the ProZorro system.

Introduction

ProZorro is an e-procurement program that stemmed from renewed nationalism after the revolution in Ukraine. Built on a rights-based approach to governance, this e-procurement platform was developed as a collaborative effort by key actors in the government and in the private sector who donated their time and skills to plan, advocate for, and implement this program in a push for increased government transparency and accountability. In May 2014, the concept was

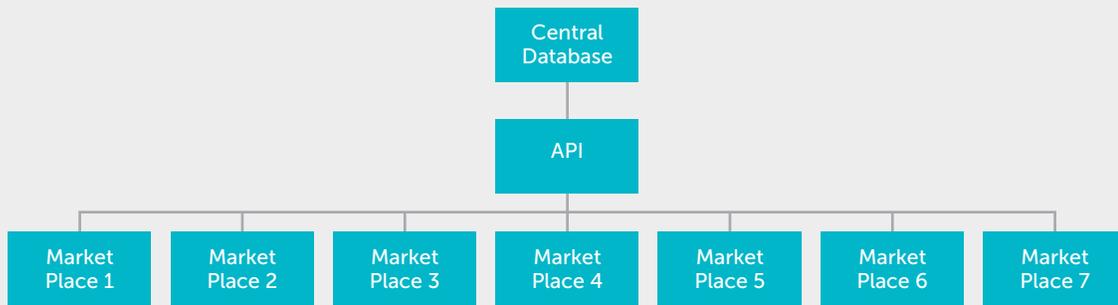
developed by Ukrainian volunteers with assistance from Transparency International, the Open Contracting Partnership, and government officials who had previous experience with the Georgian e-procurement system.

In January 2015, a team of key volunteers piloted the ProZorro platform. In this stage, Transparency International managed the platform with key support from volunteers from the private sector. Only five volunteer government departments were using the ProZorro system for procurement, which at that stage was comprised of the minimum viable product (MVP), or product with minimal sufficient components to be used by early adopters.

The MVP for the ProZorro platform includes the central database, the application programming interface (API), and seven privately run marketplaces as depicted in Figure 3. The central database, which hosts key procurement data, is the centerpiece of the platform. The API is the online website and platform through which the users interface with the procurement data. Both the central database and the API are centrally run by the ProZorro governing body. The marketplaces, on the other hand, are privately run web portals through which users place bids for products. During the development phase of the portal, private companies paid a single payment of \$7,000 each to participate in the portal and run these seven marketplaces. The development of the MVP at the pilot stage was led by volunteers in the IT sector and costs associated with software for platform building were subsidized and donated by key actors in the non-profit sector. It is important to note that these costs, while not incurred by the ProZorro platform, are critical to include in the costing to provide an estimate of the true cost of this type of program.

Concurrent with the development of the e-procurement system, there were parallel changes within the government, made through extensive advocacy efforts, that facilitated ProZorro's implementation. The department of procurement went through a reformation and monitoring systems

Figure 3: Outline of ProZorro Minimal Viable Product



for procurement were updated and put in place. The key policy factor that catalyzed the implementation of ProZorro was legislation passed in December 2015. The legislation stated that, beginning on April 1, 2016, all central executive bodies and state-owned natural monopolies must conduct procurements exclusively through ProZorro. In August 2016, this requirement was expanded to include all public procurement. It was at this time that the government took full ownership of the ProZorro system, and those ProZorro staff who were previously volunteers were recruited as government staff to work in the newly created state enterprise. The platform was also further developed in this phase to include the business intelligence (BI) tool to be used for monitoring and evaluation.

In its current stage, users of the platform pay to use ProZorro for procurement. The amount of payment for the service is based on value of products procured. This fee, paid by the users of the platform, is shared between the government department of ProZorro and the private companies running the ProZorro market places.

In the following sections, we describe the six-step process undertaken to estimate the total economic cost of the ProZorro system, including both direct and indirect costs incurred by all stakeholders. The methodology is outlined more specifically within each of these steps, but in general, data were gathered through interviews with key players, budget documents and information on the structure of ProZorro from reports and data found on the ProZorro platform itself.

Defining the Scope of the Program

Defining the components and boundaries of the open government program is a critical first step in conducting a costing analysis. This is key to identifying which components of the program should be included in the costs.

The first step is to identify the purpose and the perspective in costing the program. In this case, costing the ProZorro system was done with a dual purpose: (1) to validate the open government costing framework and (2) to develop estimates for advocacy purposes when pushing for the adoption of an open e-procurement platform in a country where it has previously not existed. For this reason, the total economic cost of ProZorro was calculated with an additional goal of pairing this total cost with further data on return on investment stemming from the elimination of corruption in procurement.

As a second step, we sought to understand why the program was developed and what it needed to accomplish to be successful. This step is key in understanding the core elements that must be in place for a successful e-procurement program and thus to inform the program elements to include when costing the system. To answer these questions, we used the definitions of e-procurement developed by the Organization for Economic Cooperation and Development (OECD) (2006) and the Sunlight Foundation (2017) which include describe e-procurement as:

- The use of electronic methods, typically over the Internet, to conduct transactions between the public sector and private suppliers;
- The process of e-procurement covers every stage of purchasing, from the initial identification of a requirement, through the tendering process, to the payment and potentially the contract management;
- E-procurement should ultimately make elements of the procurement process open to the public.

Using these definitions as guidance in the costing of an e-procurement program, all elements of the ProZorro system involved in transaction between the public and private sectors were included in the costing analysis as well as all stages of this process from announcement of procurement to monitoring of bids occurring on the platform.

Key Implementing Agents and Stakeholders

The first stage of scoping also required the identification of key players and program components, the results of which are described below and highlighted in Figure 4.

Public Sector

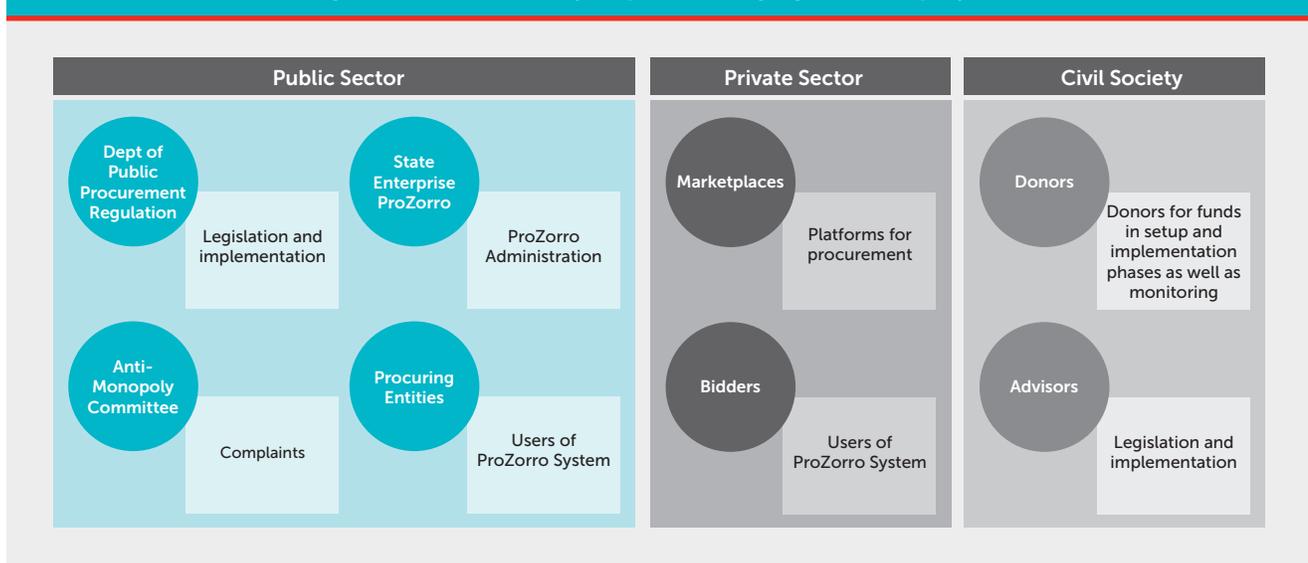
The main implementing agent for ProZorro is the Department of Public Procurement Regulation within the Ministry of Economic Development and Trade, which was responsible for changes to the Public Procurement Law and the development of secondary legislation acts required for implementing changes to the law. In turn, all the changes proposed by the Department need to be adopted by the Parliament.

The second implementing agent in the institutional environment is the state enterprise ProZorro (formerly Zovnishtorgvydav), which is responsible for administrating the ProZorro platform and operating the official website of the procurement system.

A critical stakeholder is the State Anti-Monopoly Committee which is a government body that aims to provide state protection to competition in the field of entrepreneurial activity. Bidders can submit complaints to the State Anti-Monopoly Committee and receive a verdict within 15 days.²

Lastly, state institutions and enterprises participate in the system as buyers (procuring entities). According to the law, from August 1, 2016 on, all public procurements must be conducted through ProZorro platform.

Figure 4: ProZorro Key Implementing agents and players



² Bidders are businesses that participate in tenders and eventually may supply goods to state procuring entities.

Private Sector

The private sector participates in the ProZorro platform in two important ways. First, each of the seven commercial marketplaces is run by Private sector actors. Second, private sector actors also operate as bidders in the e-procurement platform for the procurement opportunities announced and released by the public sector.

Civil Society

Civil society organizations were key in the setup and implementation phases of ProZorro. In its early stages, most funding for ProZorro came from civil society donors, such as EBRD and GIZ (see Annex 2). This funding helped pay for activities including the setup of the platform and trainings. These funds were organized and managed by a steering committee headed by Transparency International (TI) Ukraine. TI Ukraine was also the initial host and manager of the ProZorro system before the system was integrated into the state enterprise. In addition to providing direct funds for ProZorro development, civil society organizations helped advise and support the creation of the platform. For example, the Open Contracting Partnership (OCP) provided free support and advice to the ProZorro team on compliance with the Open Contracting Data Standard and access to free tools and help desk support.

Timeline

Figure 5 briefly outlines the timeline and key steps that led to the development and institutionalization of the ProZorro system. Briefly, Stage 0 included the conception phase of ProZorro, followed by advocacy efforts by key stakeholders and the development of the MVP. Stage 1 included the reform of the department of procurement, development of monitoring system and ProZorro promotion. Stage 2 was the scale up phase for ProZorro and included legislation efforts and training. Stage 3 (the current stage of the platform) includes the operation and maintenance of the ProZorro system.

For each stage, key activities, players and costs were identified through interviews and budget documents.

Identifying Types of Costs for ProZorro

As part of the costing process, researchers have to identify whether to use economic, financial, or fiscal costing for the analysis. The advantages and disadvantages, as well as cost category definitions, of each costing type is described in more detail in Section 2.

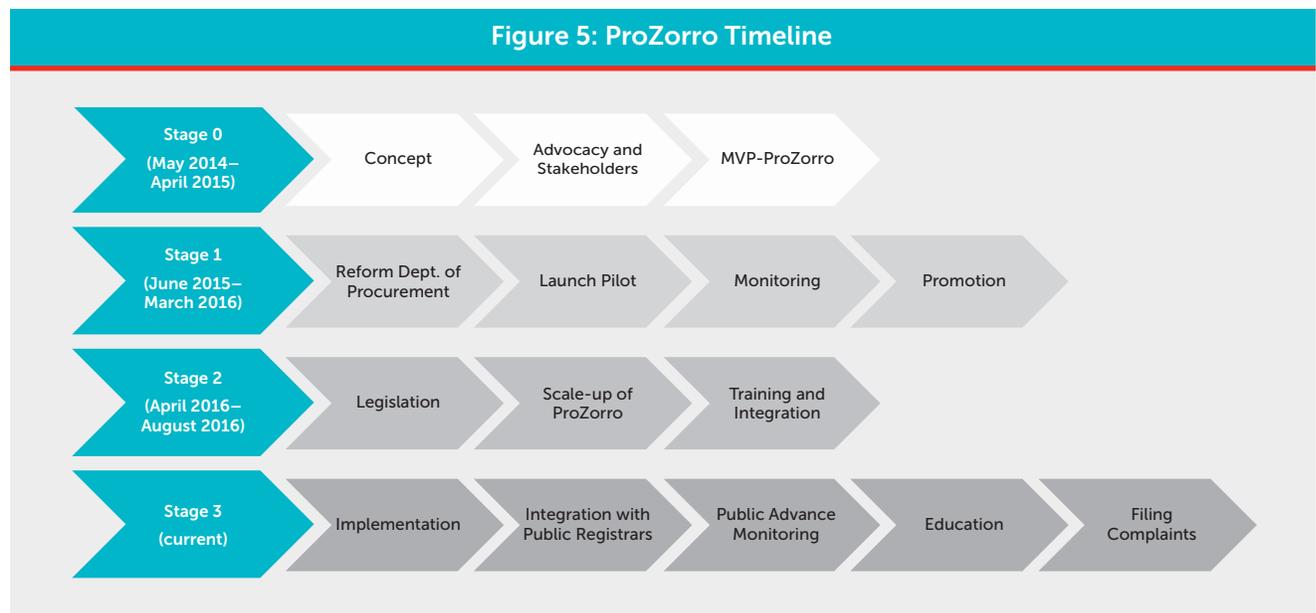


Table 4: Definition by Cost Category (ProZorro)

Cost Category	Economic Costs
Salaried Labor	Included to represent opportunity cost of time of government staff involved in program (full time and percentage of time)
Volunteer Labor	Opportunity cost of volunteers
Consultants	Labor costs of consultants hired for program
Contracts	Cost of contracted services for program
Rent	Included additional cost of venue rental needed for program
Transport	Cost related to travel for meetings, to promote program or to conduct trainings
Per Diem	Cost related to extra compensation for staff for program related travel
Materials	Cost of all materials needed for program implementation and advocacy
Overhead	Cost of additional overhead for program
Equipment	Economic cost of technology including depreciation

For this case study, an economic costing of the ProZorro program was conducted. Economic costs are a combination of financial costs and opportunity costs that reflect the full value of all resources utilized to produce a good or service. Opportunity costs represent full cost of resources actually consumed, thus preventing the opportunity to devote those resources to another purpose. In terms of personnel time, economic costs include the total value of all staff time spent on the program, as well as the opportunity cost of any volunteers and unpaid staff members involved in the program. Economic costs are generally the most useful for economic evaluations, such as cost benefit analysis or cost effectiveness analysis. As the purpose of this costing study is to provide data to feed into a larger body of work on investment and efficiency gains through the advocacy of a public e-procurement platform, conducting an economic costing was most applicable. Therefore, each of the line items included in the costing of ProZorro were defined in the broadest terms to capture total economic costs as summarized in Table 4.

Adapting the Open Government Framework for ProZorro

According to the open government costing framework, the activities, inputs and costs should be identified and segregated into discrete pieces when conducting a cost analysis of a program. This framework divides key activities of the program into three discrete phases: setup, implementation and operation as shown in Figure 6 below.

- **Setup** includes all exploration and adoption/adaption activities prior to implementation of the program. Key activities in this phase include planning, advocacy and any development of systems (hardware, software) or infrastructure investments needed for program implementation.
- **Installation and Initial Implementation** includes all activities involved in putting the program in place. This is typically related to changes needed to support implementation of a new program including with respect to skill levels, organizational mandate and capacity. Key activities would include any one-off requisite legislation, training and/or promotion required for success of the program.
- **Operation** includes all activities associated with the running of the program once it is in place. Key activities include program management, maintenance of equipment, monitoring and evaluation, utilization and refresher trainings.

For this study, each of the key steps in the ProZorro timeline identified in Figure 5 was mapped to this open government costing framework. The purpose of this exercise was to identify where costs for each program activity would be placed within the costing framework.

Identifying Cost Categories of ProZorro

Once key activities and resources are identified, costs can be categorized by activities and inputs such as salaried labor, transport and rent. Using interviews with key players and review of ProZorro budgets as a guide, relevant line items for activities across the

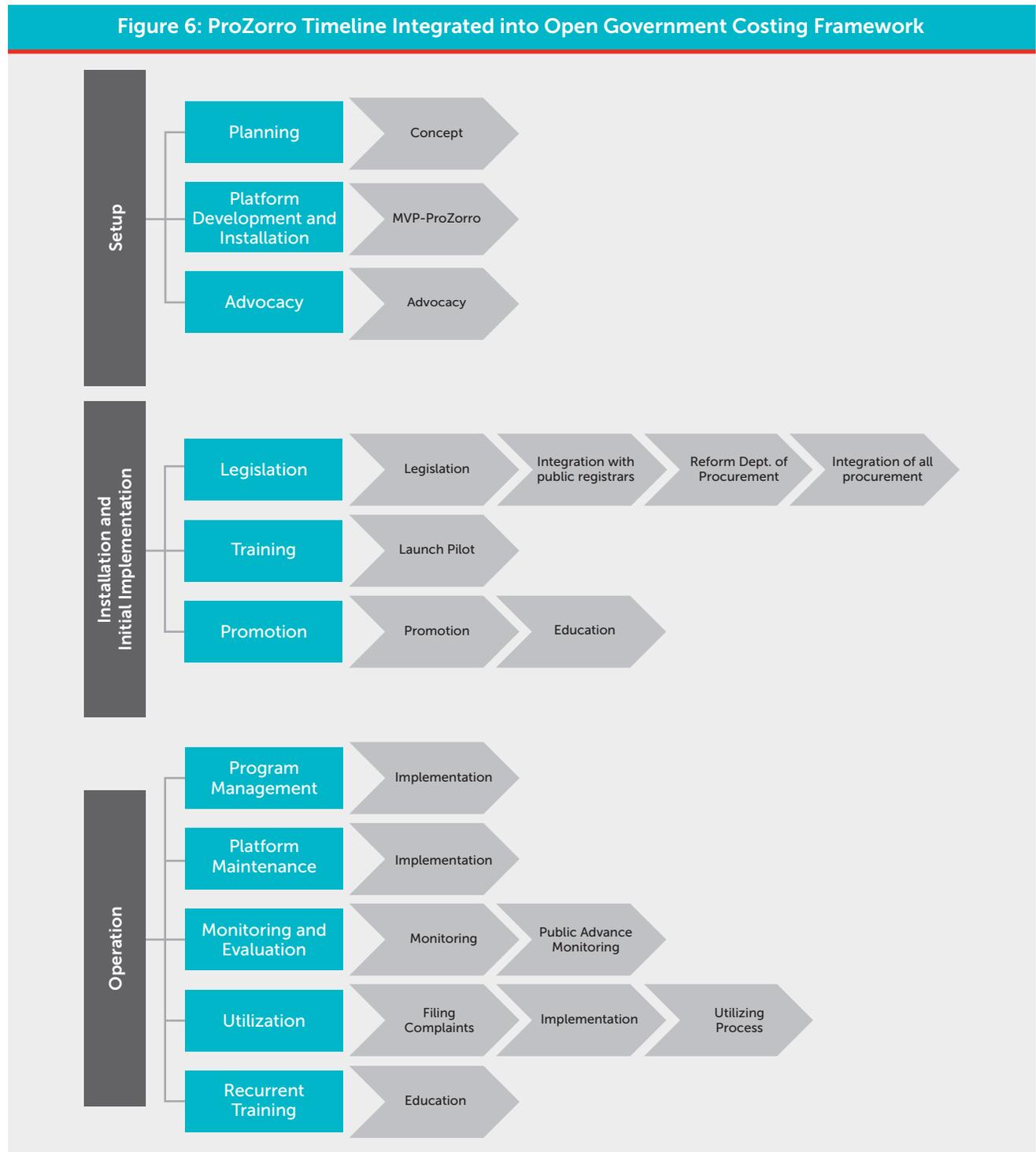


Table 5: Relevant Cost Category by ProZorro Program Component

	Setup			Installation and Initial Implementation			Operation				
	Planning	Advocacy	Platform Development	Training	Legislation	Promotion	Program Management	Platform Maintenance	Monitoring and Evaluation	Utilization	Recurrent Training
Salaried Labor											
Volunteer Labor											
Consultants											
Rent											
Transport											
Per Diem											
Materials											
Overhead											
Equipment											

ProZorro timeline were identified. In Table 5, a shaded box indicates that a line item was relevant for a given activity. As this is an economic costing, each of the line items included in this costing are defined in Table 4.

Conducting Data Collection of Open Government Program Costs

Data for this case was gathered using a variety of top-down data collection methods, which capture program expenditures through reviewing expense reports and interviews with program managers (rather than direct observation of program activities). Data sources for ProZorro costs included budget documents from both donors and government as well as an extensive set of interviews used to capture labor and historic costs. This combined approach helps to

identify costs that cannot be directly obtained through review of documents alone, such as the allocation of indirect costs or opportunity costs associated with already-completed program phases.

As this was a mixed methods approach to data collection, we used different approaches to estimate total and unit costs and to ultimately arrive at our final metric: the total cost per activity. For several activities, we started with total expenditures from budgets and then derived unit costs by dividing the total expenditure for that activity by the number of inputs. For other costs, we had to estimate total costs per activity by using an ingredients-based approach, where the number of units was multiplied by cost per unit. This combination of methods allowed for the estimation of all identified costs associated with the ProZorro platform.

In Table 6, we briefly outline the line items included in each cost bucket as well as the methodology followed to collect data for these line items.

Table 6. ProZorro Costs and Calculation Methodology by Cost Category

Cost Category	Costs Included	Calculation Methodology
Salaried Labor	Salaries of managers and platform designers paid for by GIZ in setup phase; Marketing director costs for promotion; Training labor costs; ProZorro platform manager; ProZorro platform maintenance labor cost; Monitoring specialists; BI tool developers	Data collected through donor budgets and interviews with donors and program staff
Volunteer Labor	Volunteers in setup phase	We estimated the cost of this labor by estimating time that volunteers spent free of charge on this program by wages the volunteers would have made had they been working in another sector or minimum wage when that could not be established; data was collected through interview with volunteers.
Consultants	Consultants hired for development of ProZorro platform in setup phase	Data collected through donor budgets
Contract	Contracted services for ProZorro	Data collected through donor budgets
Rent	Rent during development of systems	Data collected through donor budgets
Transport	Training transport costs	Data collected through donor budgets
Per Diem	No costs included	Unable to disaggregate data for this line item
Materials	Materials needed for setup of platform (i.e. software, iCloud storage, supporting webpages etc.)	Data collected through donor budgets
Overhead	No costs included	Unable to disaggregate data for this line item
Equipment	Supporting external platforms	Data collected through donor budgets

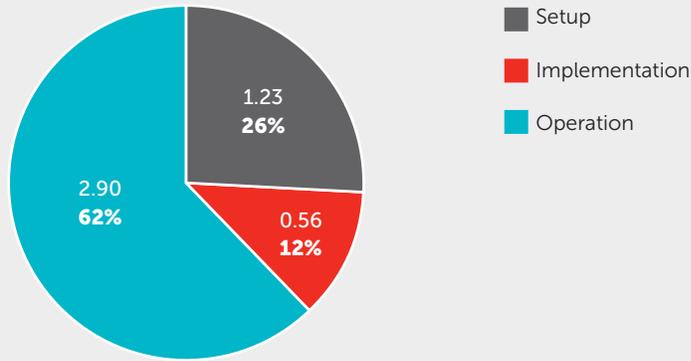
Conducting Data Analysis of ProZorro

This analysis examines the total economic cost per activity for the ProZorro program. The cost measure incorporates all costs collected from key implementing agents and funders from the public, private and NGO sectors, described in further detail in the previous sections of the case study. We estimate that the total cost of the ProZorro program

is €4.69 million Euros or between \$4.98 - \$5.98 USD³, of which approximately €1.23 (26%) million Euros was spent in the setup phase, €0.56 million Euros (12%) in the implementation phase, and €2.90 million Euros (62%) in the operation phase. Below we highlight some of the key results in Figures 7, 8, 9, and 10.

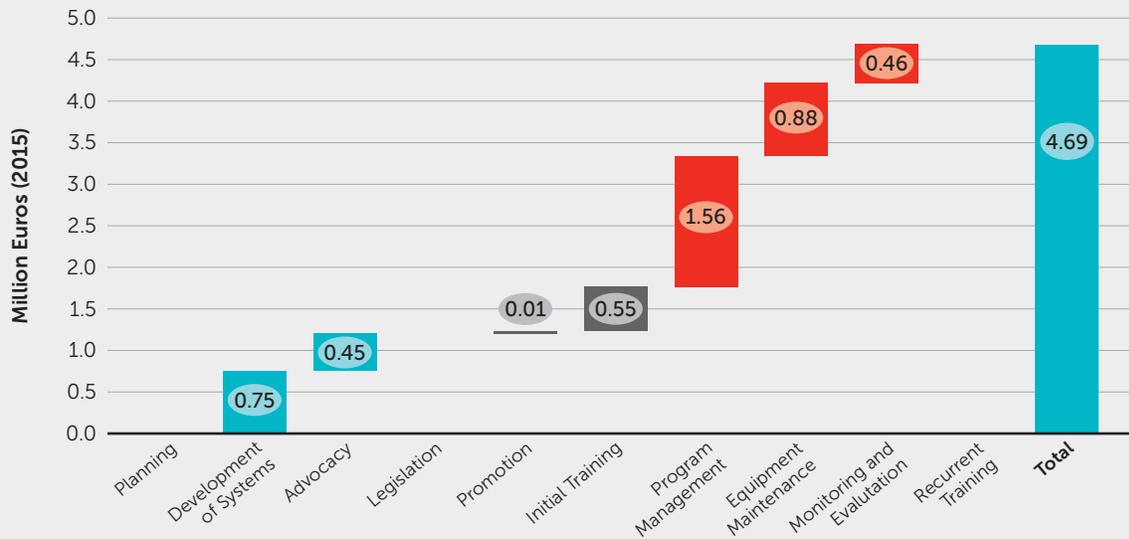
³ Estimated using average yearly exchange rates based on data from the United States Department of Internal revenue services. We present a range of costs in USD because we do not have data sufficiently disaggregated by date of procurement to properly estimate the USD value for each input at the time the cost was incurred.

Figure 7: Breakdown of ProZorro Program Costs by Phase



Breakdown of Costs by Costing Framework Phases
(Million Euros 2015)

Figure 8: Breakdown of ProZorro Program Costs by Activity



Discussion

The biggest cost driver for ProZorro is labor costs. In every stage of the program, paid staff time was a necessary component in program operation. In installation of similar interventions in other places, this will likely be the key cost driver as well. Interestingly in the ProZorro case, roughly 35% of the total labor costs were incurred by volunteers. This brings down significantly the paid labor costs in the ProZorro life cycle; however, it is critical to consider the opportunity cost of volunteer time in the costing

because this is skilled time that would likely need to be included as a salaried labor cost if setting up a similar e-procurement program elsewhere. Figure 10 highlights the importance of volunteer time in the costing of the ProZorro intervention. When split into phases, the critical role of volunteers is even more clear – in the setup phase, volunteers made up 29 percent of total labor costs (not including cost of consultants) while in the implementation and installation phase, volunteer labor was 91% of labor costs. As mentioned earlier, we observe high volunteer costs in the ProZorro program as many

ProZorro volunteers were highly skilled and therefore had high opportunity costs.

The second biggest cost driver for ProZorro is materials. This primarily includes the cost of setting up and maintaining the ProZorro platform. It is important to note here that the cost of setting up this platform is lower than expected as many of the services and materials to set up the platform were

offered at a lower cost than in the private market by organizations in conjunction by civil society donors. Although this is an economic costing of ProZorro, costs incurred directly by ProZorro were included in this case study, not costs of the materials in the private sector. This decision was made primarily because the private sector cost of these materials was hard to collect as we were unable to conduct interviews with the platform development company.

Figure 9: Breakdown of ProZorro Program Costs by Cost Input Category

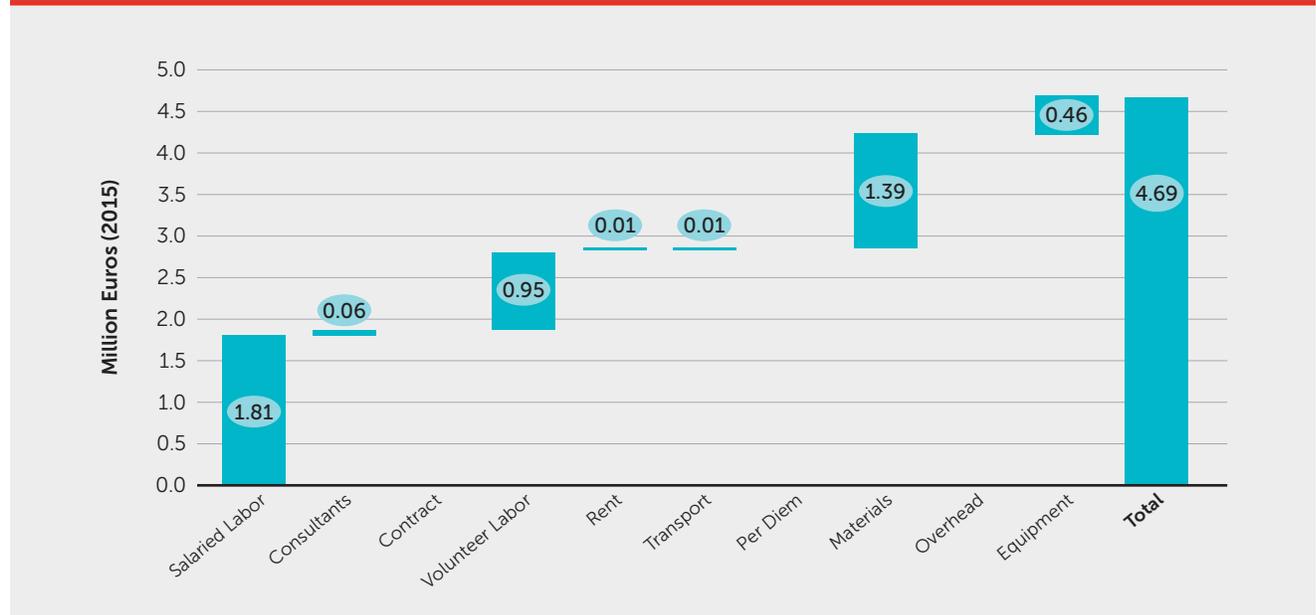
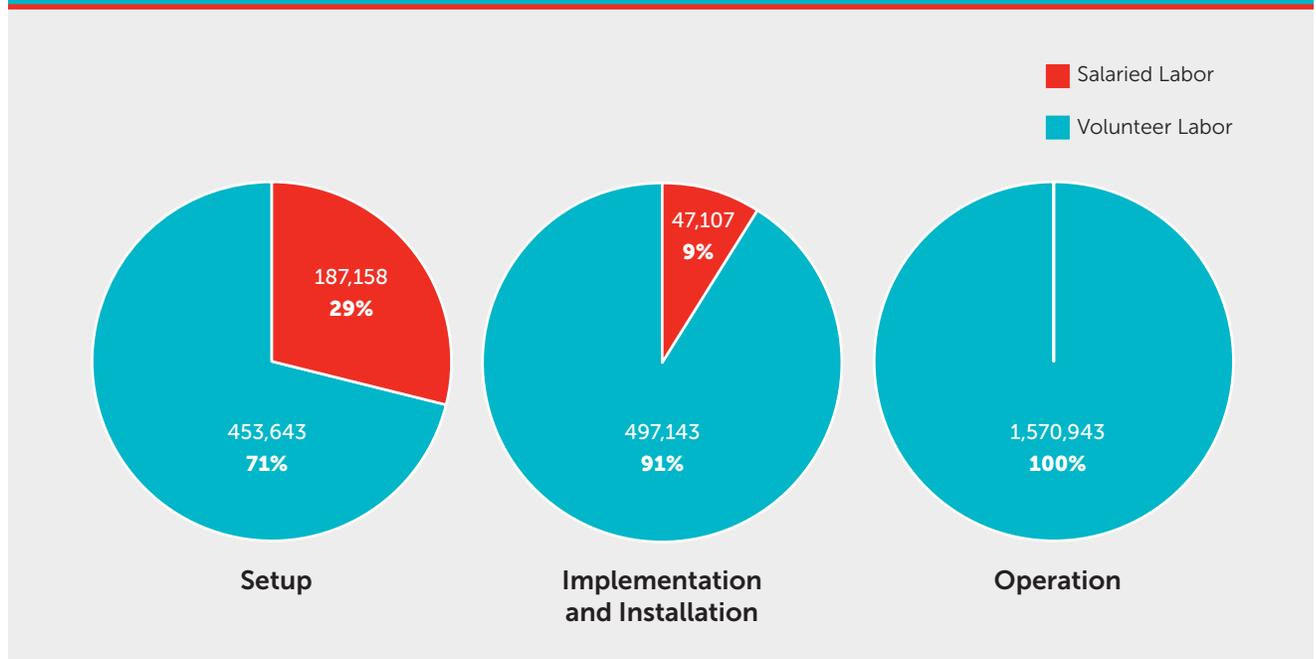


Figure 10: Breakdown of Labor Costs (in Euros) into Volunteer and Staff In 2015 Euros



When recreating this reform in other countries, the cost of materials will likely be a key cost driver of the program.

Cost offsets

Utilization or access fees to organizations and individuals submitting their bids to government using the ProZorro platform are an important cost recovery component of the ProZorro system. The costs to these users are not included as these were seen as out of scope. Utilization fees are an important source of revenue both to the government and to the private sector managing the platform. The utilization fees serve to offset some of the operational costs of ProZorro. These costs provide some revenue per transaction on the platform, but they are not enough to negate all costs associated with program operations. Expenditures or budget projections from the government state enterprise ProZorro would be helpful in quantifying the actual revenue gain from users; however, these data were unavailable for this case study.

As discussed previously in the scoping section the role of civil society actors was a key contributor to cost offsets. Many of the tools and technical expertise in procurement were donated by non-profit organizations within the governance community. While volunteer time donated specifically and only to ProZorro was included in the economic costing of this program, the cost of free resources, tools and standards in procurement that helped guide this program were not included. The existence of these resources within this sector led to many cost savings in the planning and setup phases of ProZorro. Due to these subsidized and donated resources, it is important to note that the overall cost estimate for the program is likely to be an underestimate of the true cost of ProZorro.

Limitations

While we were provided with expansive access to people and reports that could provide information on costs, there remain some limitations to this costing exercise. First, we were unable to estimate costs by each line item because there was a lack of disaggregated data in project expense reports. For example, overhead costs were tied into total costs included for operation of the ProZorro system. Therefore, the overhead cost was not available as a

separate line item, and thus the full cost of program management was only disaggregated into the highest proportion categories based on interview data.

Second, we were unable to collect information on costs for legislation, utilization and recurrent training activities. For legislation, there were labor costs associated with efforts by volunteers in the government and legislators spending time and political capital to pass bills on ProZorro and the e-procurement system. These costs have not been included as data on the legislation process was unavailable and interviews of legislators involved in this process could not be conducted. In future studies, we recommend following the methodology described by Wilson et al. (2012) to better understand the legislation costs associated with implementing governance programs like ProZorro. Such a cost estimation would be conducted using a bottom-up approach that utilizes direct observation of various cost inputs, such as the cost of the staff and resources required to implement a new program at a national or local level.

Finally, a key gap in the costing is that we were unable to estimate costs borne by the private sector. These costs include recurrent training costs, development of system costs by the private sector, and program management and maintenance of the ProZorro marketplaces. We were unable to collect this data as we did not have access to private sector representatives for interviews. It is important to note that the contribution of the private sector in terms of cost is only included in the development of systems activity. Private sector costs are also involved but not included in the costs for operation in activities such as program management and maintenance.

Conclusion

The main objectives of this analysis were to (1) justify and build evidence for the costing framework and (2) estimate the economic cost of the ProZorro platform.

We estimated the economic cost of ProZorro at €4.69 million Euros from inception of the program in 2014 through June 2017. This is an underestimate of the total costs of ProZorro program, but sets a rough context for similar e-procurement programs, though this cost should not be attributed to other cases without first undergoing a similar costing analysis.

One of the key takeaways of this case study for future programs is the critical role of skilled volunteer labor from civil society and other organizations. While the economic costing of this program captured the rough costs of this labor, it is likely that this cost is higher than presented due to the data gaps presented in the limitations section. There were also quite a few cost savings due to pre-existing literature and materials shared with the ProZorro program from civil society organizations and materials donated at lower costs from the private sector. When designing similar platforms in other places, it is useful to keep in mind the availability of resources from civil society.

When paired with data on cost savings of the program, this economic costing study provides a first step towards conducting a cost-benefit analysis of ProZorro. At this stage, there have been some preliminary studies by OCP and KMBS that have suggested a cost savings of 14.1% in mid-2016 and 9.6% in March 2017 (Frauscher, Granickas, and Manasco, 2017). As data on the cost savings of ProZorro increases, there is a significant opportunity to create a return on investment case for ProZorro. This would be the first such case for e-procurement programs and open government programs in general. Therefore, continued study of ProZorro can provide the first step in building evidence for a cost-benefit based argument for creating open government programs.

4. Case Study – Costing of the Sierra Leone Open Data Program

Introduction

The Sierra Leone Open Data Program was initially launched on May 15, 2015 in response to the government's determination to reinforce institutions, policies, and practices after a destructive civil war that ended 13 years earlier. As a public good, the objective of open government data is to promote transparency, improve government effectiveness and efficiency and increase data sharing to promote business innovation. Sierra Leone's Open Data Program in particular is focused on government accountability, openness and increasing citizen participation while providing the tangible benefit of a national resource for public-use datasets, including national budgets, agricultural data, mining leases, parliamentary laws and other easily identifiable government data (Hughes, 2015; Hughes, 2016).

One aspect influencing the launch of the Open Data Program was Sierra Leone's membership to the Open Government Partnership (OGP) in 2014. OGP member countries are obligated to multiple commitments; for Sierra Leone, one key commitment was the release of an open data portal. Within this commitment, OGP highlighted three baselines for Sierra Leone: (1) conducting an open data readiness assessment (ODRA), (2) designing and creating an open data portal and (3) resourcing the portal, including funding and uploading data (Hughes, 2015). While these steps are not meant to be comprehensive for the development of a sustainable open data portal, each of these activities were deemed important to Sierra Leone's Open Data Program and helped guide this costing exercise.

Another contributing factor to the Open Data Program's development was the May 2014 Ebola outbreak in West Africa. This health crisis motivated Ministries, Departments, and Agencies (MDAs) within Sierra Leone to openly source funding intended for an online data repository that would allow aid workers

and other stakeholders to track the virus's spread, provide resources to policymakers to more effectively respond with funding measures and give citizens tools to hold their government accountable on public health expenditures (Chrzanowski et al., 2016; Hughes, 2016). Though the portal was first launched in the year following the height of the Ebola crisis, several of the initial published datasets were related to the virus's outbreak to meet these goals.

Sierra Leone's Open Data Program has been released publicly twice: (1) Open Data Portal 1.0 launched in May 2015 and (2) Open Data Portal 2.0, which refreshed the first portal's efforts, opened in March 2017. The first data portal's initial launch included Ebola data, along with agriculture and mining leases; however, the portal's dataset collection remained inactive after that initial dissemination and ultimately shut down in June 2016 due largely to unclear responsibilities and accountability among the government agencies that managed the portal. In this analysis, the role of the government departments in the portal's closure is largely reflected in the labor cost of individuals managing the portal and the notation that the portal shifted management centers several times.

Open Data Portal 2.0 was launched in March 2017 as an effort to reactivate the initiative. Built from the baseline of the Open Data Portal 1.0, the new version of the portal was developed on the same online platform, though released on a new domain.⁴ While the second data portal initially published the same datasets previously issued on the first portal, new datasets are continually being uploaded including census data, budget profiles, national laws and policies.⁵ A major objective for Open Data Portal 2.0 is to create more sustainable and long-term transparency from within the government, and ultimately, to have a consistent user base of Chief Technology Officers (CTOs) from within various ministries who will manage and upload data to the portal.⁶

⁴ The second data portal can be found at <http://opendatasl.gov.sl/>

⁵ As of June 8, 2017, there are 62 datasets on the second data portal.

⁶ The ministries that will help manage the data include Agriculture, Energy, Education, Finance, Health, and Fisheries.

There are two major challenges to the program's effectiveness and objectives for transparency: (1) Sierra Leone's low-bandwidth internet environment and (2) technical illiteracy within the government and the population (Open Government Partnership, 2014). The first risk is being addressed by technical vendors that are systematically adapting the portal's back end operating system to make it lightweight enough to function efficiently within Sierra Leone's under-developed online infrastructure. Stakeholders are targeting the latter risk through capacity-building efforts and promoting ownership over the portal's technical management through monthly trainings for various MDAs within the government. Currently, the principal users of the data portal are employees from MDAs during these monthly trainings.

Keeping the program's historical context in mind, the following sections outline the six-step process we followed for economic costing using the open government costing framework. Our methodology for this costing exercise includes (1) setting the scope of the program, (2) identifying the critical costs in the case study, (3) situating this case within the costing framework, (4) identifying the relevant cost categories, (5) collecting the data and finally, (6) analyzing the economic cost of the program.

Defining the Scope of the Program

Aligning with the open government costing framework, we began by outlining the scope of this case study. This step allowed us to pinpoint which key players, timeframes, and activities were critical to Sierra Leone's Open Data Program.

The first step was identifying the purpose and perspective of costing Sierra Leone's Open Data Program. We identified the purpose of this work to be twofold: (1) building evidence to validate and/or adjust the framework for future costing analyses and (2) conducting an economic costing that will allow us to apply lessons from this analysis to similar open data platforms in the future. We completed an economic costing of the Open Data Program as we are looking to estimate the program's total value, including hidden costs such as staff time, opportunity costs of volunteer labor and resource costs included in the portal's development and operation.

During this analysis, we first laid out a timeline of all events and activities related to the program and categorized these events into one of two categories: those considered to be only contextual and those which were critical to the portal's development. Based on this categorization, we included critical events and activities into the costing estimates. From this timeline, we next determined the key players involved in both phases of the data portal. Ultimately, we decided that activities and relevant actors within the setup, installation and implementation and operation phases for both Open Data Portal 1.0 and 2.0 would be considered critical in this costing exercise. In delineating costs for each phase and iteration of the portal, we captured a more complete picture of the platform's economic cost and a clearer reflection of each portal's distinct objectives.

There were also events, and thus costs, that we considered out of scope and not critical to this costing exercise; these events included the development and passing of the Right to Access Information Act of 2013, a piece of legislation that intended to improve public access to government data. Additionally, we focused this case study only on the economic costs incurred for both portals through June 2017, rather than scoping out projected costs for future activities related to the program.

Sierra Leone Open Data Portal 1.0: Key Informants

For the first data portal, we defined the individuals and organizations deemed critical to the portal's development and operation. The key players in this instance were the government agencies that managed the portal in-country, the World Bank Group as the funder, and NuCivic, the company that provided the technical development and maintenance for the portal.

Public Sector

The Open Government Initiative (OGI) was responsible for the general management of the data portal from the initial planning stages in early 2015 through August 2015. OGI played the lead role in advocating for and securing funds for the portal from the Open Aid Partnership program from the World Bank (Chrzanowski et al., 2016), relied on volunteers who were paid a small monthly stipend

to collect public data and gather feedback on the portal, and secured promotion for the portal through advertisements on local radio stations.

On August 28, 2015, the portal’s in-country management transitioned from OGI to the Right to Access Information Commission (RAIC),⁷ a change that was briefly facilitated by the Millennium Challenge Coordinating Unit (MCCU). RAIC played a lead role in requesting the ODRA report evaluation and was the local liaison for the portal through June 2016.

Development Partners

The Open Aid Partnership, a program within the World Bank Group, fully funded the platform’s technical maintenance and hosting and was heavily involved in the portal’s initial planning and implementation phases. The World Bank was also responsible for ensuring the success of the portal’s management by OGI and RAIC.

Private Sector

Open Data Portal 1.0 was developed by NuCivic, a US-based company. NuCivic’s flat-rate contracts were funded by the World Bank and were inclusive of all labor, monthly website hosting, technical maintenance, security patchwork and 24/7 website

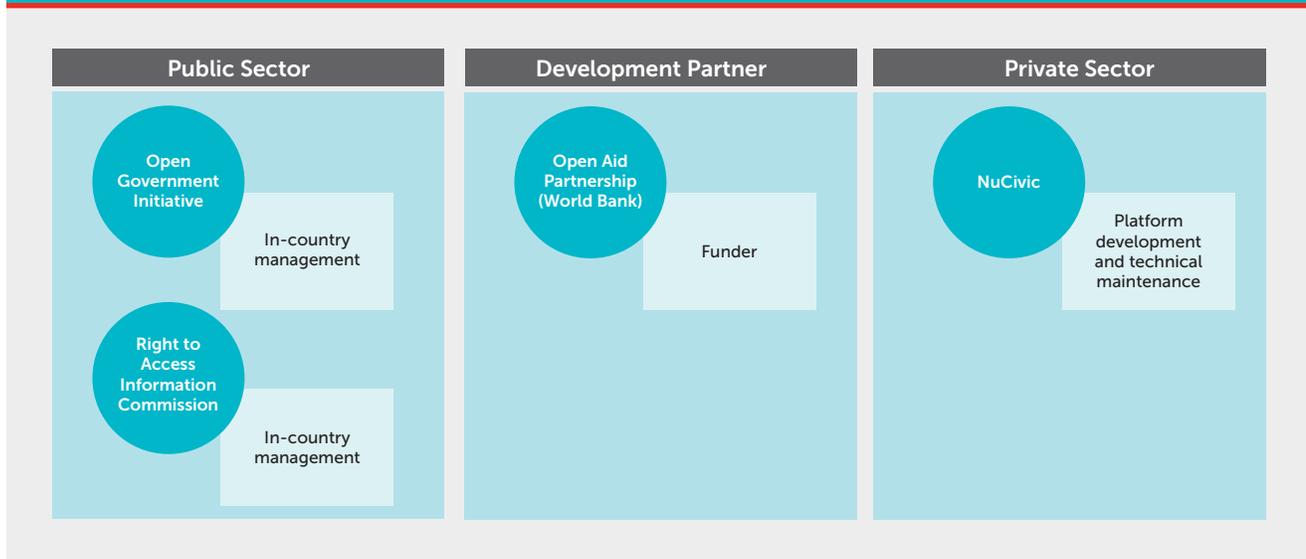
support. NuCivic developed the portal on an open-sourced platform called DKAN, and tailored the portal to specifications pinpointed in discussions and webinars with MDA representatives and World Bank consultants. NuCivic continued to provide free base-level support for the portal beyond the contract end-date⁸ which allowed the portal to remain online through June 2016.

Sierra Leone Open Data Portal 1.0: Timeline

Figure 12 outlines the full lifecycle of the first data portal, along with key events and activities that were included in this costing exercise. Specifically, this figure highlights the following events:

- OGI, World Bank, and NuCivic develop portal specifications: This was a period during the initial portal planning phase that included discussions between these organizations on the portal’s development.
- NuCivic DKAN Custom Setup: This box outlines the timeframe during which NuCivic developed the portal on the DKAN system.
- Portal Launch: This was the portal’s launch event that was attended by international World Bank consultants and various officials from local MDAs.

Figure 11: Open Data Portal 1.0: Key Implementing Agents and Players



⁷ RAIC was formed as the commission charged with promoting public access to government data in 2013 after the Sierra Leonean legislature passed the Right to Access Information Act.

⁸ NuCivic’s contract with the World Bank ended in May 2016.

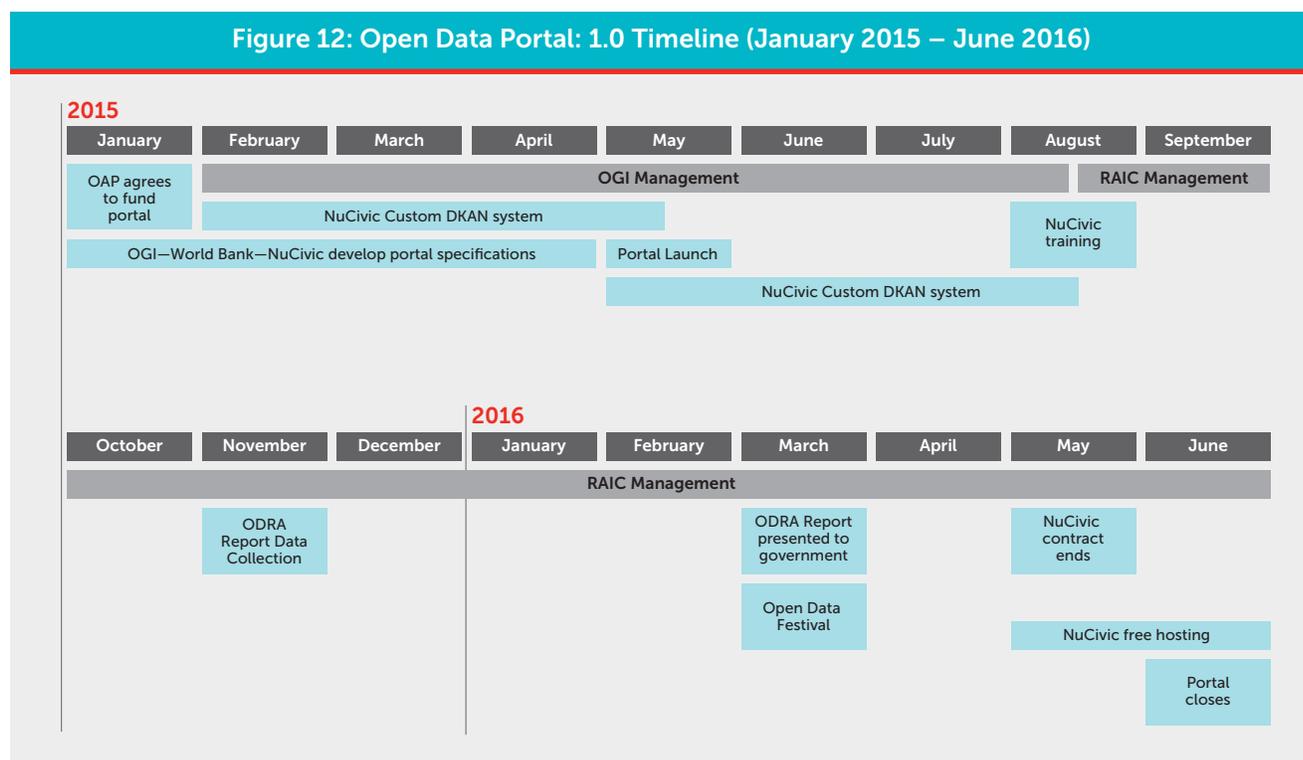
- Portal Promotion: OGI provided quarterly subsidies to 18 state-funded radio stations within Sierra Leone’s 14 districts, as well as five stations in Freetown to promote government projects, a portion of which went to the data portal.⁹
- NuCivic Training: A two-day training for the data portal in August 2015 that brought representatives from various MDAs including RAIC, MIC, MCCU, OGI, MoFED and the National Statistics Office into Freetown.
- ODRA Report Data Collection: While the ODRA is typically completed prior to launching open government reforms, in this instance it was delayed due to the Ebola virus outbreak. The consultants working on the ODRA collected data during 12 days of meetings and focus groups with the government in November 2015, identifying 40 datasets that could be published on the portal including data related to education, health and boundary maps (Chrzanowski et al., 2016).
- Open Data Festival & ODRA Report: This was a promotional festival for open government data within Sierra Leone, during which the Open Data Program was promoted and the completed ODRA report was presented to the government.

- NuCivic Free Hosting: This covers the free support NuCivic provided on Open Data Portal 1.0 before the portal shut down due to lack of funding.

The periods during both OGI and RAIC management have been delineated in grey to distinguish them from the key events and activities color-coded in blue in Figure 12.

Sierra Leone Open Data Portal 2.0: Key Informants

Despite the first portal’s closure, the Sierra Leonean government remained committed to open data. As with the first portal, the World Bank provided one year of additional funding for the technical maintenance of the second data portal which opened on March 18, 2017. Additional key players working on the second data portal, mapped in Figure 13, include the Ministry of Information and Communication, which currently provides in-country technical management, and local technology innovators iDT Labs and Sensi Hub, which respectively provide technical maintenance and training on the portal.



⁹ As part of this cost-transfer, during an interview, the OGI representative told us that radio station managers were also provided with android cell phones and other tools to help with the requested promotions, though we were unable to break these costs out further during this exercise.

Public Sector

The Ministry of Information and Communication (MIC) currently oversees the technical aspects of the management of the second data platform. MIC is developing a workplan with the Ministry of Finance and Economic Development (MoFED) for the portal's future sustainability while other MDAs such as the Ministries of Agriculture, Education, Energy and Environment are expected to become involved in uploading and managing datasets in the future.¹⁰

Development Partners

The World Bank Group is funding the technical development and maintenance, as well as MDA training for Open Data Portal 2.0. They continue to provide general oversight and facilitate interactions between the government players and portal vendors.

Private Sector

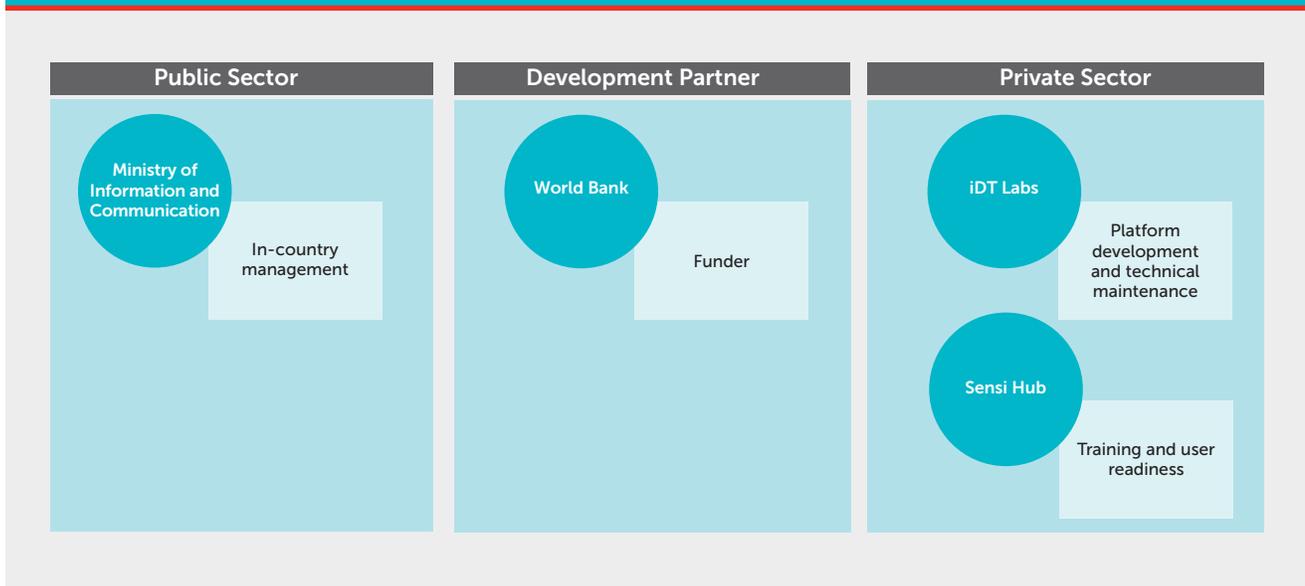
iDT Labs and Sensi Hub are part of an innovation tech hub consortium called Code for Sierra Leone, the local affiliate of Code4Africa, designed to build technical capacity and improve technological and computer literacy within Sierra Leone. Both iDT Labs and Sensi Hub are committed to making the portal more accessible to the public, MIC and technical

officers within other MDAs, who will be trained on uploading relevant datasets.

iDT Labs, based in Freetown, was contracted by the World Bank Group for one year to relaunch the second portal. iDT Labs led several activities in the launch of the revised portal, including developing the domain based on specifications from the government, migrating data from the first website, renovating and redesigning the DKAN platform into a more lightweight system that functions within Sierra Leone's low-bandwidth environment, and updating the backend coding to promote accessibility for end-users. After the first year of hosting and maintenance ends in March 2018, iDT Labs will shift full technical management and maintenance over to MIC.

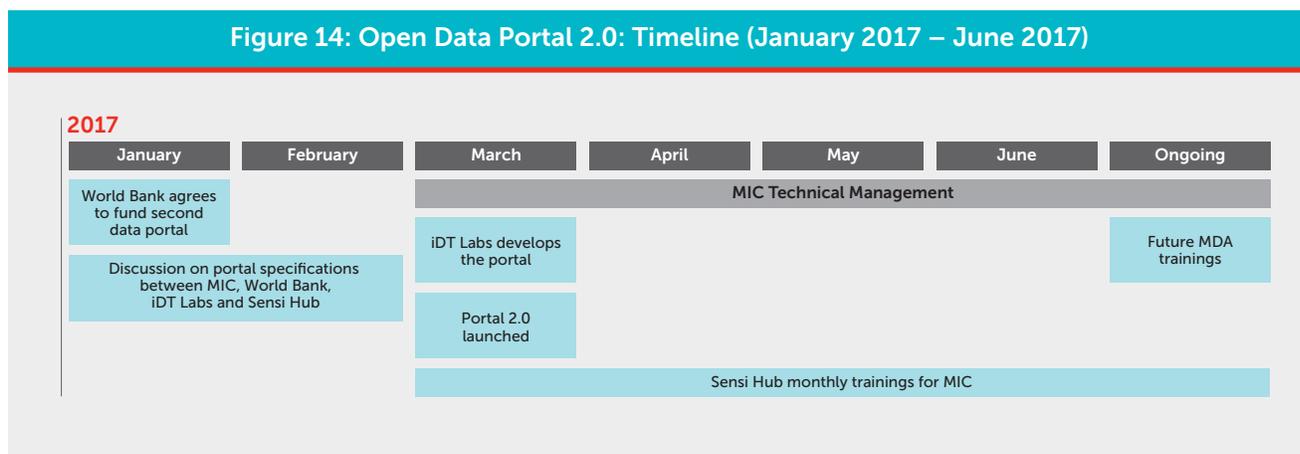
Sensi Hub works closely with iDT Labs and provides trainings on the data portal. Sensi Hub provides these trainings on a monthly basis to various government agencies in addition to uploading datasets for public use. The first six months of training are intended solely for employees of MIC to generate buy-in and ownership, before shifting the trainings to staff from other MDAs. Additionally, Sensi Hub puts on promotional Sensitization events every few months which include activities such as hackathons and other technical challenges to generate public interest in the portal.

Figure 13: Open Data Portal 2.0: Key Implementing Agents and Players



¹⁰ The cost of any future activities has not been included in this analysis.

Figure 14: Open Data Portal 2.0: Timeline (January 2017 – June 2017)



Sierra Leone Open Data Portal 2.0: Timeline

Discussions began on the second data portal’s development in the first quarter of 2017 between the World Bank, MIC, iDT Labs, and Sensi Hub. Figure 14 outlines the key events and activities through June 2017 for the second portal, specifically:

- Discussion on portal specifications: This box represents the time MIC, the World Bank, iDT Labs, and Sensi Hub spent in discussions to reopen the data portal.
- Sensi Hub monthly trainings: Monthly trainings that Sensi Hub provides to MIC. These are expected to continue through August 2017, before Sensi Hub begins monthly trainings with other MDAs.

MIC, as the current in-country portal management partner, is highlighted in grey to distinguish from other key activities in blue.

Identifying Types of Costs for Sierra Leone’s Open Data Program

The next step in the open government costing framework involves identifying the relevant economic costs for each cost category. Being able to identify and separate costs by these categories allows us to understand where the most substantial costs are located for this program and provides insight into where we would expect significant costs for future case studies.

For both phases of Sierra Leone’s Open Data Program, we clarified which costs should go within each cost category and noted which line items we were unable to capture over the course of the analysis. While each category outlined in Table 7 may not be relevant for all costing exercises, we have included all cost categories from the Open Government Framework and Methods to serve as a point of reference. For the purposes of costing Sierra Leone Open Data Program, one category – contracts – was included due to the difficulty of isolating line item costs from larger fees noted within budget documents.

Adapting the Open Government Costing Framework for Sierra Leone’s Open Data Program

The costing framework separates program costs into three phases – setup, installation and implementation, and operation – with each phase breaking out activity costs into the line item categories noted in Table 7. In Figure 15 below we mapped the timeline, key implementers and activities into the costing framework based on the above line item categories and the costing framework’s key categories. The light grey cells indicate a key activity or player for the first data portal while the dark grey cells indicate a key activity or player for the second data portal.

Table 7: Definition by Cost Category for Open Data Program (Sierra Leone)

Cost Category	Definition of Cost Category	Economic Costs included
Salaried Labor	Represents the labor cost of government employees that spent a portion of their time on the program	Includes the salaries of government employees within MDAs that spent a percentage of their time on the portal, including time in meetings, webinars, trainings, and general day-to-day management
Volunteer Labor	Opportunity cost of free labor provided over the course of the portal's development and operation	Includes labor time for consultants involved in portal development and maintenance beyond the specified amount in the contract and free advice provided during the setup phase of the second data portal
Consultants	Labor costs of consultants hired for the program	Includes all non-governmental labor costs for consultants hired to work on the data portal during the portal's planning, platform development, management, training, promotions, and monitoring and evaluation phases
Contract	Costs associated with any signed contracts with technical vendors that implemented the program	Fixed contract costs with technical vendors that we were unable to isolate over the course of the analysis
Rent	Venue and office space rent related to the program	Unable to capture these costs
Transport	Cost related to local and international travel to develop the portal	Flight and hotel costs for World Bank consultant travel to Sierra Leone during the scoping trip, program launch, and training, as well as local travel within Sierra Leone for the first data portal's launch event
Per Diem	Cost related to extra daily compensation for consultant data portal-related travel	Daily per diem costs for international consultant travel
Materials	Cost of all materials used for data portal	Cost of all materials used in recurrent trainings for second data portal
Overhead	Cost of additional overhead for program	Unable to capture these costs
Equipment	Economic cost of technology used in data portal	Unable to isolate these costs from contract fees

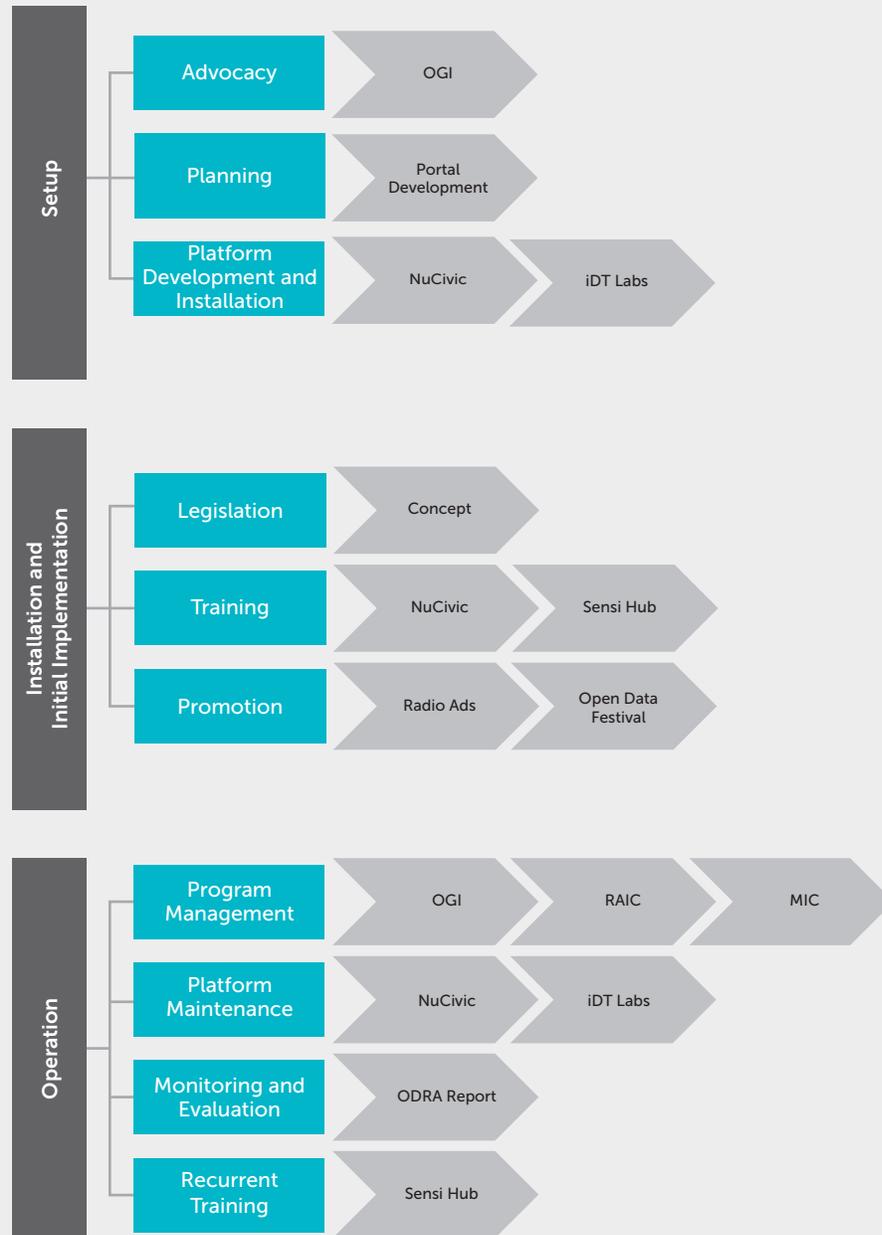
The setup phase includes all activities involved in the planning, advocacy, and development of software or hardware systems. Specifically:

1. Advocacy includes the opportunity cost of government labor in seeking funds for the first data portal.
2. Planning covers paid government and consultant labor during the initial portal setup discussions, opportunity cost of free labor or advice given outside a contracted agreement, transportation and per diem costs during a World Bank consultant scoping trip.
3. Platform Development & Installation includes the World Bank contract fees for the DKAN platform setup and development for both the first and second portal.

The installation and initial implementation phase includes any costs associated with legislation, training and promotions that were run for the data portal. Specifically:

1. Legislation costs generally include the costs of undertaking critical legislation or reforms required for the implementation of the program. While there was legislation that facilitated the creation of the Open Data Portals, these costs were not included in the Sierra Leone case study as they were incurred much earlier to the implementation of this program and were considered out of scope.
2. Training refers to government and consultant labor, transportation, and per diem costs associated with the initial two-day training for the first portal, and the initial management fee associated with the second portal's reoccurring training.
3. Promotion includes the subsidies given to local radio stations, local and international transportation and per diem costs for the first data portal's promotional launch event. For the second portal, this includes the promotion events captured in the World Bank contract with iDT Labs and Sensi Hub.

Figure 15: Costing Framework of Sierra Leone's Open Data Program



Operation is the final phase of the framework and includes all costs and activities associated with running the program. This includes costs such as general management and maintenance of the program, ongoing monitoring and evaluation, utilization of the platform, and recurring trainings. We determined that the utilization category in the costing framework was irrelevant to Sierra Leone's data portal, and removed it from this analysis. The specific costs for each activity in this phase include:

1. Program Management includes government and consultant labor and the opportunity cost of volunteer and free labor during general program management.
2. Platform Maintenance includes the contract costs for monthly hosting and maintenance for Open Data Portals 1.0 and 2.0.

- Monitoring and Evaluation includes government and consultant labor, transportation and per diem fees during data collection for the ODR report.
- Recurring Training includes the government labor and training fees for the monthly Sensi Hub trainings.

While we were unable to capture all costs within each relevant line item or phase, the figure below represents economic costs that were incurred throughout Sierra Leone’s open data program.

Identifying Cost Categories of Sierra Leone’s Open Data Program

After situating the case study into the costing framework, we determined the relevant line items to the Sierra Leone Open Data Program within each program category based on interviews with implementing agents and a review of budget documents, highlighted as shaded cells in Table 8. Each row denotes a line item category from Table 7. The columns represent the relevant program activities within the three main phases of the costing framework (setup, installation and implementation, and operation).

Conducting Data Collection of Sierra Leone’s Open Data Program Costs

We determined the economic cost of Sierra Leone’s Open Data Program using a mixed-methods data collection approach. World Bank contracts with NuCivic, iDT Labs, and Sensi Hub provided budgets associated with maintenance, equipment, labor, training, and monthly hosting fees for the portal. We also relied on interviews with key stakeholders and emails when interviews were not possible. Through this approach, we captured estimates of staff time, travel, promotions, and other economic costs that we were unable to determine through contract documents alone. A full list of key informants is listed in Annex 2. Table 9 details the methodology of assembling the data for each line item category.

Table 8: Cost Categories of Sierra Leone's Open Data Program

	Setup			Installation and Initial Implementation			Operation			
	Planning	Advocacy	Platform Development	Training	Legislation	Promotion	Program Management	Platform Maintenance	Monitoring and Evaluation	Recurrent Training
Salaried Labor										
Consultants										
Contracts										
Volunteer Labor										
Venue										
Transport										
Per Diem										
Materials										
Overhead										
Equipment										

Table 9: Methodology of Collecting Costs for Sierra Leone’s Open Data Program

Cost Category	Costs Included	Data Collection Methodology
Salaried Labor	Salaries of government employees during the setup, installation and implementation, and operation phases for first and second data portal	Government time was collected through interviews, salaries were estimated as average civil servant salaries within Sierra Leone and collected from Kargbo (2016)
Consultants	Consultants hired for portal development, management, and trainings for both data portals	Data collected through World Bank contracts and interviews with stakeholders
Volunteer Labor	NuCivic consultant labor time for portal development beyond the specified amount in the contract; includes volunteer labor and free advice provided throughout the program	This cost was the regular rate of the contractor multiplied by the number of free hours of labor
Rent	Venue and office space rent related to the program	Unable to determine these costs
Transport	Transportation costs for scoping trip, first portal’s launch promotion, trainings and ODRA report data collection	Data collected through interviews with World Bank contractors and government officials and contract documents
Per Diem	Daily rate of additional compensation during data portal-related travel	Data collected through interviews with World Bank contractors
Materials	Materials needed for platform setup including software and data storage	Data collected through World Bank contracts
Overhead	Cost of additional overhead for program	Unable to determine these costs
Equipment	Economic cost of hardware and storage related to data portal	Unable to isolate these costs from contract fees

Conducting Data Analysis of Sierra Leone’s Open Data Program

Through June 2017, we captured the data portal’s economic cost through both the first and second iterations and ultimately estimated the cost of the program at a minimum of \$558,688 USD. Open Data Portal 1.0’s costs were estimated at \$452,055, and Open Data Portal 2.0’s costs were estimated at \$106,633, shown in Figure 16. The discrepancy in costs between portals can partially be attributed to the second data portal having minimal implementation and setup costs due to the World Bank’s conscious effort to reactivate and rebuild Data Portal 1.0, rather than founding an entirely new data portal. Additionally, labor and travel costs are lower for Data Portal 2.0 due to only being in operation for three months as of June 2017, compared to the first data portal being in operation for over one year. Finally, the costs in this analysis align with an internal and independent cost estimate assessment undertaken by the World Bank on open data in developing countries that estimates an initial investment of about \$500,000, as well as similar annual operating costs, for a moderately-sized open data program with user engagement.

To further illustrate the full cost of both portals, Figure 17 indicates the costs of each portal within the costing framework’s three phases and demonstrates that the costs in the setup and installation and implementation phases for the first portal were much greater relative to the second portal. Figures 18 and 19 highlight the economic cost for each line item and program activity, respectively.

Costing of Open Data Portal 1.0

Over 40% of the first data portal’s costs were captured in the setup phase. Much of these costs were related to the initial planning of the data portal, including time spent in discussions on the specifications of the portal with consultants and in-country representatives and the initial fee for setup of the portal on the DKAN system.

Costs from the installation and implementation phase of the program made up 21% of the first portal’s total economic cost. Promotional costs were mainly made up of local and international travel into Freetown for the portal’s promotional launch event, while the radio promotions themselves made up only 2% of total promotional costs. The rest of the

Figure 16: Breakdown of Cost by Costing Framework Phase for Sierra Leone's Open Data Portals 1.0 and 2.0

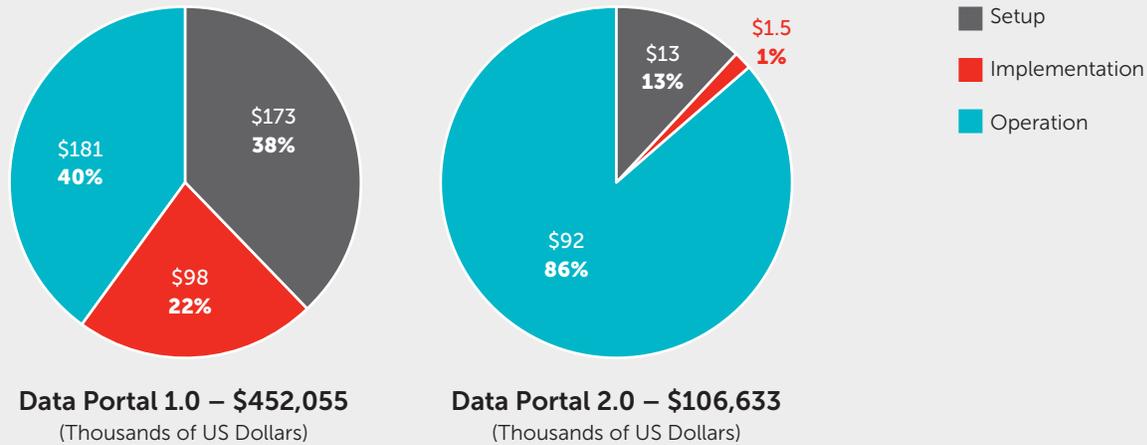
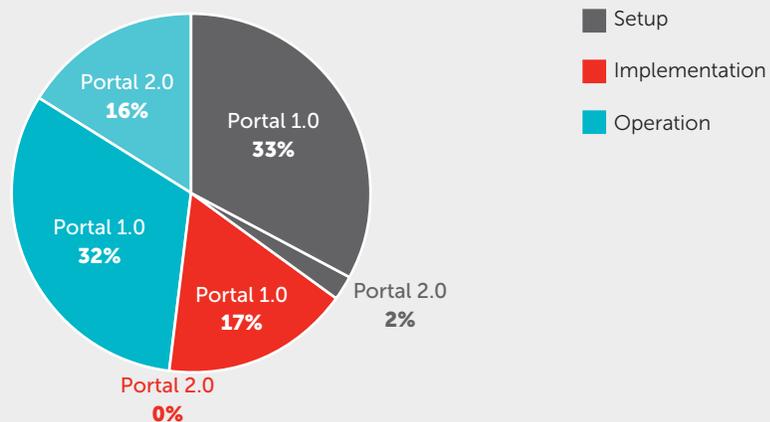


Figure 17: Cost Categories of Sierra Leone's Open Data Portals 1.0 and 2.0



implementation phase costs came from the two-day training and included government salaries, consultant labor, transport and per diem fees.

The operation phase made up 39% of the first portal's cost and included government, contractor, and volunteer time for daily portal management, monthly platform maintenance and hosting costs, labor and travel costs related to data collection for the ODRA report, and the opportunity cost of NuCivic's free maintenance support and hosting of the portal through June 2016.

Costing of Open Data Portal 2.0

Most of the costs for the second data portal are centered on the operation phase. By building the second portal from the first data portal's foundation, the second data portal has been able to concentrate on generating an accessible platform for end-users, capacity building in-country for the MDAs that will eventually control the portal's data management, and promoting a sense of ownership to MIC for the portal's technical maintenance.¹¹

¹¹ In speaking with iDT Labs, their goal is to create a consistent user base for the portal, though they do not expect more than 10 to 15 data uploaders on a regular basis; instead relying on dedicated staff members within Sierra Leone's ministries to source new datasets.

Figure 18: Cost Categories for Sierra Leone's Open Data Portals 1.0 and 2.0

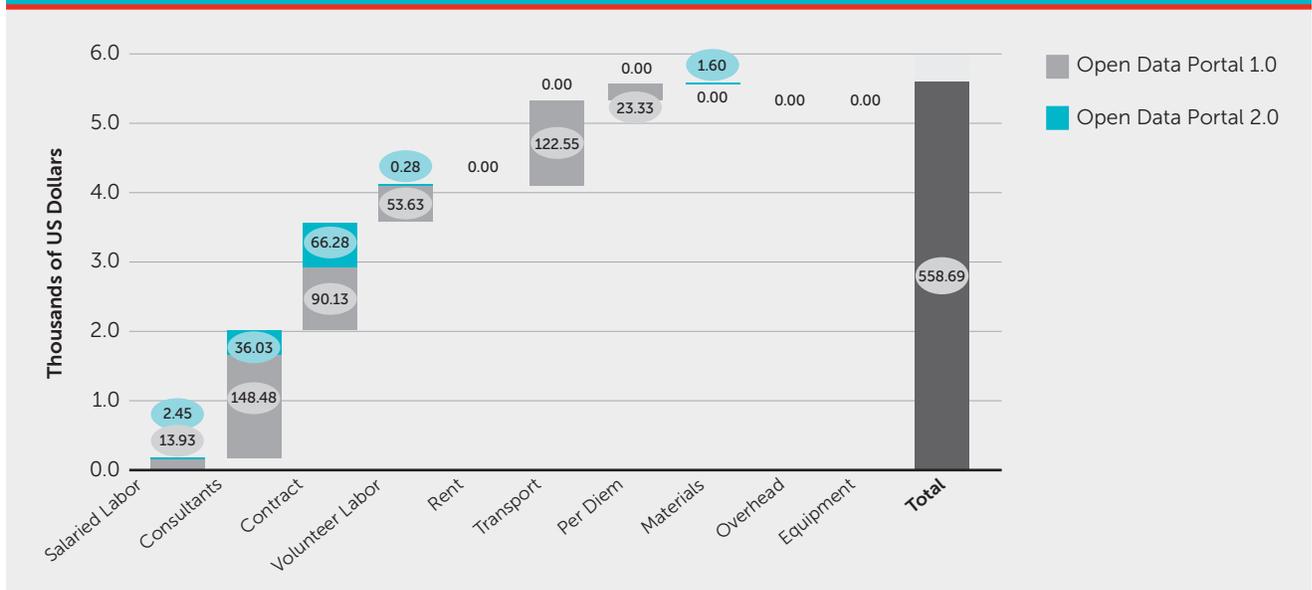
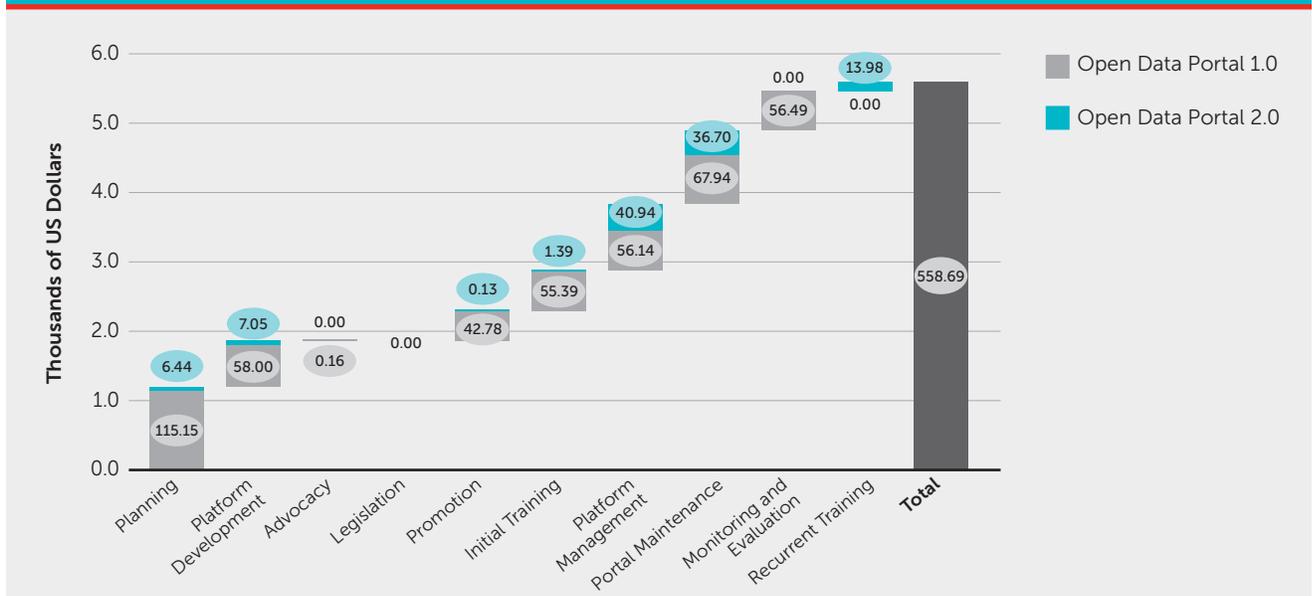


Figure 19: Program Activity Costs for Open Data Portals 1.0 and 2.0



Of the total costs in the setup phase of the second portal, 52% are for the iDT Labs contract with the World Bank to initially setup and develop the platform. The rest of the costs make up staff salary and consultant time during the planning activities. There have been very few installation and implementation costs for the second portal, with this phase only collecting an initial management fee for the monthly trainings.

About 45% of the portal's operation costs are in program management, which include labor costs for the government and consultants, as well as a contract with Sensi Hub to populate the portal with additional datasets. Recurring trainings make up 15% of the operational costs. Finally, 40% of the operational costs are for the platform maintenance by iDT Labs, which includes the monthly hosting and maintenance fees, and storage costs on Amazon cloud hosting services.

Projected future costs

Although analyzing projected costs is beyond the scope of this exercise, we expect the second portal to incur additional costs in the future as it expands in range and utility to end-users. These upcoming costs are anticipated to include monthly payments for supervision of the main MDA implementing units, labor costs for government actors and consultants, improving MIC's physical capital to better support the full maintenance of the portal, monitoring and evaluation, government labor costs for future monthly Sensi Hub trainings, as well as costs to populate the portal with additional data.

We can break down some of these costs from a draft work plan created by MIC and MoFED, which, while far broader than portal-related activities, are projected to equal \$1,460,750 through 2019. Though this work plan is currently in the approval process, it includes activities such as training 30 individuals within various MDAs¹² to upload data, navigate, and evaluate the information on the data portal, material and equipment costs for computers and servers, security, firewalls, and backup systems, monitoring and evaluation and consultant fees to upload data from the relevant ministries.

This work plan is part of a \$2.5 million component of a forthcoming \$10.0 million World Bank loan to Sierra Leone for open government initiatives, a portion of which will go toward the data portal, though we are unable to break out the precise cost of these future projects.

Discussion

Comparing the price differences during each phase of both portals provides insight into the focus and main objectives for each. Namely, the first portal's costs were focused on planning, developing and launching the platform, while the second portal's costs are centered on longer-term program management, maintenance and readying a system that will eventually be fully supported by the government.

The largest costs to Data Portal 1.0 were consultant labor and transport costs with both local and international consultants playing a significant role in developing, planning, and managing the data portal.

In relying on international consultants, multiple international trips to Freetown significantly increased the economic cost to the first portal. Advocates for future open data programs should keep in mind that travel costs for a similar exercise will be context-specific. The greatest line item costs for Data Portal 2.0 were under contracts and consultants. Contract fees for the second data portal were high relative to other costs because one year of portal hosting, maintenance and training was paid up front.

Conversely, salary costs for the government were lower than might be anticipated in other case studies due to Sierra Leone's status as a low-income country; open government data portals based in a higher income country are likely to incur larger salary costs for the government implementers.

Additionally, the contracts for both portals' hosting and maintenance were fixed costs that included data storage fees and labor. Future case studies should keep in mind that fixed rate contracts may have a greater economic cost than the budget initially indicates. For example, in discussions with NuCivic, the first portal's hosting and maintenance vendor, we discovered that the flat fee contract covered 50 hours of website development; however, planning discussions on the portal unexpectedly took a significant amount of time beyond the contract fixed amount, causing NuCivic to lose money over the course of this contract. We counted the additional time these consultants worked in the planning and development phases as an opportunity cost in the volunteer labor line item. On the other hand, portal hosting and training costs on the second data portal are also lower than might be expected because the World Bank negotiated on the contract price and relied upon local vendors based in Freetown.

Future case studies should additionally keep capital costs in mind. Equipment and materials were lower than expected in this analysis because ministries and vendors had not purchased new physical capital such as computers or on-site data storage specifically intended for the data portal, though these costs are expected in the future. The recurring trainings also do not include capital costs that might be anticipated for future cases, as Sensi Hub brings previously owned laptops to the monthly government trainings.

¹² The MDAs noted in the work plan include Education, Finance, Agriculture, Health, Social Welfare, Energy, Environment, Fisheries, Police, OGI, and Labour.

Ultimately, had the first data portal not laid the groundwork for the second data portal, costs in this case study would have been much higher. However, because the World Bank helped to streamline lessons between the first and second iterations of the program, costs for Open Data Portal 2.0 were more focused on operations and longer-term success.

Limitations of this costing case study

A major limitation of this case study is the inability to capture all opportunity costs while relying on estimates and recollections of the key stakeholders. For example, it was difficult for stakeholders to accurately remember what portion of their time was spent in meetings related to planning or general portal management from several years prior. It is also likely that the cost of government time may be misrepresented due to difficulties during our own conversations with government stakeholders to collect an accurate picture of total government time during portal setup and operations.

Another limitation came from the inability to break down lump sum costs into line item categories. One example of this is in contract documents with flat rate fees for general hosting and personnel support; ideally, we would isolate the labor cost from the hardware or storage cost but this was not always possible. Furthermore, it was difficult to gather data for line items that should typically be measured during a costing case study, including overhead on salaries and contracts, materials, and equipment.

Conclusion

The main objectives of this analysis were to (1) justify and build evidence for the costing framework and (2) estimate the economic cost of Sierra Leone's open data portal, as well as gather lessons learned to apply to similar costing case studies in the future.

Based on this case study, we determined that the costing framework can be adjusted depending on context. For example, in this case, we removed the costing category of utilization because Sierra Leone's data program has no cost to the user. Conversely, we included a contracts category due to the difficulty of breaking out line items for the monthly flat fee budget

for hosting and maintenance. Open data programs in other contexts may require further adjustment of the framework based on their key components.

We estimated the economic cost of the two data portals to be \$558,688 through June 2017. This price can help provide context for other similarly designed open data programs, though this cost should not be attributed to other cases without first undergoing a similar costing analysis.

Advocates for other programs should keep in mind the lessons learned from this case study. One major challenge in costing this data portal was developing a firm timeline. Focusing our initial interviews on establishing the timeline with key players helped us scope out key events and dates in the portal's development and operation, and allowed us to emphasize costing in later interviews. We also relied on multiple informants to triangulate and more definitively establish the amount of time that key players spent working on the program, which was particularly important in this case due to this analysis occurring several years after the data portal's initial rollout.

Advocates and potential funders for future open government programs should also keep in mind current and long-term governmental capacity, specifically considering whether the government is able to fully manage the program when it first opens or if there should be time and funding built in to ensure success with the technical aspects of portal management. In our discussions with government representatives and technical vendors, many noted the importance of capacity building, and particularly the importance of utilizing local trainers to better prepare government staff for portal management and maintenance; this will help generate a long-term emphasis on transparency and accountability rather than relying on volunteers and private companies for these critical activities.

Within Sierra Leone's government, many individuals within the relevant MDAs spoke highly of the potential of the Open Data Portal. Although currently the data program has a limited reach within Sierra Leone, it is perceived as a valuable resource hub for official datasets that promises a more open and transparent government with greater citizen participation.

5. Open Government Costing Tool User Guide

Objective of the Tool

The Open Government Costing Tool is a Microsoft Excel-based application designed to support the collection and calculation of the cost of Open Government Programs. This tool, developed by Results for Development with support from the World Bank, was developed as a companion to the Open Government Costing Framework and Methods which details an approach to estimating the cost of Open Government programs. This tool is a template in which users can directly enter data collected on units and unit costs of inputs of an open government program and automatically generate an estimate for the cost of the program. Specifically, this tool:

- Outlines the key cost elements included in an Open Government program;
- Presents the results in a variety of ways, including (1) highly detailed, micro-level information and (2) a summary of the macro-level information; and
- Provides a user-friendly interface that allows the user to input key program elements and easily adapt the tool for similar costing purposes.

This User Guide is intended to serve as a manual that can be followed to use to the Open Government Costing Tool. In this Guide, we have include (1) definitions of the costing elements included in each tab of costing tool and (2) descriptions of how to use the costing tool. This User Guide is intended to give the reader the information necessary to navigate the Costing Tool confidently and to modify the tool to best fit his/her needs.

User Guide

Overview of the Open Government Costing Tool

The Open Government costing tool follows the *ingredients approach* to costing, which calculates total costs by multiplying cost per unit by the number of units. For example, the total cost of procuring notebooks is calculated by multiplying the cost of one notebook by number of notebooks procured. Further explanation of the tool can be found in the *Tool Navigation* section of the manual.

This costing tool utilizes an economic costing methodology, meaning that it includes economic or indirect costs such as opportunity costs and volunteer labor. However, the tool can be easily adapted to calculate fiscal and financial cost by changing the definition of the cost categories as included in the Open Government Costing Methodology.

The tool is structured with two major tab types: (1) OUTPUT tabs and (2) INPUT tabs. A definition and explanation of each of the tab categories is provided in more detail below. The overall structure of the tabs in the excel file is:

- OUTPUT Tab (*information tab*)
 - Cost Summary
- INPUT Tabs (*information tab*)
 - Setup Tabs (*information tab*)
 - Planning
 - Development of Systems
 - Advocacy
 - Installation and Implementation (*information tab*)
 - Legislation
 - Promotion
 - Initial Training
 - Operation (*information tab*)
 - Project Management
 - Equipment Maintenance
 - Monitoring and Evaluation
 - Utilization
 - Recurrent Training

Each of the tabs labeled above as an information tab includes instructions for how to complete subsequent tabs in the costing tool; however, no data should be inputted into these tabs. The Cost Summary Tab will automatically generate costing estimates based in data inputted into other non-information tabs. All of these tabs are described in greater detail below.

Output Tabs

The Output Tab present the results of the costing analysis within the tool. The Output Tab in this tool is the Cost Summary tab. The Cost Summary tab contains five tables and four graphs and provides a summary of the total expected costs of the Open Government program by summing the total costs from each of the input tabs. Each of the tables include an option of input of costs per category as a summation of line items or as lump sums. A detailed description of each table can be found below. This tab also contains four graphs that automatically visualize data input in the last four tables, described in further detail in Table 10 below.

Input Tabs

The Input Tabs are the main drivers of the costing tool. These tabs require the user to input unit costs and unit amounts for each cost category and each phase into tables, data which is then automatically

included into the calculation of the actual cost of the program (populated in Cost Summary Tab, described above). Within each of these tabs, the “ingredient costing” methodology is employed; all tabs contain columns on number of units and unit costs, which are multiplied to calculate total costs. Each of the line items within the costing tabs also contains a yellow column to distinguish multiple funders, which links to ‘Total Cost per Funder’ table in the Output Tab (described in more detail below, as well as in the tabs in the Tool).

There are three main categories of input tabs delineated by the Open Government Costing Methodology: (1) Setup; (2) Installation and Implementation; and (3) Operation. Within each phase, the input tabs are separated by activity. The activities include:

- Setup Phase: (1) planning, (2) development of systems, and (3) advocacy;
- Installation and Implementation Phase: (1) legislation, (2) promotion, and (3) initial training; and,
- Operation Phase: (1) program management, (2) equipment maintenance, (3) monitoring and evaluation, (4) utilization, and (5) recurrent training.

Each of these activities is defined in more detail in the Open Government Costing Methodology.

Table 10: Description of Output Tables and Graphs

Table	Description
Total Cost of Program	Summarizes total cost of the program as calculated through line items and lump sums. Note that there is no graph for this item.
Total Cost per Activity	Summarizes costs for each of the major activates of the program as defined by the Open Governance Costing Methodology though line item inputs and lump sum inputs. The last column summarizes the costs by percentages. This table links automatically to Graph 1: Total Cost per Activity.
Total Cost per Cost Category	Summarizes costs for each of the major cost categories of the program as defined by the Open Governance Costing Methodology though line item inputs and lump sum inputs. The last column summarizes the costs by percentages. This table links automatically to Graph 2: Total Cost per Cost Category.
Total Cost per Phase	Summarizes cost per each phase of the program as defined by the Open Governance Costing Methodology though line item inputs and lump sum inputs. This table links automatically to Graph 3: Total Cost per Phase.
Total Cost per Funder	Summarizes a feature within the tool that allows the user to identify the amount financed by each funder. This table links automatically to Graph 4: Total Cost per Activity by Funder.

Table 11: List of Cost Categories

Line Item	Units	Number of Units
Salaried Labor	Estimate of salary and benefits	Percent to time spent on program activity or average number of hours/minutes per activity
Consultants	Estimate of salary and benefits	Number of consultants and number of days worked per consultant
Contract	Cost of services	Number of services procured
Volunteer Labor	Economic value of volunteer labor	Percent to time spent on program activity or average number of hours per activity
Rent	Venue rental per day	Number of rental days
Transport	Cost of transport (costs of bus fare, plane travel, and the cost of fuel for program related transport)	Number of times transport used Number of trips or share of program vehicle allocated to open governance program
Per Diem	Cost of allowances and honorariums per day	Number of days
Materials	cost of any materials used in the program such as training materials, manuals, etc	Number of materials used
Overhead	Total overhead costs as building maintenance, utilities, telephone, internet connections	Percent of time spent on the program
Equipment	Value of depreciation for equipment, such as computers, printers, furniture	Quantity, type, brand, useful life years of equipment

Within each of the activities, there are 11 cost categories. These cost categories are listed and defined in the table 11 above. Not all cost categories may be relevant to each activity. Each of these categories is defined in more detail in the Open Government Costing Methodology.

Tool Navigation

To use the tool, the user enters data for each relevant line item into each relevant input tab. Each individual line item is entered into the white rows, which sum to the cost per category in the grey rows in each of the input tabs. Each row includes six columns (shown in Figure 1 below):

- Units.** Here the user would enter the number of units for the relevant line items. For example, for salaried labor, this would be number of staff person-hours. Staff that have the same unit cost can be entered into a single row; however, different staff that have different salaries would need to be entered into different rows which would correspond to their relevant unit costs.
- Unit Cost.** This is defined the cost for each individual unit, which the user will also need to input for each relevant line. To continue the example of salaried labor, this would be cost per hour of staff time.
- Total.** This is the total cost per phase of a particular cost line. *Note that this is automatically calculated in the tool, multiplying the units by the unit cost, and as such the user should not input any data into this column.*
- Unit Type.** This is a description of the units used for the calculation. In this example, the unit type would be "staff hours". Table 11 above provides guidance on what units might be entered for each activity.
- Financing.** This column was included to allow for costing analysis that is disaggregated by funder. While it is not necessary to fill this column out, the user may want to include funder information if he/she wants to identify what costs were incurred by what funder. To include this in the calculation, the user would input the relevant funder in the yellow column next to each corresponding line item. *In order for this information to generate automatically, the user must input the name of the funder in both the yellow columns in the INPUT tabs as well as in the column titles of the Cost Summary Tab.*

Figure 20: Columns for Input Tabs

	Units	Unit Cost	Total	Unit Type	Financing	Notes and Instructions
Salaried Labor		0	0		A	
			0		A	
Consultants		0	0		A	
			0			

Figure 21: Total Rows for Input Tabs

Rent		0	0		A	
			0			
Total (from calculations of line items)			#VALUE!			
Total (if want lump sum to be entered)						

- Notes and instructions.** While this column is not required for costing estimates, this is very important in this costing tool. Additional description of the line item, such as "Number of hours worked per week (8*5) multiplied by number of staff members; Staff wages per hour \$8," and the source of information should be listed here for future reference.

Additional Input white rows can be added as needed under each of the cost category grey rows. When rows are added, it is important to make sure they sum to the total in the corresponding grey row.

Each of these grey rows sum to the teal row "Total (from calculation of line items)," illustrated in Figure 21. This total depicts the total cost of the input tab in question. When individual costs per line item are not known, the user can also input the total cost as a lump sum in the teal row labeled Total (if want lump sum to be entered).

The totals in the teal rows in each input tab automatically tie to the Cost Summary tab to calculate *Total Cost per Activity*. The totals in the grey rows of each input tab sum to the *Total Cost per Cost Category* table in the cost summary tab. It is important to note that when the lump sum cost is entered, line item costs are not entered in summary tab. The inputs of the funder into the yellow column for each corresponding line item automatically sum to the *Total Cost per Funder* table in the cost summary tab.

While this tool automatically populates total costs, it is also necessary for the user to double check each of the costing tabs to ensure that each line item is included and not counted twice. The total costs for each of the tables in the Cost Summary tab should all add to the same number. Double checking this sum will ensure that all costs are included in all tables of the summary tab.

6. Conclusion

The open government costing framework and methodology, case studies and overall toolkit (including the Excel-based tool and manual) were designed, developed and tested to help fill a key gap in the larger open government community, specifically a lack of resources to estimate cost and ultimately value-for-money of these types of reforms in countries. The open government costing framework and methodology is the first of its kind in this sector, and it has now been validated through its application to different types of open government programs in very different regions and political contexts. Valuable as a standalone tool for costing open government initiatives, this work also provides a stepping stone to additional cost-benefit analyses of open government reforms, serving to improve the design of these reforms, and is a potential tool for advocacy to promote open government programs globally.

This first-generation costing of open government reforms has revealed several key lessons regarding the costing methodology, costs associated with open government reforms, and new directions for research in the open government field.

What costing these cases reveals about the methodology

As one of the major cost drivers of open government reforms, labor costs are a critical component of reforms to accurately estimate. However, the experience of costing ProZorro revealed that even a relatively straightforward input category like labor can have unexpected costs that need to be included. Much of ProZorro's development was led by volunteers and, as such, would not normally be captured in financial budgets for the program. However, for anyone seeking to replicate a program like ProZorro, these labor hours would likely show up as salary costs in other contexts (specifically where volunteers may not fill this gap), and so it is critical to include these costs in the labor estimates.

The Open Data Program in Sierra Leone presented unique challenges as well, in particular due to the fact that the portals were implemented over two distinct phases. While the early steps of the costing framework focus largely on background and context, the step of defining scope can make a significant difference in terms of the ultimate program that researchers cost and thus the cost estimate itself. Providing ample resources for interviews with key stakeholders to ensure that the scope is accurately defined is critical for coming to an accurate cost estimate.

Finally, there are important lessons to be drawn from the case of the EDE Este 311 program, which we were ultimately unable to complete. The detailed experience from this case is outlined in a series of boxes in Section 2, but one core lesson is that there is a minimal requisite amount of data and stakeholder buy-in required to make the effort of conducting a costing study worthwhile. An ideal costing analysis would be built on extensive data from interviews and reports from multiple levels and sources that could be triangulated to ensure and verify accurate estimates for each cost at each phase of the reform. While no case is likely to reach this ideal, the EDE Este 311 case provides a sense of the lower bounds of adequate data and buy-in from stakeholders to be able to conduct a useful costing analysis.

What costing these cases reveals about open government reform costs

Even in this first round of cost analysis of open government programs, we observe key themes that government reformers, donors, and open government advocates should bear in mind when planning and managing open government programs. While the costing methodology and framework was successfully applied to two open government programs and has proven to be an actionable tool, many of the practical lessons from this process are derived from overcoming challenges related to applying the costing methodology to ProZorro and

Sierra Leone's Open Data Program – as well as the experience of the EDE Este 311 case.

The first lesson is the importance of labor costs, a key factor in both completed case studies and the experience of costing EDE Este 311. In all three cases, labor costs were the most expensive cost driver in each of the phases of the program. This insight is critical in planning open government efforts in a new area or in modeling the expansion of open government programs where they already exist. Practically, this trend matters because it provides insight to those designing and funding open government reforms as to where large sums of funding are going (i.e. salaries) and thus provides insights into how adjustments can or cannot be made to make the programs more cost effective. In addition, while many open government reform programs are technology- and data-centric, these results remind us that public sector efforts, including open government reforms, are fundamentally about people.

Relatedly, another significant finding was the striking amount of cost savings achieved through the use of volunteer time and pro bono resources. We see this in the central role played by civil society in ProZorro planning and in the free resources and time provided by NuCivic and the World Bank in Sierra Leone. Understanding which and how many of these pro bono resources exist and attempting to leverage these same free resources in similar programs is a useful insight for those seeking to develop new open government programs with constrained budgets. This is particularly important during the setup phase of the program, where most of the fixed cost is incurred in a short period of time.

In both the ProZorro and the Sierra Leone cases, a key insight in the scoping phases was the cross-collaboration of actors from multiple sectors to implement each of the programs. Although both programs are open government initiatives, neither was developed or utilized exclusively by government. Both programs had a significant amount of input, utilization and buy-in from civil society and the private sector. Arguably, the cross-collaboration and co-development of these programs through interaction between government actors, civil society organizations, and the private sector led to cost savings in the bringing together of different types of existing technical expertise. Nurturing and leveraging communal interest in open government programs across sectors may be a useful tactic in developing and implementing those programs.

What are the next steps for open government program costing

As with any first stage research, the work outlined above on open government costing also reveals some key areas for further work that would greatly augment the ability of funders and implementers of these programs to proactively estimate costs, design more cost-effective initiatives, and better assess the value and usefulness of open government reforms. Specifically, we see two major paths for future work in this area – increasing the landscape of open government costings and ultimately linking this costing to impact evaluations to be able to undertake cost-benefit analyses of open government programs.

First, conducting more open government costing studies can further validate the framework and methodology. While the ProZorro and Sierra Leone cases proved the versatility and effectiveness of this methodology, gaps in validation remain. For one, both cases conduct an economic costing of the program. Using this methodology to conduct a fiscal or financial costing can identify any further changes or additions to the framework. In addition, due to data collection gaps, cost offsets and revenues of the open government programs were not analyzed. Validating the use of the framework and the tool in building in these revenues would be helpful in noting the type of costs this framework can assess.

As noted above, there are many lessons that can be revealed by two successful and one attempted but incomplete open government costing cases; however, there are a myriad of key questions that can only be answered by building up the number of costing cases. With regard to open government program design, there are many innovative features that some initiatives employ and that are worthy of further study. For example, ProZorro utilizes access fees to offset the costs of the program, but without cost estimates from a larger set of open government programs and the ability to compare these programs with those that do not employ similar cost offset strategies, it is impossible to assess the effect of this feature at large on costs as well as utilization of the platform.

Furthermore, although the Ede Este 311 case had gaps in data, it revealed critical questions on potential differences in data collection barriers between

different types and structures of open government programs. For example, the Ede Este 311 case was run exclusively by the private sector within a specific industry. More costing cases of 311 programs and those programs led by private sector actors should be conducted to isolate if data collection difficulties can be pin pointed to either of those components specifically and identify if and how the costing framework can be adapted to be used for these types of programs.

Another question that would require further costing work to answer is the role of management inefficiencies and mismanagement of funds in the cost of open government programs. While the goal of open government programs is to improve governance and reduce corruption, this does not preclude open government initiatives themselves from being subject to problems ranging from inefficient management to the misuse of funds. Such problems can be hard to identify in a single case because there is no baseline as to what certain inputs should cost; with more costing cases to serve as comparisons, there is a greater opportunity to identify outliers in terms of costs and dive deeper into the reasons that such inconsistencies may exist.

Finally, while ex post costings provide an important set of information that can be used to help guide the design of future programs, one question that these cases cannot answer is how these actual costs compare to the ex ante estimates. For those seeking to implement a new open government program, knowing how budget forecasts and actuals for these types of programs differ on average is invaluable for planning. By undertaking more costing cases, specifically ones that have ex ante budgets that can be used as a comparison, we can begin to understand more about the types and magnitude of common unanticipated costs and/or savings.

A second path for future research moves from costing analysis to cost-benefit analyses. Ultimately, donors, governments, and implementers alike have the same core question regarding any open government reform: what is the value of open government? A major part of value is understanding the cost of implementing reforms like the ones analyzed as part of this work, but the other part of the equation is estimating the benefit and/or impact of these reforms.

Earlier work from the World Bank Open Government Global Solutions Group revealed that the open

government field still has many significant gaps to fill in understanding the impact of open government reforms (World Bank Group 2016). However, there is a pool of research that has been done on outputs and outcomes of a small but growing set of open government reforms. Using the landscaping undertaken by the World Bank as a guide, a potentially important next step for the open government costing literature would be to select a subset of the reform cases that have robust estimates for (an ideally common set of) outcomes and pair these with costing analyses of these programs. Looking forward to a next generation of cost-benefit analysis for open governance, researchers could identify open government programs at the planning stages to allow for a more rigorous analysis of not only the impact of open government reforms but also the ex ante budgets and ex post costs associated with these reforms.

As this stage, the open government community is arguably at the beginning of an evidence building phase to “make the case” for open government. Making an investment in analyzing costs of open government reforms has the potential to improve the case for these reforms in several key ways. First, undertaking costing analyses like those conducted for ProZorro and the Sierra Leone Open Data Program will allow researchers to further refine this methodology and will provide greater information to donors and implementers as to the true costs of reforms like these. Second, a wider pool of costings will further validate the open government costing framework and methodology and, help reveal more potential cost inefficiencies that practitioners should avoid as well as cost saving mechanisms that help to make the case for more and better-designed open government reforms. We are already seeing the beginnings of this type of analysis around the ProZorro platform; a study by the open data program identified a cost savings in procurement in the Ukraine of 14% in 2016 and 9% in 2017. Finally, evidence regarding costs of open government reforms has the potential to not only increase the resource base available to develop open government programs but also, when paired with data on the benefits of these programs, serve as a powerful advocacy tool for promoting open government reforms. Developing more of these cost-benefit arguments will help build the momentum in favor of opening up government in new domains and geographies.

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Annex 1. Key Terms

Annual cost: The cost of an intervention, calculated on a yearly basis, including all the capital and recurrent costs

Annualized costs: The annual share of the initial cost of capital equipment or investments, spread over the life of the project – usually modified to take account of depreciation.

Average cost: Total cost divided by quantity

Capital cost: The value of capital resources which have useful lives greater than one year

Cost: A general term that can refer to the value of resources/inputs used to produce a good or service. This can refer to financial, economic, unit or average, or other types of costs depending on the inputs included. Costs may be incurred by providers, clients or society.

Discounting: A method for adjusting the value of costs and outcomes which occur in different time periods into a common time period, usually the present.

Economies of scale: Occur when long run average cost decreases as output increases. After minimum efficient scale is achieved, average cost may increase (diseconomies of scale).

Expenditures: The financial outlay that an agent (e.g., government, donor or individual) spends during a period of time for goods and services. Expenditures can refer to the entire sum required by a specified service or intervention, or it may pertain only to those outlays incurred by a subset of the organizations involved in delivering the service. Note that expenditure data are usually reported using the cash basis method of accounting; that is, no amortization to capital goods is applied. All capital goods expenditures are recorded in full as they are incurred.

Fixed costs: Costs that do not vary with scale (changes in the level of output). These costs would be incurred even if the output was zero. Examples may include items such as buildings and equipment but also may include administrative costs that consist mainly of personnel.

Incremental cost: The cost of scaling-up or adding a new service to an existing program.

Indirect cost: The value of resources expended by key players in program essential for program implementation.

Marginal cost: The change in the total cost if one additional unit of output is produced

Overhead cost: Cost that is not incurred directly from program implementation but is necessary to support the organization overall (e.g. personnel functions)

Recurrent cost: The value of resources with useful lives of less than one year that have to be purchased at least once a year.

Shadow price: The true economic price of a good that reflects its value to society.

Total (economic) cost: The sum of all the costs of an intervention or program.

Variable costs: Costs that vary with scale (changes in the level of output). Service delivery personnel costs are usually considered variable, since a substantial scale-up of the program will require more staff, though small increases can often be accommodated within the existing staffing pattern.

Annex 2. Stakeholder Interviews for the Case Studies

List of Interviews and Validators in Data Collection on ProZorro

Stakeholder	Organization
Viktor Nestulia	Transparency International Ukraine, ProZorro Steering Committee
Lindsey Marchessault	OCP
Kathrin Frauscher	OCP
Karolis Granickas	OCP
Olexandr Starodubtsev	State-Enterprise ProZorro Lead
Kristina Goutsalova	Council of Reforms Manager, ProZorro Volunteer-Training
Andriy Kucherenko	ProZorro Staff and Volunteer – Platform Development

Civil Society Actors and Donors for ProZorro

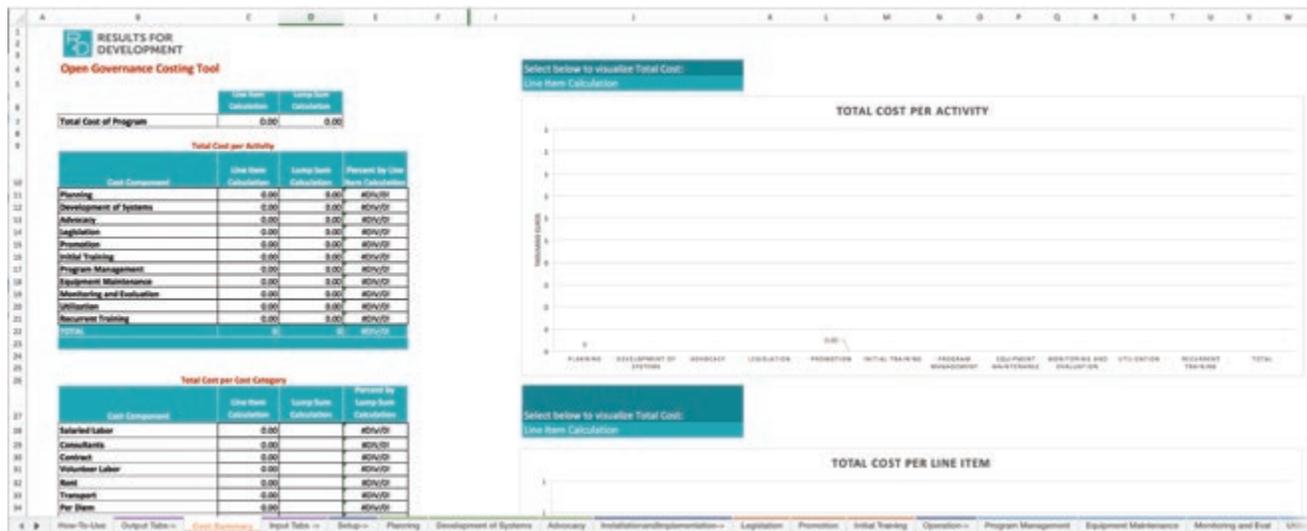


List of Interviews and Validators in Data Collection on the Sierra Leone Open Data Portal

Stakeholder	Organization
Daniel Nogueira-Budny	World Bank (consultant)
Rob Baker	Former World Bank (employee)
Elizabeth Dodds	Former World Bank (consultant)
Qiyang Xu	World Bank (consultant)
Jeanne Holm	World Bank (consultant)
Andrew Hoppin	NuCivic
Morris Marah	Sensi Hub
Khadija Sesay	Open Government Initiative
Usman Khaliq	iDT Labs
Bakarr Tarawally	Ministry of Information and Communication
Yeama Thompson	Right to Access Information Commission
Ndeye Sesay	Millennium Challenge Coordinating Unit

Annex 3. Open Government Costing Tool

Example: Cost Summary tab



Example: Planning category tab

	Units	Unit Cost	Total	Unit Type	Financing	Notes and Instructions
Salaried Labor		0	0	A		
Consultants		0	0	A		
Contract		0	0	A		
Volunteer Labor		0	0	A		
Rent		0	0	A		
Transport		0	0	A		
Per Diem		0	0	A		
Consumable Supplies		0	0	A		
Materials		0	0	A		
Overhead		0	0	A		
Equipment		0	0	A		
Total (from calculations of line items)						
Total (if want jump sum to be entered)						

Navigation: How-To-Use | Output Table | Cost Summary | Input Table | Setup | **Planning** | Development of Systems | Advocacy | Installation and Implementation | Legislation



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