Onglet 1

***Definition of Problem & Design Proposal***

*CS 205*

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## Discussion Transcript

**Professor SMITH:** So this is an exciting point in the course where we're introducing our project and we have a special guest joining us, Professor Groves from the government law department.

Before I turn things over to him to introduce your project, does anyone have any questions either on anything we did last week or what we'll be talking about today?

Any questions at all?

Ok, I'll turn things over to Professor Groves, who'll introduce your project.

**Professor GROVES:** Thank you so much for having me here. I'm excited to talk to you about this project in part because I think it's interesting. I'm excited to see what you do with it, but in part because it's taken over a significant part of my life. It's very much something that I'm spending a lot of time on right now. This morning was a two-hour call with some of the project clients. And so I'm hoping you can provide me some helpful advice and feedback as we go.

Here's our clients. The trick to this is that there's actually four different clients.

So, uh, one, who I was on the phone with this morning, is Wezesha. Wezesha was started by two guys from Harvard Business School with the idea that they can start and build technology that can help citizens provide feedback, connect to governments and businesses to provide feedback on services. Yeah? And this is a pilot for something that they would like to take to many countries around the world.

Our second client and part of the funding for this is UNICEF, which is a United Nations program primarily focused on health and well-being of children and mothers. They have done a project similar to this for a long time, but are partnering with Wezesha, who has some of the technical capacity.

The third key stakeholder, in part because they could shut the whole project down, if they wanted to, is the government of Tanzania. The vision for this specific project is a nationally scaled program in partnership with the government of Tanzania. It's not gonna be brought to national scale unless there's buy-in from the government and we have a big meeting with them tomorrow, actually.

And then the final one, they have brought in a team of researchers myself, my friend John Marshalls at Columbia University, and Pascaline Dupos at Princeton University to do an evaluation of this project, how does it improve health services, can it be scaled cost effectively?

So four different constituencies. I'll talk a little bit about their different goals as we go along.

What's the problem they're facing? Well, the big goal they have is that they want to find ways to leverage efficiently, citizen feedback to improve essential services, in this case, in Tanzania, and that is part of this broader goal that Wezesha has for all of their programs.

Why does that matter for health specifically in the case of Tanzania? Well, Tanzania has more than 10,000 health facilities. And like a very vivid memory I have. A member of the district medical team. I was out in the field as a PhD student. I wanted to figure out whether health services were working for people in Tanzania. I was friends with this district medical officer. He was telling me how awesome this one facility one. Yeah? They're like really good numbers. The doctor's really well trained. The good old friend. Things are going well. And so we drove this muddy road all the way. He's talking about what a great facility it is. We show up like an hour and a half

later at the facility, there isn't a doctor or nurse in sight. Yeah? And four hours later around noon when the doctor does finally show up, you can kind of smell whiskey on his breath. Really embarrassing moment. We go and talk to citizens. It actually turns out that's been going on for three months.

Yeah, because in a country in which basic infrastructure is pretty limited, in which the funding—like there's a gas budget that district medical officer can't visit every facility all the time—is pretty limited, then the ability to oversee and figure out "are these systems working?" It's really not where they would hope it would be. And the result is that you have huge variation in health facilities and the level of funding, the quality of services. It means you're spending services really inefficiently. It means citizens don't always have trust that those services are going to be there when they need them most. So you see a lot of women choosing not to give birth at facilities in the first place. And sometimes you get important outages at the times you can least afford them. So for example, if there were an Ebola outbreak or another kind of pandemic, it would be very hard to organize those services. Here's just to kind of give you a sense of the especially rural facilities that we're working with.

So a couple things to note. Here's who would greet you, a community health worker, when you visit a health facility in Tanzania. Their job, and you can see it's all paper-based, is to record your name and basic information and what you're there for. Then you might move in and meet with a nurse about what issues you have if you need medicines or other otherwise, you would get them here, and this is kind of a bigger picture of what a facility would (inaudible). A couple of things to notice. First, most of the administrative records are paper-based. So the ability for a facility to quickly and cost-effectively get that information to higher levels of government, pretty limited. It happens slowly, it doesn't always happen accurately, it doesn't always happen completely. So problem one, records very difficult to track. Very difficult to verify. Another big challenge is when supplies are given, those tracking systems are also fairly limited and the ability to know if they got to the right place is pretty limited. The third thing, it's hard to see here, but this is a half built facility. It's just to recognize we are working in a place with pretty limited resources overall. The government doesn't have the money to solve every problem at once, so they need to figure out how to target things cost-effectively. So fundamentally we're dealing with a problem where the government doesn't know where the biggest are which makes it hard to effectively provide services in the places they're needed. Common challenges that we had when we kind of did an audit of about, we sent journalists to about 300 different facilities around the country to ask what kind of challenges were being faced. I mentioned for infrastructure, I mentioned absentee doctors. One thing I didn't mention that the government really doesn't like to talk about, but it's a big problem is that doctors will also overcharge citizens. Doctors in Tanzania don't get paid very much.

So one way they supplement income in some cases is to ask for additional payments in order to get essential services. Or they'll say, oh, you didn't show up with these supplies. So you're going to have to go in the back of line where people who have those supplies come first so that the doctor can save money or skim some off the top. Doesn't happen everywhere, but definitely happens somewhere.

Lack of supplies and testing technology as I mentioned that if you don't have enough childhood vaccines that are given to facilities that makes it really difficult to get mothers to come to facilities when they need them. Long wait times and sometimes abuse, mistreatment, whether it's lack of clean premises or using abusive language or stigmatizing people, let's say, for example, with HIV or (inaudible). Yeah? All things that citizens might complain about, they're very applicable to track.

What's Wezesha and some of the other organizations' theory of change? Well it says if we could find a way to get clients and citizens to provide feedback about their experiences in a way that will reach the people making decisions, then we'll be in a much better place to help improve services and allocate support in the place they're needed most. So the classic thing that they try to do, and I'll provide you an example of the surveys they use and the data they collect, is to say, when you come in and sign up for a health facility, we are going to, like, take your phone number and then within 24 hours send you a message asking for you to provide feedback about your experience. How long did you wait? Were there the necessary supplies? Did anyone treat you with abusive language? Did you ultimately end up satisfied with your experience?

Yeah, I'll give you that full survey. We can also talk about questions that you would recommend adding, but fundamentally, collect that data then provide it both to the healthcare providers, right directly to the doctors and nurses at that facility, how did you do today, how did you do for clients this month? But also to their bosses at the government level, either national or district to say which facilities are doing well, or, similarly, which services across the entire district are being provided effectively versus which services, for whatever reason are there not

not enough supplies, not enough training, et cetera to provide (inaudible).

Yeah? That's the theory of change and that is the core thing that's being done now.

this thing in the field to collect this feedback from clients, how do we present that?

in an online platform for the government to be able to use. Yeah, that's the kind of must have the government needs a way to say we're collecting this data. How do we now put it into an actionable form for people in the health services at the clinic level, people at the district level, and also other people you might think of who might be part of an effective process, whether those members of civil society, media organizations, political actors who might help mobilize that data and ensure that the government acts on it. Yeah?

The second, as we kind of expand to things that would be nice to have, is that it would be, well, actually this is something the government's demanding as well. In addition to making it usable by the government, it would be helpful for this to be usable by citizens. Citizens need to know, kind of a Yelp-type way, which facilities are usable, which facilities are likely to mistreat them, which facilities provide which services. And so providing something that citizens will have access to, to be able to respond to these problems, I think is also part of the

core deliverable, that would be helpful.

Now as we start expanding to things that would be nice to have beyond that, this is just a starting point for every one of our stakeholders. Yeah, we want to prove that citizen feedback can improve services. But as we do that, we also want to incorporate additional forms of feedback, right? Because not every citizen is going to be able to reply to that message and not every citizen goes to the health facility—if they've already heard that the health facility sucks, they don't show up in the first place, yeah?

So we want to provide additional forms of feedback. For example, we work with the government to go conduct audits at health facilities, show up unannounced or send patients who are there to report on the quality of the services they provide. And that should also go into the online platform as feedback.

Similarly, you might imagine working with journalists to say, here's the reports that you're doing about health facilities, here's a platform for being able to submit your feedback. Or people within government or other citizens to be able to go online and submit specified complaints.

Yeah? So add a nice to have would be adding additional forms of feedback from citizens.

Long term vision, which you can't see, but I'll explain, is we're starting with Tanzania in healthcare, but this is actually, so right now we're doing about a what, like $300,000 pilot. The idea over the next three months is to demonstrate because then if there's demonstrated success, then there's about $4 million to scale this up at the national level. But that for what they show UNICEF and the government of Tanzania is really just the start. Because the government of Tanzania would like to use this platform to go far beyond just health services. They'd like to be able to have effective citizen feedback on education services, on tax collection services,

road production services, construction services.

So figuring out ways that this could become interoperable and usable far beyond healthcare also an interesting aspect to grow.

And then finally, thinking Wezesha especially would love to build this over and beyond Tanzania.

And that adds to new things like working with different types of governments, working in different languages, working with different citizen contexts, some places more rural, some places more developed and early. So thinking on Wezesha's behalf about how this could work elsewhere is another part of the long term mission.

I think this is really exciting. We have worked on this original version of this that happened in Sierra Leone. Like, they found that it cost effectively saved, like, tens of thousands of lives in the places that it was happening just by helping COVID relief get to the places that it was needed. I think it's really exciting, the idea that you can kind of more tightly connect citizens to the governments who are supposed to be serving them. But it obviously comes with a ton of challenges and that's why I'm very happy to answer your questions.

**SMITH:** Alright, so we're going to talk about as you're thinking of your questions, I'm going to ask each group to ask one question and then we'll open it up.

But some of the deliverables, what you have to do in terms of next steps you hopefully should have already submitted your team contracts those are due yesterday and then you'll be creating 10 user stories following the format that we talked about in class last Tuesday. Those will be due on Thursday, so Thursday midnight this week. And then your larger deliverable is the Definition of the Problem and Design Proposal, check Moodle for more specifications for what I'm looking for for that. There's also a rubric that I'll be using

to grade that assignment, you know exactly what I'm looking for for that. And that's due next Friday so you have a little over our little under week. Or, a little over a week to be working on that.

Okay, so we're gonna have, each group will have an opportunity to ask a question. I'll just ask that you introduce yourself to Professor Groves so he knows who's asking the question. We'll start with team 2A. So that's John, Nora, Naomi (unintelligible).

**JOHN:** Hi, my name's John.

**GROVES:** Nice to meet you.

**JOHN:** Nice to meet you. I guess just, to start off, like what kind of, like product are you looking for us to help (inaudible).

**GROVES:** So what you can assume I guess the phrase is "out of scope of the project" is they have the platform for texting citizens and receiving feedback. What they don't have is once this kind of CSV file of all those survey responses comes in, how to put that into an online platform, the government officials at the district level, at the health ministry level, health center level or maybe even citizens can access, figure out what they need to find out to access health services to improve health services and use those actual insights.

Yeah. And one thing that I will add to that, it kind of takes you out of the computer space, is you've got to be thinking about context here. You've got to think not just about let's provide a platform that everyone can access, but let's provide deliverables that can be sent to rural villages where they can use that information even if they don't have computers available.

Yeah.

**Jackson ESHBAUGH:** First of all, my name is Jackson. It's super nice to meet you and on behalf of my group, I guess I'm I'm curious about is like are there security considerations that I need to keep in mind about this like what what am I locking down? What am I allowing to be seen? There's obviously government versus citizens.

**GROVES:** Yeah, and I should say it doesn't take much Googling about Tanzania to know that things like journalists who are too critical can end up in jail and politicians who are too oppositional can end up shot in some cases in Tanzania. So it's a good question.

Couple of considerations. One, privacy. It is inevitable that people are going to be concerned about coming from their phone number. Anything they say that's too negative might end up with them, like the government being upset with them. Yeah? So that's something you have to be thinking about. How do we build in privacy protections? How do we build in confidence in the system to allow people to speak freely? Yeah? As it is, UNICEF controls the technology. So while the government theoretically has permission to see it, they don't access it, so when you're thinking about what public facing data set you want to provide figuring out a way to provide that in a way that protects the privacy of the people who might have said something negative about the government—very important, yeah? With respect to other types of technology actually crime rates in Tanzania are relatively low especially in rural areas So I don't think the major operational consideration is like how to lock everything down and prevent theft at the local level about how to preserve the privacy and protection of like stakeholders and participants.

**ESHBAUGH:** Thank you.

**JACK:** Hi, my name is Jack.

**GROVES:** Nice to meet you.

**JACK:** Nice to meet you. And I guess our question would be, why hasn't something like this already been developed? Like what drawbacks have there been in previously attempted?

**GROVES:** Beautiful and important question. So UNICEF has previously tried to do this project called Afia Mayoni, which you can actually, it exists in the world is. They did it, but it was just focused on maternal health.

Yeah, and that maternal health system faced two problems. Number one is they didn't invest very much and didn't have very good systems for getting people to participate in the first place ensuring that they actually text. Yeah, well two things that emerge from this the first is this text-based approach we're doing it rather than on

on site or in person. And the second is thinking about alternative ways to solicit feedback and stuff so that we can try and get it across many different sources of data. So that was one.

The second is the more, the general premise of feedback. Every health facility has feedback boxes. Yeah, every just like every airport has those like smiley or sad face buttons that you provide, right? So this is something that is being done across the board, companies ask for feedback. So I wouldn't say it's not being done. What I would say is that the health facility system in Tanzania in particular doesn't have a very good system for collecting that information and especially making it actionable. Theoretically, they collect information in paper form all sorts of administrative data, but if you ask a district administrator, what have you found? What are you going to do about it? It's a little bit of a loss. So that's where you all come in to think about what's the system for turning a whole bunch of messy data into actionable insights? Yeah?

Oh, if I could add one more thing to this question. A big problem with previous versions, like a suggestion box, is that there's the middle step of the people who control that information are the people you're complaining about. So the doctor who's getting accused of harassment sees the suggestion or complaint, they're not going to pass that on up. So new technologies and the spread of cell phones in the last five to 10 years now makes it possible to directly connect to citizens in a way that previously wasn't responsible. Perfect. Thank you. Yeah.

Go ahead.

**Unknown PARTICIPANT:** (inaudible) How should the integration be (inaudible)?

**GROVES:** So I think you can assume that these text message surveys are going to be coming in on a on a fairly regular basis, right? So you can assume that you'll be getting like CSV file updates and I'll give you examples of what that data looks like every, let's say, week. They're actually coming every day but like you can think about how often you want to do the updates for that. Yeah, and that's actually something to think about is like if you're doing daily updates It's gonna be very overwhelming to the district official. So you need to think about What is the ... what is the timing and the format of the way you're going to try to get information in front of the people who can take action?

Yeah? Because if you try to get a daily email, that'll just start going to the to the automatic track files, but if you try only do it once a year well now there's a lot of stuff that might have popped up that they didn't have to respond to in time. So you have to think about what is the way to provide this information that's going to maximize the chances of it getting used.

**ALEX:** I'm Alex.

**GROVES:** Nice to meet you.

**ALEX:** So we were wondering, what information would (inaudible) the data (inaudible) I guess, gender, social class …

**GROVES:** Social class, not as much, though you know a lot by knowing which village or city or town they come from. Here's some basics on what would go into the survey. What's your name? What village are you from? Why did you come into that health facility? Based on that, some questions about exactly what services you were provided with.

Based on that, or sorry, following from that, let's ask some basic metrics. How long did you have to wait?

How many other people did you wait in line for? Were you ever skipped in line? Did you have to pay for those services? Was the necessary test and medication that you needed available to you? Did you end up leaving to go somewhere else?

Following from that, you have more general service indicators. How satisfied were you with the process? Did you have any interpersonal challenges? If so, please explain.

Yeah.

So, because smart cell phone penetration is somewhat limited in rural areas, maybe 40%. They have to have surveys that can be done on like a burner phone I think. But, It is also true that that limits how in-depth and intense the feedback can be, how nuanced the feedback can be. So something for you to think about in terms of building up the project is could you build in an interface where, if somebody red flags that they have a problem, maybe you get a automated phone call that allows you to voice record a longer recognition. And then think about ways that you could turn that into usable data. Right? Text to... sorry, voice to text type stuff. So, lots of room to think about how to improve the system, but I'll send you the current prototype that's being piloted, which is this core survey that they're sending home.

Cool?

**Hunter ANGST:** So, my name is Hunter Angst, and one question we have up here is ... what, what features are absolute, are absolutely needed?

**GROVES:** (inaudible)

**ANGST:** You know, either, either one will work.

**GROVES:** Okay (unintelligible)

You need to have a platform that at any time can tell me the most up-to-date information about what's going on in health facilities in a given district, which ones are going well, which ones are gong poorly, and provides actionable insight about what to do. Yeah, so (if) I'm a district official, I can go online and I can say what's the state of the facilities and services in my district at any given time. Yeah?

The second thing you have to have is somebody at a health facility needs to be able to maybe log into the same platform or slightly different platform and see specific to their facility how are they doing. Maybe relative to their nearest neighbors, maybe relative to their best competitors. This is what is going on in my facility. Again, with actionable insights. These are the things I need to improve. These are the things I'm doing well. Yeah?

The third thing that I just think you have to do, which the government isn't actually asking for, but I think it's still obviously going to be part of the long term. should do it is citizens need some way to have access to that information so they can make choices about when, why, where they should go for health services.

Yeah.

And you need to be careful because citizens in many cases don't have smartphones.

So you need to think about deliverables that can be sent out to the legislature in those meetings, potentially put on the radio so that they can get that information, right?

Without just giving them a website. And similarly, a lot of health officials don't have

always have computers at the clinics. They'll almost always have a smartphone, but they won't always have a computer.

Okay, so the way that each of these will be interacting with that data are going to be a little bit different.

**SMITH:** So, we've heard from each group, now we'll open up the floor if anyone has any additional follow-up questions for Professor Groves.

**GROVES:** Go ahead

**Eliso MORAZARA:** I'm assuming …

**GROVES:** ... Remind me your name?

**MORAZARA:** Sorry, my name is Eliso.

**GROVES:** Nice to meet you.

**MORAZARA:** I'm assuming the language of the surveys are in …

**GROVES & MORAZARA:** Swahili

**GROVES:** You want to have it switchable between Swahili and English. But I think you can safely assume that most of the users speak Swahili, like the history of Tanzanias that Nerere really imposed in nationwide education Swahili, that's why.

So if you wanted to think even deeper and say we want to make second and third tribal languages also,

available to use. That's great, but I think Swahili is a baseline and switch between Swahili and English.

**Nora SHAIPI:** Hi, my name's Nora.

**GROVES:** Nice to meet you. I think I (unintelligible) …

**SHAIPI:** ... Yeah. (laughs) And, I was just wondering, you already mentioned there's already like the feedback form.

**GROVES:** Sure.

**SHAIPI:** Has it been distributed among people …

**GROVES:** ... Well, the forms never get distributed the thing that's happening now in one district is, and I'll share you some data from that through the professor, is

that they have started when this community health worker, you saw a picture of the woman, when people in this one district is at the health facility, they log them in in the standard way. And then they also say, here we have this program. I'd like to take your phone number and plug you into this database. You will receive a text message over the next 24 hours asking for that support. So they never necessarily see the form, but for some tens of thousands of people have started to receive those messages and fill out the surveys.

**SHAIPI:** And as a follow-up question,

**GROVES:** Yeah.

**SHAIPI:** Have you guys started analyzing any data from those forms?

**GROVES:** We have but I would not start using, by using our analysis.

I will provide you some of the data and you can do your own analysis to start.

One other thing I'll add to that is In addition to the feedback forms, we also, I mentioned, did a bunch of audits of health facilities. Yeah. And that will provide you additional data. You can also look at the correlations between citizen feedback and what we found when they went and did audits and think about how can we provide a platform that triangulates between different forms of feedback.

**JACK:** I remember you talking about how some citizens don't have cell phones so they need some sort of deliverables?

**GROVES:** They don't have smart phones.

**JACK:** Smart phones. Then what do you mean by deliverables?

**GROVES:** I mean, if I'm a citizen, I won't put in the form of an answer, but a challenge: I'm a citizen.

I have a right to know whether when I go and give birth the doctor is going to be there or treat me poorly. You have to think about how you are collecting a bunch of information at the district level I mean at the national level about which facilities can ensure that which ones can't with what probability, etc. You need to think about how to get that information into the heads of the people who need it

**JACK:** And that doesn't mean through technology, right?

**GROVES:** Well, I would use an expansive view of technology. So that could mean through partnering with local radio stations, which 80–85 per cent of people listen to and say at a monthly level, we're gonna put out radio spots warning people about bad places or celebrating the places that are improved.

**JACK:** I guess my follow-up to that, how do we prevent these medical facilities from, I guess, silencing, these radio stations ... (unintelligible)

**GROVES:** Sure. In some places they'll go to that pressure, and one option is to use additional routes, so, going to local politicians, like the local mayor of the village, and having it be part, who has every interest in good health services and (unintelligible), and having him announce it at local village meetings, yeah? Now you've kind of gone away and not necessarily raised awareness. One sacrifice of that is it puts no pressure on the government to improve services 'cause it's not public information any more.

What I will say is that I find local radio stations—I've worked with them a lot—is as long as you don't make it about the corruption of the very top, you can talk about challenges at the local level. It's a meaningful concern, but it's not something that radio stations would be unwilling to push.

**JACK:** OK, thank you.

**GROVES:** Additional questions ... I think I saw you.

**LANDY:** Landy.

**GROVES:** Nice to meet you.

**LANDY:** My question is that you want us to have some control over (unintelligible) ... some people can lie (unintelligible).

**GROVES:** 100 per cent. It's a wonderful question. You have a grudge against the doctors. You submit four forms about how the doctor's corrupt and try to get them fired.

I don't have an answer for you, but I think that's something you need to think about. You have the power.

because you received the CSV, right, to automate the search for anything that seems outrageous, or to first provide the information to the health facility so that they can respond to potential criticisms before it goes to their bosses, or to follow up with anyone making a really meaningful claim to verify that it's true. But all of those you can imagine the problems, right? You have to automatically follow up with everyone that's super expensive. You need to go to the health facility first. Now the doctor's just going to say they're lying. So how do you adjudicate between them, right? There's very big challenges I think across the board with that and it is the fundamental problem with whistleblower systems. Yeah? How do you know the whistleblower is doing it with the best interest of services in mind? How do you know that the survey data is true? I think that's something to wrestle with.

**KIM:** Hi, my name is Kim, and I'd like to know what the expected levels of maintenance would be for the system, so how (unintelligible) …

**GROVES:** Totally. So one answer based on the previous question is that's not given. You can design. What you will be guaranteed is a fairly clean but not totally clean CSV with the data that is coming in and that

level that says here's the health facility here. That's what you get. From there to being in an online actionable platform and any other methods of distribution. You can imagine a lot of challenges along the way. Yeah, will people be able to access that online platform? What kind of maintenance is required if they're providing additional inputs in the crash of the server, any of that. Those are kind of things that I think, A, I want you to be creative about. for seeing and B it will depend on the choices you make (unintelligible)

**Unknown PARTICIPANT:** When are the deadlines for this …

**SMITH:** I'll set all the deadlines. (unintelligible) intermediate deliverables like those that I just mentioned communicated to you as you go.

**GROVES:** My deadline is, we're doing this pilot, not my deadline as it relates to you, but your ... the real world deadline (unintelligible) doing the pilot in the next 4 to 5 months and we're really hoping to show demonstrable impact.

**Henry WALSH:** This kind of goes back to a previous question, but I just want to know, I'm Henry.

**GROVES:** Nice to meet you.

**WALSH:** Nice to meet you. Um, will we be able to verify the identity of the person who submits the claim, kind of to avoid like somebody who submits multiple claims?

**GROVES:** I can think of ways you could, but I'm not giving you those ways. Yeah, so it's like, like, if you want, all you get is the text message response. You also know that the reason they gave that text message response is because when they signed in at the health facility, the community health worker asked me, what's your name? What's your cell phone number? Let me call it verify that's your cell phone number. And then within 24 hours, we're going to automate sending the questions to that cell phone. Does that mean you answered it? I don't know. Maybe your husband or wife answered it instead, right? Does that mean the health community health worker saw you had a bad experience and might have deleted that number? Maybe. I mean those are worries you should have, but I don't think you should leave saying this data is crap. I think we have found that it tends to be somewhat reliable.

Sorry, I'm not going in order.

Yeah.

**[UNINTELLIGABLE QUESTION]**

**GROVES:** Those books are like government mandated big books that happen. They don't track any of the stuff we just talked about

They track who you are, what date you came in, whether you paid any money.

because they have to bill insurance and what problem you have?

That's none of the satisfaction stuff after that ... So you could say, hey, we're going to go in.

but you still wouldn't have a lot of interest.

**Tuna AKIN:** Hi, my name is Tuna.

**GROVES:** Nice to meet you.

**AKIN:** Nice to meet you too. I don't know if this was mentioned, but I was curious about, what do you have, in terms of the survey questions, what do you already have?

**GROVES:** I'll share them with you. OK. And I think I said,

Good overview of them to that first question. It's everything from overall satisfaction. What service you got, were key things for that service performed? Where you asked the penny money, where you mistreated, how long did you have to wait? It's not comprehensive because it has to be able to be done within a burner phone, but it does have a lot

of the challenges that we just had.

**Judson DUNNE:** Hi, my name's Jud.

**GROVES:** Nice to meet you, Jud.

**DUNNE:** And I was just wondering like …

**GROVES:** This is like the mustache team. What's going on, man? Your team leader or your team runt?

**DUNNE:** I was wondering what the current like health care and costs of health care associated with this would be if that would be like If that would be something that would mean that a certain demographic of people who have enough money to assure and how we can target distribution to make sure we're including all the …

**GROVES:** Really really good question. The reason. UNICEF is wonderful in many ways, but honestly...

They are not essential to this. In fact, they did a not that effective version of the survey and are now doing a good one. The reason they remain in the game is because they have a cost-reduced phone number from which you can send a text message and the text message replies are free. So that element of it is free.

However, as you're designing your platform, thinking about alternative ways of collecting information, thinking about alternative ways to distribute information, costs should absolutely be on your mind. And you should be able to come and say, we want to add XYZ component. This is our kind of projection based on inputs of what that would cost. Yeah.

**ANGST:** So you were talking about how citizens should be able to see the place around them and see how (unintelligible) rate sort of.

**GROVES:** Yeah.

**ANGST:** (unintelligible) ... that the places have to be registered. So how can that work? Like the doctor's office or something.

**GROVES:** No, no, no, no, you're exactly right. I just want to flag one thing about the problem. Which is if you're unregistered, then you can't be logging people into the system in the first place.

So this is fundamentally going to be about ratings of 80 per cent of, 90 per cent of services in the first place. Public health facilities.

And I mean there is like medicinal and herbal doctors especially in rural areas, there's (unintelligible) a witch doctor. Those are like a real part of public life. But they are not gonna have access to the number to be able to register people in the first place.

Okay

Yeah, if you're part of the government registry of health plans, then you have access to the system to log people in.

which means you will show up on the cloud.

Okay, if you are not, then you will not get any of that feedback in the first places.

If you wanted to think about ways to expand, the citizen feedback to unregistered and informal healthcare (unintelligible) ... and reading about the culture around trust of health versus traditional health …

**SMITH:** Anyone who hasn't talked yet.

**GROVES:** Go ahead.

**LANDY:** My question goes back to the problem.

**GROVES:** Yeah, sure.

**LANDY:** How do you know the lack of data is actually the problem ... (unintelligible) ... government doesn't always know it?

**GROVES:** It's a really, really nice point. I do know for a fact that the government doesn't always know.

Not just because I went on the trip with the one guy, but because when you survey the district officials about where citizens are most of the satisfied, they're not particularly accurate. Yeah, so like you do the survey of the citizens, you do the survey of the district, it turns out they're not always aware of where citizens have the biggest problems. Yeah? But you make a beautiful point which is not the only problem. You might have an information problem, but you also might have a motivation problem. Which is I have the information but who's telling me to take action on it right I collected my paycheck and going home with Which is one reason why something like a radio or providing information directly to citizens, right? Now you're like a fire under the butts of these people because now you know and your constituents know you know. So if you're not doing something about it they have every reason to try to vote you out of office or protest or anything. So thinking about ways to leverage this information for motivation and for information, very important. One thing that we're already doing that you could consider is we're thinking about not just sharing information with the bureaucrats, that helps people, but also sharing information with the local politicians, right? Whose job and reelection depends on serving their citizens' interests.

And now they might be putting additional pressure on the bureaucracy to take action, not just

rely on information automatically that needs good outcomes.

**ESHBAUGH:** Yeah, so I'm thinking a little bit about who, the who is using the solution. And so I'm hearing outlines of three larger groups of users. I'm hearing an outline of citizens. You could say some who are rural, some who are not rural. I'm hearing an outline of health facilities to be able to access this. I'm hearing doctors and nurses, fair enough. And then I'm hearing an outline of government. And I'm curious about this government a little bit. Primarily like okay, so there's district level. Yeah, so stuff like state county and then you have the the the the Tanzanian national level. Okay? Um at the district level would it be fair to say or a good idea to say okay this district your access to data is restricted to only these health centers within your district. Yeah. Yeah. Yeah. Where is the federal level or whatever you want to call it there? Yeah. Okay. Okay.

**GROVES:** So I'm not going to give you an answer, but I'll give you some things to consider.

**ESHBAUGH:** Yeah.

**GROVES:** Yeah. So, and first of all, I want to add one more layer.

**ESHBAUGH:** Sure.

**GROVES:** Because it came up in the conversation we were just having, which is you also have like village and ward level, which is kind of like Easton government.

**ESHBAUGH:** Yeah. Yeah. Yeah.

**GROVES:** And they may be the people who are mobilizing on behalf of the community. They may also be able to put pressure directly on that health facility. Yeah. The mayor shows up to your local health facility and says, Hey, we just got a report that things are going wrong here. What are we going to do to fix it? Yeah. So you have a local government as well.

But let me answer your question as you asked it, which is who should have access to what? And I can see arguments for either side. On one hand, learning not just how your district is doing, but how it's doing in comparison to others, that can be quite motivational. Yeah, there's a lot of evidence. that kind of building this into a competitive type environment improves public sector motivation. So that's one.

On the other hand, you might say that that leads to lack of privacy undermining between health facilities. And the other thing is it might lead to information overload. If I'm seeing 50 districts, but I only work with one, you know, so much of this is about the precious little attention you can get of a government official when they have a million problems. Sending them information about 50 districts might reduce the amount of time they spend thinking about the one district that really matters for them.

Yeah? So you have to think about how to make the information actionable, how to make it motivational, how to prevent kind of spillover and lack of practice.

**ESHBAUGH:** That's helpful, thank you.

**Unknown PARTICIPANT:** So in case we have more questions later…

**GROVES:** I think the general system for both my time reasons, but also to make sure there's fairness and whatever is the talk to your professor first. And then if we want to loop additional folks in.

One thing I will say that I just want to make really clear: absolutely cannot contact Wezesha or the Tanzania government or UNICEF if they heard from some Lafayette undergrad like, oh, we're working on your project. That would be super bad.

**SMITH:** I'll just echo that. All contacts (unintelligible) me. There may be a point later in the semester, and you'll know if and when it's happening where you'll get to show some intermediate progress to your client.

**GROVES:** Absolutely.

**SMITH:** Depending on your client's time. But otherwise, this is your opportunity to kind of understand the problem that's being presented to you, and then at the end of the semester (unintelligible).

**GROVES:** And I will say like in the long term if you're build—like I mentioned, Wezesha and other organizations are absolutely implementing this in lots of different places. If you get a fire in your belly about this and are interested in how it can work and then at the end of the semester want to talk to some of the organizations who are doing it, awesome. I'd be more than happy to talk to you. But for this class, I'm gonna look like a real idiot. It's like, why'd you give our project to an undergrad?

**JACK:** I guess I have two things. One, do you think we could have this PowerPoint?

**GROVES:** Yeah, absolutely. And you should pass questions to your professor because if he passes them on to me I'm more than happy to try to provide whatever information I can. Or if he can make up an answer and it'll still be useful to you.

**JACK:** And then secondly, one big concern I have with a lot of people giving in user input, at least for me, I feel like it's mostly going to be negative. How can we balance that because we get more? (unintelligible)

**GROVES:** Great question. So one thing you do there's this classic literature and term of art and government laws like fire alarm systems which is rather than having to control around and find problem you have a fire alarm system which is somebody pulls it when the problem emerges yeah the problem for that is you only ever hear the fire alarm you never hear about all the good days. And so you have, when you think about providing your

feedback when you think about your platform. You need to be cognizant that you're raising red flags in some cases. That doesn't necessarily mean you're providing all the good stuff, yeah?

On the other hand, the whole goal of mobilizing a lot of citizens, making it free, making sure that as many people sign up as possible, is so that you can get an overview of both satisfied and dissatisfied customers. Yeah? The goal would be that you're asking citizen satisfaction from lots of people, including the people who are happy.

And I think one question is to ask, is that successful? Like looking at the data, how effectively are we getting those satisfied indices?

**KIM:** Are we like (unintelligible) surveys (unintelligible) …

**GROVES:** So two questions first of all I think translation is a really interesting question and you face it a lot in international projects and there's a lot of tools fro doing it, so I would make that part of the challenge.

The second on your first question though is absolutely I would say the need to have is a way of dealing with the data that's coming in. The nice thing to have is thinking about additional forms of data collection that you think you could pitch the government or UNICEF on and say, hey, this is what we're going to do with what you've got. Here's XYZ thing that we think is even better. Yeah, I would love if we could come back and say here are four different types of data that would improve feedback prompts.

**SMITH:** I'll add on to that. I don't want you to get lost in the sauce in trying to translate everything. You have to deliver a working system at the end of the day, so if your version 1 is in English and then you do some translation later down the line, and think about what's the most important. It probably should be in English because all stakeholders speak English at the highest level. All the stakeholders speak English and the Tanzanian government has the resources to deal with translation.

Yeah. So if you can do that, that's great, but the first version needs to be in English.

**Unknown PARTICIPANT:** Will we have access to data like there's a place ...

**GROVES:** I will give you access to a CSV with every health facility. Yeah, so you'll have all the health facilities I don't recall if that has doctor names, but I think you can reliably assume that the district who is gonna see the data could say—and maybe we could create this data like a fake version of it on your behalf—is the district knows if you tell it the name of the facility and location it knows the numbers and everything on the doctors who work there.

**SMITH:** The thing I'll add is you can create whatever data you want. So like you're building a system that will support this type of interaction. If you feel like it would be nice to know what the doctor's names are that are associated with the facility and you haven't gotten them from the client or from me, you can come up with some imaginary doctor's name to associate the facilities and have a system that would enable those to be ... swapped out.

**JACK:** Just a quick question off of that. How many facilities are there?

**GROVES:** I think there's something like 10,000 public health facilities in the country. I was talking to your professor about, oh, should we do a pilot first because we're doing a pilot right now in one district with 100 health facilities. And I think we settled on if you would like to pitch that as the starting point, that's great. But we'll get you immersed in the full data. Think about what you could do at a national scale. And if you decide, hey, we want to do it into a bite-sized chunk first, that's great. Otherwise. Thanks, guys.

One more? Yeah, keep going. These questions are great, by the way. I'm very impressed with them.

**Unknown PARTICIPANT:** Would we get penalized if we were to do something on as far as scale?

**SMITH:** Uhh, no. I mean it's always better to deliver the entire solution, but what I'm looking for is that you're following a process that's going to give me confidence that you have (unintelligible).

**GROVES:** I will say if you come back to the government and say here's your solution.

They want to say okay, and then what are the steps that you would imagine for bringing that to scale when you (unintelligible) …

**SMITH:** Okay, so I wanted to make sure you all have some time as groups to put your heads together and digest a little bit of all that you've heard. Think about how you're going to meet these deliverables, including the ten user stories that are due in just a couple of days. And then, if any other questions kind of trickle up from these discussions, we will be circulating happy to answer any questions that come up.

**ESHBAUGH:** Thank you very much.

## Definition of Problem

**Problem Definition**: “[I]f we could find a way to get clients and citizens to provide feedback about their experiences in a way that will reach the people making decisions, then we'll be in a much better place to help improve services and allocate support in the place they're needed most” (Groves).

**Definition of Problem:** In Tanzania, there exists a significant disconnect between the government and the citizens they serve, particularly in the healthcare system. This disconnect leads to a lack of accountability at all levels—from government officials to healthcare providers. As a result, healthcare services suffer, and citizens bear the consequences. Furthermore, the government lacks a clear understanding of how these services are performing, making it difficult to make informed decisions.

### ***2.1. User Stories***

| **Priority** | **As a …** | **I want to …** |
| --- | --- | --- |
| 1 | Citizen | Access health facility reviews and ratings within my community so that I can make an educated decision on where to seek care. |
| 3 |  | Provide real-time feedback for emergency issues (e.g. facility closure or stock-out) so that others in my community are aware. |
| 1 |  | Maintain anonymity when submitting sensitive feedback so I can report issues without fear of retaliation. |
| 2 |  | Access the platform in both English and Swahili so I can provide feedback in my preferred language. |
| 3 |  | Receive updates when my reported issues are addressed so I know my feedback led to action. |
| 2 |  | Get information about local health facilities even without access to a computer or smartphone so that I can make informed decisions about where to seek care regardless of how connected I am. |
| 2 |  | Compare two or more healthcare facilities so I can easily make a decision about which to visit for my next appointment. |
| 2 |  | View historical data to see if improvements have been made in my local healthcare centers so I can be better informed about my healthcare centers. |
| 1 | Healthcare Facility Staff Member | View collected feedback on my facility so I can understand areas for improvement. |
| 2 |  | Track changes in the feedback over time so I can see if improvements or regressions are made in facility operation. |
| 1 | Public Official | View healthcare facilities in my area of focus so I can identify facilities that need attention and support improvement efforts. |
| 3 |  | Generate summary reports on healthcare facility performance in my area of focus, so I can easily share key insights with other officials and stakeholders |
| 2 |  | Compare facilities in my area of focus, so I can identify which are performing well and which need improvement or intervention. |
| 1 | Government Official | View data about healthcare facilities in my area of governance so I can find any issues in the healthcare system. |
| 2 |  | Determine how well my area of governance is doing in terms of provision of healthcare so I can be encouraged to work towards a better public healthcare system. |
| 2 |  | Access historical healthcare facility feedback data so I can identify trends and make long term policy decisions. |
| 3 |  | Generate summary reports on healthcare facility performance in my jurisdiction, so I can easily share key insights with other government officials and stakeholders |
| 1 | System Administrator | Create an account for a new official or healthcare provider so that they can access data relevant to their jurisdiction. |
| 1 |  | Delete an account for a healthcare provider or government official so that if they leave their position or something similar, their access to this data can be restricted. |
| 1 |  | Update an account’s details so a government official or healthcare provider can maintain access to their accounts even if some details are forgotten, or so that accurate, up-to-date information about each user is maintained. |

## Design Proposal Statement

We propose a review platform to support accountability in public healthcare in Tanzania. This platform will be easily accessible (i.e., online), and will be fully compatible with smartphones. Citizens will be able to search for healthcare providers based on rankings derived from survey data, similar to consumer review platforms. For rural citizens, there will be features that generate reports summarizing key healthcare facility rankings, which can be printed, broadcasted on the radio, or presented at town meetings. To promote broader use, this platform will be multilingual, offering both English and Swahili versions.

In addition to survey data, the system will integrate other forms of feedback, such as government audits and news reports. The platform will also harness unsupervised machine learning techniques to improve data interpretability. These might include anomaly detection models to flag centers with abnormal data, sentiment analysis, and word-embedding techniques to process Swahili survey responses into a usable vector format.

Healthcare facilities will be assigned a score between 0 and 5 based on various factors, such as sentiment analysis of qualitative survey responses, average ratings (from rating questions), and a comparison of how these facilities perform relative to similar ones (based on k-means clustering). Scores are updated weekly, recalculated as new survey data is added to the system. We now explore the system from different perspectives.

### ***3.1. User Perspective***

The *user perspective* pertains to how users interact with the system. We elaborate on user perspectives based on cases:

* *Citizens* — Citizens are able to access the platform without credentials. Their use of the service will primarily include searching for healthcare facilities and viewing summary data about them. For example, citizens can search for a facility, view statistics such as an overall score and the average response to some of the more important ranking questions, and compare that facility to others.
  + *Citizens in rural communities* — As a special case, citizens in rural areas will be able to engage with this data in ways that may not require a device or an internet connection. For example, a document that lists the top 5 or 10 best and worst healthcare facilities in a given region would be useful to many entities. Radio stations could broadcast this information, and mayors could include it in their town meetings.
* *Healthcare providers* — Healthcare providers are able to access more detailed information about their specific facilities. While feedback will remain anonymous, healthcare providers will be able to access average responses to each survey question, along with high-level recommendations of where to target reform (in the form of a list of strengths and weaknesses).
* *Public officials* — Public officials are almost identical to healthcare providers: they can view the same information that healthcare providers can, but they can do this for a defined jurisdiction (similar to a government official).
* *Government officials* — Government officials access all public official data plus anonymous individual responses. They also have an anomaly detection dashboard, which flags facilities with unusual patterns in survey responses.
* *System administrators* — Admins are the most privileged users of the system. They are responsible for creating and managing user accounts, ensuring access for authorized users. Alongside being able to view each of the views from less privileged users, administrators can also view every feedback response recorded, *including contact information*, which provides the potential for follow-up.

### ***3.2 Structural Perspective***

#### *3.2.1 Data Pipeline*

The data flow in the system is as follows:

1. Import survey data from CSV files (and any other types of reports & data if they are supported by the system)
2. Machine learning techniques are applied to increase the interpretability of the data.
   1. These may include: anomaly detection, k-means clustering, sentiment analysis, and more
   2. Results can be used to add other features to the system, such as a listing of outlier healthcare facilities for government officials, a listing of similar facilities, or an overall sentiment for each facility (this could take into account other text-based reports & data).
3. Data is analyzed and scored on a scale from 0–5 based on:
   1. *Baseline Score:* Average ratings from the survey
   2. *Adjustment Factors:* Perhaps ML results may be included (i.e., sentiment analysis may play a role in this score)

This flow occurs once per week, since data is delivered once per week. Also, data is never overwritten. Instead, everything is saved so that previous statistics can be viewed.

#### *3.2.2 User Interaction & Accessibility*

Users should be able to interact with the system easily. This means that the system *must* support mobile devices and Swahili. Additionally, summarized reports can be exported as printable documents, which can then be disseminated through town meetings, radio broadcasts, and more. The high level user roles and permissions are listed below.

* *Citizens (unauthenticated)* access public reports & rankings.
* *Healthcare providers* review anonymized facility-specific feedback.
* *Public officials* analyze comparative facility reports within their jurisdiction.
* *Government officials* gain access to raw anonymous survey data and anomaly detection insights.
* *System administrators* manage user accounts and oversee platform operations.

### ***3.3. Key Features***

Our solution will harness the power of machine learning techniques to improve the interpretability of data, such as anomaly detection for detecting outlying medical facilities. Additionally, we plan to support other types of data, such as news reports or government audits of facilities, parsing and analyzing these using sentiment analysis to provide a more complete evaluation of healthcare facilities.

### ***3.4. Use Case Diagram***