Information System Conceptual Modelling Process to Design Tech Solutions To Fight Land Corruption Through Transparency International's Land and Corruption in Africa Programme

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Abstract

Transparency International (TI) has commissioned research based on the experiences and challenges in four pilot chapters, to develop a conceptual model of information on how the chapters will work in the land sector. A conceptual model is a diagram that defines theoretical entities, objects, or conditions of a system and the relationships between them. It could serve as a baseline to identify and conceive successful and innovative tech solutions to fight against corruption in the land sector in Africa. Using innovative tech solutions, TI considered a data-driven approach to deliver better monitoring, evaluation and learning at a national and regional level.

The purpose of using a conceptual modelling process was to build an information system that provides a clear understanding of how the chapters will individually manage information in their projects and identify which part of the information system could be automated; an information system that any programmer could use to design a platform that corresponds to what the chapters require.

Introduction

Data and technology are key components for enhancing transparency, but in and by themselves they do not suffice in dealing with challenges organizations face when using technology to tackle governance issues. In this paper, we present how TI, a global anti-corruption coalition, integrates data and technology into an overreaching strategy.

TI has been working on fighting corruption in the land sector in sub Saharan Africa, aiming to secure land rights and complement official land administration services where necessary by harnessing cloud and data technologies at scale. Even if the issues TI is aiming to address at the regional level are clear, identifying how technology can be used to address these issues remains challenging. Challenges faced provided an incentive to develop a new approach to implementing technology.

In Sub Saharan Africa, land issues are very diverse from one country to another. In addition, TI chapters (ten in total) taking part in the project are free to decide which specific issues they would like to target and which different approaches they will use to address these issues. To avoid the development of solutions which would not be compatible with the reality on the ground, the usage of technology requires a more in depth analysis.

Independently to what chapters will focus on, the conceptual modelling had to address issues in four key areas, identified by the Land and Corruption programme of TI as key areas where technology could contribute to fight corruption in the land sector.

Lack of accessible information
- Information on land registration (process, time and cost)
- Awareness about land information (for marginalised people)
- Access to information for illiterate people
- Duality of customary and statutory land rights
- Gender specific information

Lack of understandable information
- Language used
- Technical terms used

Inadequate access to justice on land issues
- Awareness of law on land regulations
- Awareness on how to seek justice
- Awareness of inheritance laws
- Lack of means to access justice
- Lack of availability of juridical (support) services

Lack of monitoring and social accountability mechanisms, to prevent and prohibit corrupt practices in the land sector at local, national, and regional level
- Monitoring of freedom of informationin land commissions and cadasters
- Publication of fee rates of administrative services, royalties and rents
- Publication of tender in case of allocation of public lands
- Publication of contracts in case of public andprivate partnership
- Publication of revenues of land commissions

Research statement

Many non-profit organisations are facing some challenges when they want to use technology to tackle an issue in governance. Some challenges identified are:

- It is not clear if the technology identified will fit in the overall solution
- It is not clear if the technology identified will fit in the overall technology landscape of the country
- Lack of information and communication technology literacy
- Lack of time and free capacity to pursue additional projects
- The data collection method sometimes does not fit with the context (like collecting data from a smartphone where you don't have internet or electricity)
- Companies building the application don't have time and/or enough understanding of the context (of social impact or citizen engagement) and most of the time the money allowed to build the application is not enough

- Build a conceptual modelling is not covered by many technology projects in the non-profit sector because they don't have staff who could lead that initiative

This research aims to reinforce the use of data and technology in governance projects by building a conceptual modelling process of information systems that a non-technology expert can follow to have a clear understanding of how they will manage information in their project and how technology will apply in the project.

Survey population

Chapters in East and West Africa working on the land projects were selected (Ghana, Madagascar, Zambia and Kenya) based on their capacity to implement a technology solution and the data available on the issue in the country. After the selection process, each chapter had to fill a survey and run an interview where they presented Information on land-related legal procedures applying to citizens. With the objectives to draft:

- An easy-to-understand model on land-related judiciary processes and redress mechanisms (formal and traditional, e.g. in case of injustice, evictions, unjust land registration, impunity)
- The conceptual modelling of legal advice responding to land related concerns (e.g. how to access justice – terms and procedures)
- The conceptual modelling of information to give to citizens on corruption in the land sector and how to withstand and counteract it
- The conceptual modelling of an online/offline mechanism for citizens to give an account of corruption they experience related to land

From the conceptual modelling the next step was to generate common and standard models of managing data to fight land corruption in some countries in Sub Saharan Africa, and to elaborate an efficient and innovative solution for enhanced transparency and accountability in the land sector across several countries in Africa.

Methodology

With a questionnaire in a direct interview, the method used was the observation, using both, qualitative and quantitative. Twenty questions were asked to each chapter targeted, with the objective to identify a technological solution which should reflect the political/ legal environment, the capacity and interest of the chapters participating in the project. For each chapter, information was collected to draft three behavioral diagrams (information flow, activity diagram, and use case). An information flow diagram, to have an overview of how the chapter fight land corruption; an activity diagram, to present all activities that the chapter will perform on the land project; the use case diagram, to present resources required, processes, objectives and constraints applying to the local land initiative.

Information from the questionnaire were completed by an observation of the general level of use of technology on the country. Observation from the field, coupled with diagrams drafted, turned easier the identification of what could be the most efficient use of technology in the project. The

solutions were conceived based on what could work, and from what the chapter wants to achieve, what is realistic.

Solutions and Benefits

Information collected from Ghana, Madagascar, Zambia and Kenya was first documented in textual form, then used to devise Unified Modelling Language (UML) diagrams, presenting the circulation of information on land (reports, laws, regulations etc.) between different stakeholders. After an analysis of information flow diagrams and data collected, we identified three solutions that all chapters could easily replicate. These solutions can be applied at the national level as well as the regional level, with the exclusive goal of enhancing transparency and fighting corruption in the land sector.

Solution 1: platform to promote the work of chapters

The objective of this platform is to be a strong voice for the entire project at the international level to attract more supporters and donors. This platform will be a channel to alert the world about a specific issue happening in a country and will support geo-mapping of issues on land at the national or regional level, social media integration, donations, publication of local and regional reports, newsletters and multimedia galleries featuring TI chapters in action.

This solution should include media material for off line solutions to make it available to multipliers and for those experts/ facilitators who are online but work with the communities offline given that most people affected by land corruption are not part of the digital community.

The platform will enable TI chapters to reach out and engage a wider audience to promote their work, showcasing impactful cases and sharing their activity. It will comply with the latest design directives for multi-device responsiveness and W3C standards for accessibility and semantic enrichment.

Solution 2: Knowledge management of reported cases

The goal of this platform is to reduce the time chapters spend on cases. This platform will be used to increase case management efficiency, enabling chapters to build and retain a knowledge base to quickly access information on laws and regulations, and keep track of status of issues reported and actions taken.

The platform will enable TI chapters to spend less time looking for answers and focus on cases related to corruption, retain in-house knowledge in the face of staff turnover and gain analytic insights on the course of reported issues and the effectiveness of actions taken. It will constitute a middle ground between a fully blown traditional expert system and a grass-roots unstructured wiki, utilizing a structured semantic wiki approach, 'a wiki that stores some portion of its data in a way that can be queried elsewhere.'.

Solution 3: Land process workflow

This platform aims to document, visualize and popularize information on land acquisition, procedures and regulations, as well as to keep track of progress in land registration processes. It

will enable TI to visually represent and monitor complex processes and provide a means through which the public will be able to navigate and search within processes, add information and attachments, and submit reports about a specific step of the workflow.

The platform will enable TI chapters to break down complex processes into a form that is easy to digest and follow even for underprivileged members of the public, while also giving citizens the chance to log, monitor and report on the execution of their registration process. This will shed light on the processes and help fight corruption and inefficiency. It will require a Business Process Management (BPM), which is 'is a systematic approach to making an organization's workflow more effective, more efficient and more capable of adapting to an ever-changing environment.'. A BPM approach for modelling and implementing land registration processes, enabling executable instances that can be transactionally recorded and analytically investigated.

Challenges and learnings

- Most of the people affected by land corruption are not having access to internet. They are rural or live in urban slums, they are women without access to higher education they are poor and marginalized. Digital solutions should synchronize with off-line or text message based and via Unstructured Supplementary Service Data (USSD).
- Lack of information is always at the roots of land corruption. Data management is for the upper class and educated part of the society – dissemination of information is needed to empower victims of land corruption.   In Sub-Saharan Africa dissemination of information is mainly taking place off-line, but today services via mobile phone became more important.
- Data collection should start on the grass-roots level. This is exhausting, time-consuming, costly and requires translation services. Too many funds are directed to technical solutions without including grass roots, without being of any use for the grass-roots.
- The modeling process of land management has the advantage to simplify procedures and visualize procedures. These models can support the work of community workers.

Conclusion

Technology should align and integrate with organizational strategy to be effective, and this calls for a conceptual framework. Being data driven does not mean blindly following trends, it means adopting and adapting frameworks and approaches to transform organizations and become more efficient, focused and accountable. The adaptation process must consider the reality of people on the grass-roots level. To be data-driven, organisations have to be sensitive in terms of collection of the data, have to conduct a rigorous analysis of data that is used, collected and shared in projects. This analysis lies in the foundation of technology adoption, to ensure that data collected will contribute to address the issue identified in reference to its target group.

Although most organizations shy away from conceptual modelling, it has helped TI obtain a clear understanding of how information will be managed in the projects and what could be expected from data and technology. This processing approach could be replicated for similar projects and is a gateway to innovation through the use of technology.