

Crowdsourcing Public Policy Innovation

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Motivation: Problem Statement

Governments in developing countries usually fail to generate innovative solutions to public policy issues or they are not even conscious of the high potential they have if they could open their problems for innovative solutions. Innovation at the public level is limited because of organizational and cultural reasons, mainly because government officials do not have the right incentives to do so. In addition to these challenges, in developing countries the public sector lacks a proper innovation cycle because of factors such as labor migration (brain drain or talent flow) or budget constraints. Therefore, governments in developing countries need alternative ways to generate innovative policies to cope with their most persistent public issues.

In many cases, governments fail to generate the quantity and quality of innovations necessary to solve these policy issues. (Bommert, 2010) reviews the arguments of many proponents of a new form of public sector innovation. According to his findings, the claim that “the public sector has been unable to respond to large scale social, economic and environmental challenges” seems to hold true (Bommert, 2010, p. 19). In addition to these emergent and persistent challenges -terms suggested by (Harris & Albury, 2009)- governments around the world are increasingly facing budget constraints. Hence, it is important for governments at all levels to find less costly ways to respond to these challenges.

Why is it that governments show deficiencies when innovating? What factors explain these deficiencies? Are there any reasons to believe that governments in developing countries face increased pressures that further limit their ability to generate a proper innovation cycle? (Bommert, 2010) partially addresses some of these questions. From his literature review, this author defines some basic deficiencies such as the lack of an innovation cycle and the inability of the governments to set up a broader innovation strategy (Eggers & Kumar Singh, 2009): governments tend to focus only on short-term initiatives and problems leaving long-term strategic decisions on the side (due to the political cycle). These deficiencies come from organizational as well as cultural reasons. In our view, these organizational and cultural barriers are stronger in the developing world where highly hierarchical and power-centered governments don't provide incentives to their employees for early stages of innovation such as the idea generation. In

addition to this, a culture of high risk-aversion (Mulgan & Albury, 2003) prevents governments at all levels to undertake risky projects that may hurt taxpayers' money.

Additional factors might hamper public innovation in the developing world. One of the most relevant factors is the large amount of "Brain Drain". Talent flow is a phenomenon that mainly affects developing countries. Salary differentials and in some cases security issues force talented individuals to study and work abroad (Glaser, 1978). Migratory flows worldwide are large, particularly from countries with lower per capita income levels and lower productivity levels per worker (Commander, Kangasniemi, & Winters, 2003). Developing countries are constantly struggling to come up with policies that at least can involve their drained talents with the technological progress process.

Objective

Our project aims at generating a design document that will propose a platform for crowd-based innovation at the policy domain. Through this platform, governments at all levels in Colombia would be able to share their challenges with the community, particularly with their nationals studying or living abroad. For instance, if a particular city has problems with traffic jams, and has limited budget, the government office in charge of this aspect can post the challenge in a crowdsourcing platform so citizens (specially students) based at the country or abroad can think about the problem and submit their proposed solutions.

In this design document, we address potential solutions to the three main challenges that arise when using crowdsourced innovation for public policy. These challenges are: i) to design the best incentive mechanism that will allow governments to rely on the crowds to solve policy issues and that will incentivize citizens (living at home or abroad) to participate and generate solutions; ii) to design mechanisms that allow for an efficient quality control of the policy solutions generated by the users; iii) to design a sustainable platform that ensures the building of trust among the participants (governments and citizens).

Crowdsourcing Innovation is the intersection between crowdsourcing –“[...] the act of a company or institution taking a function once performed by employees and outsourcing it to an undefined (and generally large) network of people in the form of an open call” (Brabham, 2008)– and innovation (creating something new). A company wanting to crowdsource part of its R&D operation has two choices: i) Roll out its own platform for crowdsourced innovation, as the case for Nokia, which holds dedicated websites where customers and others can evaluate beta versions of new applications; ii) or rely

on a third party, a broker that will connect both supply (bright minds) and demand (companies and governments).

At the public policy level, crowdsourced policy innovation simply means bringing the process of policy making at a cooperative level. Through the interaction between policy makers and citizens, the government would be able to improve the idea generation, problem solving, and implementation (development) stages of the policy making process.

This document explores the creation of a platform for brokering innovation aimed at solving public policy issues in Colombia. We chose a country in Latin America because we think this type of platform would be highly relevant due to the constraints this continent faces in terms of funding and highly qualified policy makers. We want to focus in Colombia because it is one of the more advanced economies of the region. During the past ten years the Colombian economy grew by 4% on average every year, and it has not experienced negative economic growth (Proexport Colombia, 2009). Also, we consider that due to its advances in ICTs there is some capacity that can be leveraged. Colombia is currently undertaking an E-Government strategy (Gobierno en Línea¹) that has allowed governmental agencies to be better connected among them and with the citizens. In spite of this advances, Internet penetration remains low at only 5.08% (Mintic, 2010), below the average for the region (6.55%). This lag might pose a challenge in implementing our proposal.

We will present this design document to the Dean of the School of Government and Public Policy at Universidad de los Andes. We choose this University because is one of the best in the country and it has high reputation within the government. Many of the current Ministers from the President's cabinet have at some point attended Los Andes to obtain bachelor, master or PhD degrees. We will also present this proposal to Universidad Externado, which also has a School of Government and International Relations with high recognition in the government sphere. Our intended audience also includes Think Tanks like Fedesarrollo, which pursues research on policy topics.

Benchmarking Other Crowdsourcing Innovation Platforms

At the private level, open innovation initiatives have been put in place by several firms in order to increase the efficiency of their R&D strategy and also to reduce R&D costs. Additional efforts have been made in the field and currently crowdsourcing has emerged as a potential way to further improving the innovation process. Our preliminary research has resulted in a list of some platforms already in use. These

¹ For more information on the program you can visit <http://programa.gobiernoenlinea.gov.co/apc-aa-files/5854534aee4eee4102f0bd5ca294791f/OnlineGovernment2009.pdf>

platforms mainly focus on the private sector's innovation process. One of these platforms is called Innocentive².

InnoCentive's main service is to bring open innovation to a new level. Basically, a set of scientists that work for the company go out and help companies or "Seekers" to find potential challenges related to their production processes or R&D operations. After a given challenge is detected, the company goes online and posts the challenge. Now, thousands of "Solvers" –a community of more than 200,000 experts from more than 200 countries– work independently on the issue. But these solvers are not just random users. They are usually people from diverse backgrounds and experience levels, and with some field of expertise. Solvers could be chemistry undergrads, lawyers, professors, scientists from many areas of expertise, and computer scientists among others who find interesting to spend their spare time working on problems and challenges that come from the best corporate R&D units.

The most up to date factsheet of the company shows a remarkable performance. A network of solvers that has been growing during the past years and that has more than 200,000 solvers from a myriad of countries. A total of 1,044 challenges have been posted, resulting in almost 20,000 solution submissions and 685 awards given. The range of these awards is from USD 5,000 to USD 1 million depending on the complexity of the problem. In total, participant seekers (Procter & Gamble among others) have awarded more than USD 5 million. As a performance metric, the average success rate of the platform is now 50%, a rate higher than what traditional in-house approaches could ever achieve.

Ideaconnection³ is another interesting platform. It is also built around the idea of solvers and seekers. Its value proposition for seekers (companies looking for ways to crowdsource their R&D operation) is based on low-cost, high-return investment. Companies, as in the InnoCentive case, only pay for those successful solutions. At the same time, users agree to transfer Intellectual Property Rights to the company that posted the challenge. Users do not keep their IP rights in this case. For solvers, the value proposition resides on getting paid for having fun. According to this brief benchmark process, we find that the monetary reward and the recognition scheme among the community ensure that solvers will be willing to participate.

There have been some examples of government-based crowdsourcing in the United States. These are often small-scale, such as city wide, attempts at increasing interactivity in government actions by implementing an idea-sharing website with a voting mechanism, such as Ideas For Seattle. However, there has also been an official White House memo on the "Guidance on the Use of Challenges and Prizes

² <http://www2.innocentive.com/>

³ <http://www.ideaconnection.com/>

to Promote Open Government" (Ziens, 2010). This memo includes guidelines on providing incentives, addressing legal issues, determining the authorities that should be in charge, and so on. It encourages executive departments and agencies to employ President Obama's *Strategy for American Innovation*, part of the *Transparency and Open Government* memorandum. That the U.S. government is embracing this strategy to such an extent shows that they believe crowdsourcing has potential to be a problem-solving mechanism for governmental use.

Addressing the Challenges for Designing a Crowdsourced Innovation Platform

(Jain, 2010) identifies several challenges that arise when managing crowdsourcing projects. The most relevant relates to the set up of an effective incentive mechanism. The existing crowdsourcing literature identifies several reward schemes: money, status, knowledge, professional recognition, reputation, etc (Brabham, 2008). However, these incentives are linked to private initiatives (Innocentive being one of the most prominent examples). When using crowdsourcing for solving public policy problems, additional issues such as budget constraints might arise. Another challenge relates to control and quality of the crowdsourced solutions.

The bottom line is the ability of the system to generate trust among participants. Trust from the government's perspective, meaning that governments feel that it is safe to share their problems with the world. And trust from the citizens' perspective, meaning that they feel comfortable with the final solution (outcome) and that it comes from a person with a good reputation.

The remaining of this design proposal addresses the following questions:

1. What is the best incentive mechanism for a crowdsourcing public innovation platform?
2. What is the best way to ensure control and high quality of the solutions generated by the crowd in a crowdsourcing public innovation platform?
3. How to design a sustainable platform that ensures the building of trust among the participants (governments and citizens)

Design Prototype (The Main Concept)

Si-Sigo, our design prototype, involves a two-sided interaction between government and citizens. The service blueprint for this main concept is depicted on Exhibit 1. The basic elements are as follows:

- Government agencies identify problems and post them in the website
- Citizens identify problems and also post them in the platform

- Citizens can also look for problems they have some degree of expertise and propose solutions
- Users then vote for those problems and solutions that interest them the most
- Policymakers are able to analyze the most relevant problems (according to the crowd) and see the most innovative ideas that address those problems

This is open to the crowd: students locally and abroad, professionals, other governmental employees, think tanks, universities. Problems could also be solved internally at the government agency but incorporating points of view from different divisions. At this problem/solution sharing level there are no monetary incentives to participate. Given the large amount of diverse problems and policy issues that may come from citizens and government officials, it is not possible to determine a proper way to price every single problem such that the best solution can be awarded. At this level, the main incentives are the public recognition given by the voting scheme in place and the sense of communication with the government that the platform gives to its citizens. The voting scheme allows users to vote not only for their solutions of interest but also for the problems posted by other users (different than governmental agencies). In this case, the crowd not only self-regulates but also self-recognizes the whole system.

Quality

In regard to quality, as we noted before, several mechanisms can be placed to ensure a particular level of quality of service. At the private level, crowdsourced initiatives have always cared about quality issues. Several algorithms have been developed in order to guarantee that the quality of the final product is above a certain threshold. For example, some currently applied systems rely on tasks repetition to improve accuracy (Eagle, 2009). Others, such as InnoCentive, rely on a well-defined process of problem definition and preliminary screening of solutions posted by users. At the most basic level, some other platforms rely on self-regulatory mechanisms such as voting among users. The best choice will depend on the nature of the service and the complexity of the challenges (or problems) that are posted in the platform.

We find very interesting and worth noting the scheme employed by InnoCentive to ensure the highest possible quality of service. Given the high-level nature of its customers, this platform uses an innovative approach that involves a certain degree of in-site consulting. InnoCentive has its own workforce: A group of scientists that engage with companies (customers) and lead them in the process of defining a challenge. In most cases, the appropriate problem definition guarantees clear expected outcomes. Having a problem with an unclear scope will definitely open the room for interpretations and a myriad of potential approaches and solutions. As a result of this initial interaction between the company's R&D staff, and InnoCentive's scientists, the company is able to post a clearly defined challenge, with guidelines and

deadlines that will ensure some degree of quality of solutions. Moreover, the actual quality control stage occurs after the website receives all the candidate solutions for each challenge. At this point, a group of scientists reviews and filters the solutions to ensure the proper levels of quality and appropriateness. At the end, the company posting the challenge would receive the best solutions.

This approach is suitable only for high-level challenges on policy issues or processes that pertain to an agency's structural functioning, and that might not be obvious at the first sight. This could be implemented as a value-adding complementary service that ensures a higher quality standard.

In regard of our main service (shown on our demo), a simple voting mechanism will serve as a mean of guaranteeing appropriate quality levels. In this approach, users (registered) are allowed to post problems and solutions, and also to vote for problems and solutions. This ranking mechanism allows visitors (and users) to see the most relevant problems and solutions, and helps the policy-makers understand the key issues and their best crowdsourced solutions.

Complementary Service

Following the considerations stated under the previous section, we propose an extension to the service. This high-level complementary service would help governmental agencies develop an appropriate problem definition. As we know from the aforementioned problem statement, developing countries usually lack governmental agencies with a culture of innovation. This issue not only affects the creation of innovative solutions, it also affects the detection of problems and challenges. This is why we also propose an approach similar to the one followed by InnoCentive.

This additional service is depicted on Exhibit 2. In this case, policy experts replace the basic elements of voting. These policy experts (Si-Sigo's own workforce) help governments detect and define policy challenges that will be eventually posted online, available to the crowd. The benefits of this scheme are in terms of consistency and quality. By clearly defining a challenge, with the help of a policy expert, government agencies can easily price the award. If the boundaries of the challenge are set in a clear manner, it is easy to filter solutions that follow the expected guidelines, and it is also easy to define the proper amount to be awarded (if there is a monetary award in the first place). These policy experts also play an additional role by screening the submissions (no voting in this case). By doing so, the government agency would receive those submissions that meet certain previously-defined quality standards and guidelines.

Monetary and Other Incentives

Due to the fact that the government might have restrictions to assign cash to solvers, we believe a prize scheme should be implemented. According to (Ziens, 2010), prizes represent a wide possibility of benefits that under the right conditions may allow the government to:

- Establish an important goal without having to choose the approach or the team that will have to accomplish it
- Pay only for results
- Increase diversity in the approach to solve government problems
- Help the participants improve their skills
- Stimulate private sector investment
- Identify good solvers to incorporate them in the public sector (Head Hunt)

Furthermore, and due to budget limitations that governments may have, it would be appropriate to explore public-private partnerships that will allow funding, with private funds, for some of the prizes for the challenges that are posted. Depending on the stakeholders involved in the definition of the problem, the platform could use private resources to support prizes and monetary incentives. There are additional incentives that might guarantee participation at some degree. Such incentives are public recognition (by using rankings), and job opportunities derived from the active participation and successfully solving of many challenges. This tool can become a way to build the resume of young graduates that want to enter the job market with some degree of experience.

From the government's perspective, besides the benefits associated with increasing the amount of participants in the innovation (cost reduction and speeding up the process of innovation), the scheme could incorporate some benefits in terms of Intellectual Property. In regard of Intellectual Property protection, our proposed methodology assumes a scheme similar to the one used by the Federal Government of the U.S. In this scheme, and under the Bayh-Dole Act, "[...] small business, universities, and other nonprofit organizations that develop inventions with Federal funds [...] can elect to retain title to and profit for those inventions [...]" (Ziens, 2010). However, in these cases the Federal government retains royalty-free licenses to use these innovations. By doing this, participants have incentives to work on challenges and come up with innovative ideas that might end in eventual patents and profit sources. At the same time, the government, by sponsoring these activities, earns the right to use those inventions at no cost.

How to Foster Innovation in the Public Sector: Additional Implementation Elements

In order to address this point it is important to remember that the public sector lacks innovation as it has been previously mentioned in this paper. The first step towards achieving the right incentive mechanism is to foster and innovative culture within the public sector. Capacity building is essential so that public servants understand the importance of crowdsourcing to tackle the problems they face in their work. We propose that our project is implemented by phases so that the different stakeholders are progressively connected to the project (see Exhibit 3).

The first step will be to open challenges posed by the government to governmental workers so that ideas can flow from different agencies towards the same problem. A holistic approach is much needed in policy making but achieving this is very hard. Once government workers are engaged in crowdsourcing as the first solvers then, in a next step, the platform could be open to think tanks and Academic Institutions (Faculty). In a later stage, it could be open to students and citizens. This stage gate process will guarantee that the platform could be continuously evaluated to identify red flags related to the stakeholders' engagement. At the end, if a crowdsourcing platform lacks the right amount of solvers its mission could be hardly accomplished.

Prototype

The prototype version of Si-Sigo was created using an open source platform called Question2Answer (Question2Answer, 2010). This platform uses PHP and MySQL to manage the application logic and CSS for styling to implement a standard question-and-answer website. It features user registration and login and allows users to post problems (the 'question' side) and solutions (the 'answer' side), along with comments.

These problems and solutions can be voted on so users can identify the problems that are interesting or important to them and support solutions they agree with. The problems can be categorized by pre-defined categories or on-the-fly tagging. The platform also supports e-mail notifications to show responses to problems or answers, and provides RSS support to allow for the subscription to recent problems and solutions. Users can search for problems or solutions via a built-in search box, and related problems are automatically generated to share additional problems.

Q2A manages reputations using a points system that is customizable by the administrator. It offers spam-prevention tools by connecting to reCaptcha, and also offers IP address blocking. It has language definitions that can be translated or changed easily, with several language packs already available. The

administration panel is extremely powerful and can manage many of the settings, configuration, and customization needed without editing any PHP code.

Question2Answer is an active project and was first released in February 2010. There have been a total of 12 official or beta releases in 2010, with the most recent version, 1.3, released on November 23, 2010.⁴

The English version of the site is hosted at <http://crowdsourcing.webatu.com> and the Spanish version of the site is hosted at <http://si-sigo.host56.com>.

Recommendations

- Prizes: It is necessary to award prizes for those challenges that require a higher expertise from the users. In order to involve students and professionals to actively participate in solving challenges, and not only limiting their participation to share comments and thoughts, we recommend having a prize scheme (supported by the private or NGO sector). These prizes would be awarded only for those challenges that come from the interaction between the policy experts and the governmental agency, and that have a clear expected outcome.
- Private-Public Partnerships: As we noted before, since governments present budget limitations, and are required to cope with certain regulatory issues regarding procurement, the prize incentives would require the active participation of sectors different than the public one. This issue opens room for additional research on the area of incentives for private agents and NGOs or academia to participate in this crowdsourced innovation system.
- Intellectual Property: It is important to ensure transfer of Intellectual Property to the government, since this is one of the few ways to motivate governments to actively participate in open innovation.
- To improve quality in a considerable amount, and generate higher incentives for governments to participate, we recommend including the complementary service in which a high-level assessment can be performed following the idea presented by InnoCentive's approach to quality. Apart from the basic crowdsourcing service, the platform would allow the governments to post high-level challenges that were previously defined with the help of a group of policy experts. Later, after the crowd submits their solutions (not available for public vote), the same group of policy experts will perform an initial screening to rule out solutions that don't comply with the guidelines. Finally, the government officials would make the final decision and will reward, with the support of a sponsoring entity, the prize to the winner.

⁴ <http://www.question2answer.org/versions.php>

- Prototype: Expand the application by further customizing based on the needs mentioned above. Create ways to filter by government- and citizen-posted problems, and/or somehow visually differentiate the two, potentially making government-posted problems “sticky” or more prominent. Add custom fields, like a prize/incentive field, which can show up only for government users with adequate permissions. Change user roles and permissions to better match the structure of the government, allowing different users to have different access rights, potentially based on their level in the government. Add more user information fields to be collected when registering to get more information about the citizen. Consider whether or not users need to have a registered account in order to vote on or add a problem, solution, or comment.

For all of these customizations that require changes in code, it may be reasonable to request them to be added to a future official version of Question2Answer, or it may make more sense to create them and then contribute that code to the Q2A author. This would give back to the open source community that helped create the product and help it to grow.

Exhibit 1. Service Blueprint for the Basic Crowdsourced Policy Innovation

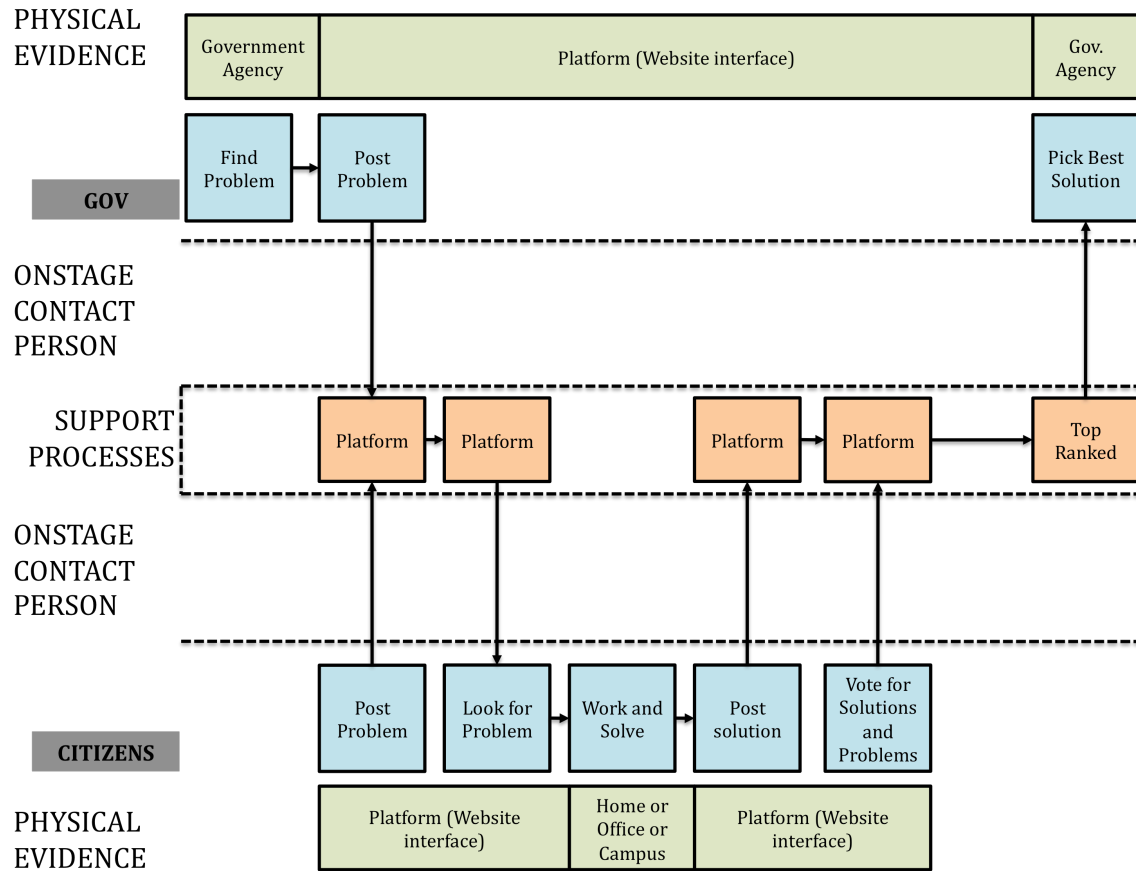


Exhibit 2. Service Blueprint for the Complementary Guided Crowdsourced Policy Innovation

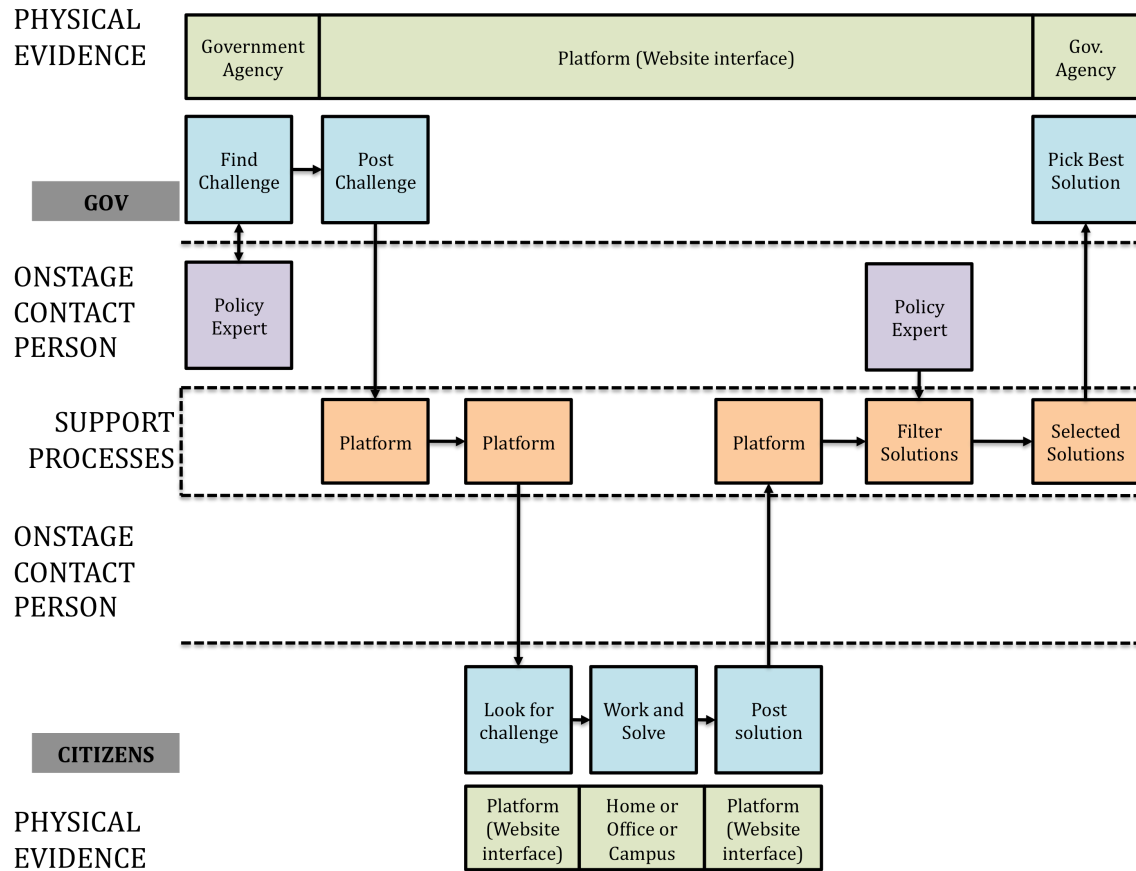


Exhibit 3. Implementation Process



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