

WHOLE-OF-GOVERNMENT INNOVATION IN SIERRA LEONE



THE CHALLENGES TO HUMAN-CENTERED DESIGN IN GOVERNMENT INNOVATION

Case by Mariama N'Diaye, MCP, MBA 2024

What are the challenges, opportunities, and decision making tradeoffs that bureaucrats face when designing public sector innovations within resource-constrained governments? Over the winter 2022 and summer 2023, MIT GOV/LAB's Governance Innovation Initiative worked with six graduate student fellows and various public sector innovation labs, agencies, and other actors in the Global South to co-produce practitioner-friendly case studies that illuminate context-specific innovations. The first pilot case was researched by Mariama N'Diaye, as part of her Morningside Design Academy Fellowship with the MIT GOV/LAB, while the first cohort of summer research fellows were launched in collaboration with Priscilla King Gray Public Service Center (PKG) and MIT International Science and Technology Initiatives (MISTI).

Table of Contents

/	Executive Summary	1
/	Learning Case	2
/	Conclusion	11
/	References	13

Executive Summary

This case study follows the decisions of mid-level and senior leadership within the government of Sierra Leone's Directorate of Science, Technology, and Innovation (DSTI) and Ministry of Finance to digitize its payment processing system. The process of implementing the payment processing system illuminates the challenges and opportunities that bureaucrats face when developing and sustaining whole-of-government tech solutions and institutionalizing a public innovation team.

At the end of a two-year process that was meant to take less than a year, the digitized version of the paper-based payment processing system struggled to reach its desired uptake. After implementing a human-centered design process, the DSTI team struggled to adapt to a highly rigid, national-level, bureaucratic environment to address both the infrastructural and engagement challenges that arise in resource-constrained contexts.

This case study provides an example of governance innovation in a sub-Saharan African country and the managerial challenges that government innovation teams face in resource-constrained contexts. This case study illustrates the need for user-centered design in building technologies for governance as a way of increasing transparency and reducing the waste of government resources.

Learning Case

Background and Context

Mission and team composition

In 2018, the president of Sierra Leone, Julius Maada Bio, established the Directorate of Science, Technology, and Innovation, or DSTI. The directorate uses science, technology, and innovation to support the country's national development plan and to help transform Sierra Leone into an innovation and entrepreneurship hub, according to DSTI's vision statement. DSTI is led by chief innovation officer David Moinina Sengh (who was later appointed the government's minister of basic and senior secondary education) and chief operating officer Michala Mackay.

Although information technology (IT) officers already provided necessary IT support across ministries, DSTI was created to serve as a hub for the conceptualization, development, and deployment of technologically innovative solutions throughout the government. Senate permanent secretary for the Ministry of Agriculture, Andrew Sorie, described it as an "opportunity to have things that are locally developed and locally engineered so we do not need to keep outsourcing apps or platforms from other countries." DSTI could house innovation outside of the day-to-day hustle of technological needs across ministries with a local team and local knowledge.

DSTI is a lean team of finance and operation officers, software developers, data engineers, data scientists, product managers, researchers, policy analysts, business analysts, and communications specialists. Many members of the team are young, bright, and motivated individuals either trained professionally or in school, or are self-taught. Many have come to DSTI after their university education in Sierra Leone and without a government background, hoping to aid in the digital transformation of their country. This case study will follow the experience of Bineta Diop: one of DSTI's civil servants who joined the team early in her career.

The protagonist and the innovation

After graduating university, Diop joined DSTI just after it had launched in 2018 as an intern, eagerly expecting to shape their work as well as the organization. That same year, Diop was tasked to work as a business analyst and project lead on a project with the Ministry of Finance. The project aimed to transform the ministry's expenditure management system so that ministries would switch from submitting their annual budget manually to digitally. The project was called the Electronic Expenditure Management System (EEMS), but everyone

1. Defined as a "group of responses to the problem of increased fragmentation of the public sector and public services and a wish to increase integration, coordination and capacity" (Ling, 2002).
2. I use MIT GOV/LAB's working definition of governance innovation: a new solution to a complex problem in public services, products or processes leading to a more accountable and/or, responsive and transparent relationship between citizens, government, and civil society.

Learning Objectives:

Reflect on the social and ethical challenges of implementing a whole-of-government approach for government technologies [1]

Provide a managerial level perspective to the social and ethical challenges often faced within government innovation teams

Understand how to correctly assess infrastructural challenges when deploying an innovation in the public sector

Understand the need for user-centered design and governance in tech builds as a way to increase transparency, reduce wasted government resources, and address social and ethical challenges that emerge

Provide a much-needed example of governance innovation in Sub-Saharan African country. [2]



outside of the DSTI team referred to it as EPETS11 because it was going to be the electronic version of the PETS (Public Expenditure Tracking System) form.

Methodology

This case study draws on participant observation and 10 interviews with 33 leaders across eight ministries and departments: the Ministry of Agriculture & Food Security, the Ministry of Finance, the Audit Service, the Ministry of Education, the Accountant General, the Ministry of Health, and the Ministry of Defense. Interviewees included representatives from many roles, including deputy director, senior budget officer, information & communications technology (ICT) officer, and procurement officer. Out of the 33 leaders interviewed, 27 were mid-level ministry staff and six were senior-level ministry staff. After my time in Freetown, I spent two weeks conducting four virtual interviews with members of the DSTI team, from program managers and tech developers to senior leadership. These data provide a set of rich perspectives on challenges facing a government innovation lab in sub-Saharan Africa, though of course they have the following limitations — the data collected was from a small subset of users, there were limitations to the number of follow-ups conducted, and not enough in-person time passed to validate the points made by ministries through first-hand experiences, notably infrastructural tech challenges.



A DSTI developer at DSTI offices (Courtesy of DSTI)

The Call to Action for DSTI: The Need to Digitize the Ministry of Finance's Payment Processing System

The Ministry of Finance approached DSTI with a question — how can you help us digitize our payment processing systems across the government so that we can become more efficient and more transparent? At the time, the Ministry of Finance led annual budget reviews for every ministry. Each ministry would submit their annual budget to the Ministry of Finance, which would review, request edits to, and approve the proposed budget. Each ministry would then send their approved budget to the Accountant General's Office, which would provide final approval.

This process required inputs from several members of each ministry, including program managers, budget Officers, and the minister. Most of this process had been paper-based, except for the Ministry of Finance, which had a server-based platform, or an Integrated Financial Management and Information System (IFMIS). This platform served as a database primarily for file management and storage. For all other aspects of this process, the ministries built their budgets through conversations and back-and-forth word documents, physically signing these documents and emailing (or sometimes manually transporting) them to the Ministry of Finance.

Many challenges arose with this process, the most notable being length of time for completion and file mismanagement. Tasima Joh, the director of budget for the Ministry of Finance, explained “we hoped that by partnering with DSTI, we could build a web-based platform so that directors were able to work from anywhere, and we could reduce delays with ministries asking and process

their requests.” The Ministry of Finance hoped a digital system would provide a clear paper trail and eliminate constant follow-ups to find documents previously submitted. The system’s success could provide DSTI with a case study on how to make government processes both more efficient and transparent, serving not only civil servants but the entire nation.

After receiving the request from the Ministry of Finance, senior leaders of DSTI approached Diop to lead this project. Diop had already supported several other projects in process management across various government ministries and agencies on researching existing processes, identifying and analyzing gaps, and recommending tech interventions. She was excited to dive into a project in the finance realm. Diop and her team were optimistic about how long the project would take, while also recognizing that the EPETS-1 project was new terrain for them. “We thought it would take about a month to do our research,” Diop stated. The team’s confidence stemmed in part from DSTI’s commitment to using a human-centered design (HCD) approach to their work, which the team hoped would not only make the project more efficient but also center users throughout the design process. For this project, they applied the following HCD roadmap to guide them throughout the process: 1) **Discovery**, 2) **Pain Point Identification**, 3) **Design**, 4) **Development**, and 5) **Implementation**.

The goal was to conclude the initial discovery and pain points in one month, the design phase in three months, and the development and implementation phases in three months. The process took much longer: The team worked from 2018 to 2020 to build out the platform, and EPETS-1 wasn’t rolled out in all 29 ministries until December 2020. In the past, projects led by ministries across the Sierra Leonean federal government were created in vacuums with a select handful of senior leaders dictating the process, the design, and its implementation.

The DSTI team from the onset of the project aimed for an approach that would take into account social and ethical considerations by utilizing the human-centered design framework and centering users across senior levels and ministries. The DSTI team prioritized taking the time to understand the challenge by speaking to those most impacted, which was quite unusual for previous government projects. DSTI sought to disrupt the ethical challenge of the lack of inclusion in traditional policymaking.

Navigating Bureaucratic Challenges

DSTI’s plan to engage

DSTI tasked Diop and her team with creating a technological innovation with 469 potential users across 29 ministries and 128 potential users across departments and agencies (EEMS Internal Report). From

This case study explores where social and ethical challenges emerged that did not neatly fit into the framework of the HCD roadmap, impacting the outcomes of the project despite the team’s attempts to mitigate them.

Diop's perspective, she had to find a way to facilitate the creation of a platform that would be useful to almost 500 people and simplify a rather arduous process that had existed for decades.

Diop did not want to speak only to a small group of leaders from the Ministry of Finance. She wanted to find a way to build with those 469 potential users, as opposed to exclusively for them, using the human-centered design approach. However, despite the thoughtful attempt to engage with users, they later realized that the HCD approach did not take into account the highly rigid bureaucratic environments and the impact it would have on the EPETS-1 project.

The design process

As part of the Discovery phase, Diop mapped out the current expenditure payment process. In collaboration with the Ministry of Finance, she developed a list of critical stakeholders involved in the expenditure payment processing system. The Ministry of Finance was involved since they said they knew all of the key players across the ministries, and because they were serving as a client and had a strong say in who DSTI could engage with. The stakeholders on the list included senior-level and a few technical-level secretaries, accountants, and deputy secretaries that would interface with the platform. With limited time and personnel capacity, Diop and her team were not able to engage with all 469 potential users. She had to narrow down the list to those whom she believed could provide a comprehensive understanding of the process. This is a critical challenge for those seeking to create new tech with many users: Who do I talk to? Who do I defer to you to help me choose people to speak to when I am not completely familiar with the process? What will I lose by not speaking to certain people? How do I make those not spoken to feel included? Diop thought about all of these questions but was not able to fully address them.

Diop and her team then set up group interviews with the various ministries to walk them through their current process from the perspective of the various roles. After these conversations, Diop moved into the Pain Point Identification phase. Diop quickly realized through conversations that there were too many different processes across ministries dealing with the same form, and none of these processes were documented. The differences ranged from how they requested budget allocation to when they submitted their documents to the Ministry of Finance? She had to do a lot more interviews and some back-and-forth to validate what she was being told and to make sure she got the process documented correctly.

To begin the Design phase, the DSTI team created a senior task force composed mainly of Ministry of Finance senior budget team members. This task force was charged with approving the design of the EPETS-1 platform. Their first task was to review the pain points identified within the discovery phase. The second task was to begin the design of the platform and to analyze the design during "demo days." On the DSTI side, there were two software developers, two business analysts, and two policy analysts. The software developers took the original process and pain points, and created a wireframe to make sure they understood the process correctly. From there, they used Django for web application development and Python for web development. The software developers also utilized Ionic React to make the developments compatible for mobile usage — both on Android and iOS. Within those "demo days" that occurred every one to two weeks, the business analysts from DSTI presented an iterated version of the tech build of the new platform. All feedback received during those meetings was to the software developers to integrate into the platform.



Ministry of Finance staff in day to day operations (Courtesy of Sierra Leone Ministry of Finance)

As the platform evolved, senior leaders from other ministries were invited to see a closer-to-finished version of the platform. The discussion around who to engage and how primarily stopped at the Discovery phase. In the Design phase, there was a fear of having “too many cooks in the kitchen” and using limited resources to continue to engage a large group of people. This then raised the ethical question of who made the cut and what power dynamics were at play in their selection, which was primarily made by the Ministry of Finance.

Once the platform was completed, Diop and her team entered the Development phase by rolling out a series of trainings for five pilot ministries. The trainings were described as “an interactive training workshop designed to improve user knowledge on their role and experience within the system ... with an extensive ‘Question and Answer’ session” (EEMS Internal Report). They were meant to train but to also collect and incorporate feedback from various users, such as ministers, deputy ministers, permanent secretaries, deputy secretaries, program managers and directors, accountants, and budget officers. Some of the attendees were stakeholders selected by the Ministry of Finance’s senior advisors and DSTI. Subsequently, the permanent secretaries (very senior officials) for each minister selected representatives from their ministries to attend based on the provided stakeholder list. After the trainings were completed, Diop’s team entered the Implementation phase, where the platform was rolled out to all 29 ministries.

After launching the platform, DSTI eagerly began to track usage. Out of 469 users, 32 % were active platform users by January 2021 (EEMS Internal Report). By 2022, nobody was using the EPETS-1 platform and the ministries reverted back to a completely manual process. Let’s explore what may have happened.

The challenges to reaching critical stakeholders in the design process

Interviewees understood the existing expenditure payment system needed to be digitized. They all expressed their frustrations with the existing paper-based process and talked about the benefit of digitization. Senior budget officer for the Ministry of Agriculture Isha Kamara noted, “Do you know how hard it is to have to go down to the Ministry of Finance constantly? Sometimes 3-4x a day? It being digitized would make our jobs much easier.” ICT manager for the Audit Office Usman Mansaray shared similar sentiments: “We thought it would be quite

useful, paperless — more effective and efficient, and we're always open to new developments." There was a fundamental understanding of the need to change the expenditure processing system.

Civil servants also valued the trainings. Deputy secretary for the Ministry of Basic and Senior Secondary Education Aminata Y. Samoh said, "We were very impressed by those who presented on EPETS 1 and we were expecting the process to keep up." ICT officer for the Audit Service particularly noted DSTI's openness to feedback. "Going through the training, it was quite easy. I had one concern about response time and they responded well on the challenge that I brought up." Overall, civil servants warmly received the idea of tackling the issue of the paper-based payment-processing system and the training that DSTI led. According to a post-training survey conducted by DSTI, all 29 ministries reported being satisfied by the training.

However, as Diop dug deeper, it became clear that staff were not satisfied with the final product nor the engagement process. There was a sentiment among civil servants that they were not consulted enough, and that the project was not designed for their use. One senior leader said, "There was very little consultation ... and when I did get to see the platform in the form of a demo I knew it did not work but I did not want to seem as not in favor." He insisted that if he had been involved much earlier in the process, his opinions could have shaped the platform as opposed to being used as the final stamp of approval. This sentiment was shared amongst many individuals interviewed. Diop and her team wrestled with the social challenge of how to engage all of the platforms' potential users and the ethical challenge of who gets to decide who sits at the table. The DSTI team sought to navigate this by using the training sessions as another engagement moment. However, those who got to attend the training felt that this type of engagement was DSTI seeking a rubber stamp of approval on a completed project. One civil servant noted, "When I was engaged on this project, it felt like it was too late to add opinions. It was difficult to see who this was going to serve." **They viewed the training as a session for learning a new platform as opposed to a space for feedback that still had time to be included in the process.**

Several ministries were not aware of the existence of this platform before this training. "I found out about this project when I received correspondence from my minister to attend a training. That was the first I had heard of it," said an ICT Officer from the Audit Service. Senior leaders were the ones with the opportunity to be involved in the demo presentations. Those attending the demos **were not the super users at the bottom of the political hierarchy who needed to use the platform. Those demos also did not include the technical staff that needed to know how to use the platform well to support any of the users, such as the ICT teams.** In this instance, those who were a part of the process were senior Leaders and the most direct users of the platform. An ICT manager for the Audit Service described it as, "Defacto there is always a steering committee but the step down — the end users — they must be included way before product build and versions." In this instance, civil servants did not feel like the end users were involved before the final build.

Discussion Question:

Given the rigid bureaucratic structures and the amount of time and resources you have, how would you have sought to identify and engage users to speak to and include in your design process?



According to an internal report written by DSTI after the completion of the trainings, the sessions were interactive and were meant to help DSTI understand the user experience. Instead, interview participants perceived by those interviewed as a completed project, they could only provide feedback on the more minute details that could be easily fixed. The trainings were not perceived as a session to discuss fundamental issues with the platform nor to test its interoperability with existing infrastructures. The DSTI team did not think they could engage everyone and was not sure if they were engaging the right people. The training as an apparatus of engagement sought to address this social challenge. Instead, the training made participants feel excluded from the process.

Finally, the ICT team's lack of engagement in the process impacted the success of the project. A civil servant noted, "Each ministry has an ICT department seated there; most of them are competent officers. Their roles are to enhance and support all processes. But it might interest you to know when it comes to EPETS, it is a no-go for them. If my system is shut down, why do I have to go down to the Ministry of Finance? Why can't my team here help me?"

There was an existing infrastructure system to handle EPETS-1; however, that infrastructure was not fully tapped. ICT officer for the Ministry of Basic and Senior Secondary Education Mohamed Tury shared, "For example, the ministers need to change the password just to start. We as the ICT team could not help them. Now they are going back and forth with the DSTI team until they just stop using it all together." Although some members of the ICT team were trained on what the system was, they were provided the same training as everyone else. They did not get the chance to go under the hood to understand the mechanics of the new platform, nor did they have access to certain user interfaces that would have allowed them to address many of the simple requests, such as changing a password.

The ethical challenges to innovation in resource-constrained environments

The ICT team members' involvement from the beginning could have worked to address the fundamental infrastructural challenges of the EPETS-1 platform. Senior budget officer for the Ministry of Agriculture Isha Kamara stated,

"The system is laid out but how can we work without electricity? And on top of that internet? We have had a lot of disruptions of our electricity and seizures of the internet supply. That is our main challenge."

This sentiment echoed throughout the ministries. For DSTI, the infrastructural challenges were not top of mind from the very beginning of the project. There was an informal awareness that there were challenges of connectivity across ministries. However, this challenge was seen as beyond the scope of DSTI's mandate and role as a department. The need to address infrastructural challenges became more pertinent during the rollout of EPETS-1.

After the trainings were completed, DSTI did conduct an end user assessment in which they analyzed the preparedness of users across ministries to use EPETS-1. The end user assessment rolled out simultaneously with the training. The assessment tested three things: 1) access to a reliable internet connection with a broadband speed of at least three megabits per second, 2) the availability of computers with at least four gigabytes of ram, at least 10 gigabytes of disk space, and a browser, and 3) scanners that can provide PDF documents. The assessment found that 79 % of ministries fulfilled all the above criteria. The remaining ministries that did not meet the threshold were asked to address these gaps immediately in order to ensure they could use

EPETS-1, but were not provided the support to do so by DSTI. Despite a 79 % preparedness rating, ministries still complained about basic infrastructure challenges, including electricity shortages which were not part of DSTI's assessment.

Since DSTI was innovating in a resource-constrained environment, they needed to clarify what was and was not in their role nor capacity. Given the existing information technology department was working to bring the entire federal government into the era of digital transformation, Diop's team did not see it as a part of the puzzle they could solve. They could solve the creation and implementation of EPETS-1. The inability to solve all interconnected challenges is one not unique to DSTI. However, it does call into question the ethics of creating a new platform that would be hard to bring to life in a resource-constrained environment, as well as what ethical questions must be considered if doing so.

The ethical challenges of working in a hierarchical structure

Diop and the team believed that they had done a thorough process and created a detailed stakeholder map from the onset to understand the pain points and challenges across the ministries and across users. However, it felt like a constant battle to understand who should be involved in the process, how to reach them, how to get them to the table, and how to ensure their opinions were included in the process given the existing hierarchical and rigid bureaucratic environments.

DSTI could not speak to every possible user and were limited by their knowledge on the subject. They relied on the Ministry of Finance to choose who would join for the demo days and the trainings. The permanent secretaries – senior leaders within each ministry – determined who would be their representatives at these trainings. DSTI could provide input on who would be invited at each stage but did not feel that they could control this engagement. Diop would need to lean on her supervisors and senior leaders at DSTI for support around reaching critical stakeholders overlooked by the senior leaders of the ministries. Michala Mackay, DSTI's chief operating officer, said the institutional bureaucracy made it difficult to reach some stakeholders. "I cannot write to the ICT manager directly; it has to come from the permanent secretary who would then assign representatives. Although we can say we would like two of your representatives to be here, we do not have control over the two they send. They may send people but they may send people who may not be the most relevant to the project. Those individuals may write a nice report on the training but then go back to their regular duties," she adds. This creates barriers to engagement that exist in highly bureaucratic environments where attempts to reach those often excluded are seen as unacceptable.

Another observation from Mackay was that the rigid bureaucratic structures did not encourage strong communication channels within teams. Information was not shared nor transmitted within ministries, leading to ambiguity. When DSTI sent a letter to the permanent secretaries for a follow-up session, it was not guaranteed that the representative who attended the second session would have attended the first. Mackay noted, "So now you have individuals being trained with no context, making it difficult to bring them up to speed." Finally, Diop explained that even if her team

Discussion Questions:

How would you have worked to address the infrastructural challenges that could affect the success of your initiative?

What ethical considerations would you have embedded into your design process?

certain positions to show up, such as an ICT manager, they couldn't guarantee that this ICT manager would receive the invitation from their ministry or be requested to attend as one of the requested certain positions to show up, such as an ICT manager, they couldn't guarantee that this ICT manager would receive the invitation from their ministry or be requested to attend as one of the team's representatives. Diop stated, "It could have been determined by the permanent secretaries that the ICT team did not need to be present, and we only discovered this the day of our training."



*Yakama Jones, Director of Ministry of Finance
(courtesy DSTI)*

For the technical staff that the DSTI team was able to engage, their feedback often was dismissed by senior leaders from their respective ministries.

When Diop presented the process map or tidbits from conversations with technical practitioners to directors and senior leadership, she said she was often told "that's not what happens!" or "no we can't have that proposed change happening." At the end of the day, Diop needed the process maps and all the demos presented validated by the director-level positions. Since senior-level positions dismissed the findings shared by mid-level and technical managers, thwarted the findings the DSTI team were able to share. DSTI is asked to consider its organizations' ethics on whether they will proceed with the knowledge of senior leaders or the dismissed and unwelcome feedback they received from those closest to the work.

As a result of this hierarchical dynamic, X feared retribution from Y and were hesitant that any information about Z would not be valuable to mid-level and technical staff. Diop over time noticed that people were defensive or wary of this project. Although they may see the value in dealing with the challenges of the manual system, speaking to Diop and her team felt imposing and exposing. She felt this sentiment in her conversations, noting that "people were very scared to speak up or they tried to hide some of their challenges." In order to circumvent this, Diop tried to get more one-on-one conversations walking around the offices to hear people's experiences outside of collective meetings. Sharing that they "were just doing research" and informing those interviewed that they would be anonymous worked during the exploratory part of the process. Diop noted that **"digitizing feels to people like exposure," and that mindset prevented people from being transparent about their challenges or shortcomings of the process.** Getting people to open up became a challenge for the entire process. This calls into question the ethics of design when working in a bureaucratic institutional environment where you are not trusted. How much should one question the feedback they are receiving?

Discussion questions:

- / If you were Diop, how would you have elicited some of the real opinions of users despite the fears of retribution given the hierarchical and rigid bureaucratic environments?*
- / What efforts would you have made to ensure people spoke honestly and did not see EPETS-1 as a threat to their current processes?*

DSTI's attempts to address uptake challenges: Creating a hotline and enforcement through policy

In the end, both DSTI and the Ministry of Finance team did not know how to incentivize greater participation. ICTs were unable to utilize the EPETS-1 platform and circumvent issues with it due to a lack of training and backend access to the platform. So DSTI became an IT team overnight, creating a live chat and a hotline to address any technological issues. There was an influx of questions, which became unsustainable for the team to continue to monitor, while usage remained low. Among the many ideas that arose to address this challenge, one included policy intervention. At the time of the rollout of EPETS-1, the Ministry of Finance had not mandated that ministries submit their budget proposals through the platform. While the platform was recommended and verbally enforced, the forms were still being received manually. It was in large part because when technological challenges and challenges navigating EPETS-1 arose, the Ministry of Finance felt like it would take too long to require the use of the EPETS-1 platform. One civil servant stated, "Telling people to do things without enforcement? Not in Africa ... everything here has to be enforced." The DSTI team simultaneously had to consider the ethics of enforcing the use of the platform. The enforcement of the platform given the challenges of using it was not universally welcomed.

The government didn't think a lack of policy explained the limited use of EPETS-1. The director of defense for the Ministry of Defense Colonel B. Conteh stated, "It is easy to default to enforcement, but enforcement should only come into play if the service providers at DSTI have monitored the system and evaluated it to determine it is working well. Enforcement on a non-optimal platform will only be worse for everyone." From DSTI's perspective, policy was the missing link to the EPETS-1 platform's success. Given that none of the previous interventions resulted in greater usage of the platform, it was perceived that policy was the one lever that DSTI had yet to pull to increase uptake. Civil servants felt that if the issues with the platform weren't addressed first, enforcing its use wouldn't solve any problems.

Conclusion

The DSTI team sought to use a human-centered design methodology to digitize the Ministry of Finance's payment processing system and incorporate more voices in the government's problem-solving process. Simultaneously, the rigid bureaucratic and resource-constrained setting made it difficult to reach the parties they wanted to reach when they wanted to reach them. DSTI also struggled to identify how to achieve innovative digital products in a system where the foundational technological needs are still being addressed. The DSTI team must plan for and address these challenges when embarking on government innovation initiatives within Sierra Leone's national government.

Discussion Questions:

Do you think the enforcement policy was the right approach to increasing user uptake? What would you have done?

If you were in Diop's position, at what point of the process would you have addressed the infrastructure issues across ministries? How would you have addressed them?

How would you have dealt with the constant influx of requests for support?

The challenges to engagement highlight the importance of not only utilizing design methodologies but also developing a strategic political approach that will allow individuals to reach users effectively within rigid bureaucratic environments.

The infrastructural challenges highlight the importance of asking nuanced and varied questions to assess infrastructure gaps in resource-constrained environments. In Sierra Leone's national government, not every critical player had access to reliable internet. If one critical person does not have access to reliable internet, the whole-of-government approach can fall apart. Similarly, the lack of assessment of electricity shortages created an information gap for which DSTI could not plan for. Innovators in resource-constrained environments must think holistically about infrastructural design constraints, and must the role they seek to play to address these constraints. They are as much about availability as they are about accessibility.

As a result of the challenges experienced throughout the launch and implementation of EPETS-1, DSTI has since been focusing its collaborations on building a more robust stakeholder map, sharing a clear criterion before agreeing to a project that includes implementation and sustainability plans, and working to build a stronger project management protocol amongst its project leads.

To this day, there is great variability in uptake among DSTI's whole-of-government projects and whole-of-government approaches. Kahil Ali, DSTI's head of project design, noted that the DSTI team needs "political strategists" and hopes to build the soft skills amongst its developers around strategy, negotiation, and change management. The DSTI team has learned that these soft skills around navigating hierarchical and rigid bureaucratic environments are as critical as tech development skills, and that implementation has to be at the forefront of any new project.

The DSTI team's experience using human-centered design methodologies illuminates how these design tools are not enough to address the challenges of whole-of-government innovation approaches. In rigid bureaucratic environments, these tools must be combined with political strategy and heightened awareness of the social and ethical challenges nascent to the context to overcome hurdles to engagement. Overall, these lessons will be key to any government innovation lab working in rigid bureaucratic environments and/or resource-constrained environments.

Discussion questions:

Having seen the ways DSTI has navigated the challenges described:

- / What can other innovation labs learn from DSTI to successfully implement digitally transformative projects?*
- / What questions around local context should innovation labs ask themselves to successfully implement said projects?*

References

1. Ling, T. "Delivering joined-up government in the UK: Dimensions, issues and problems." *Public Administration*, vol. 80, no. 4 (2002): 615-42. <https://doi.org/10.1111/1467-9299.00321>.