

Designing Digital Interventions for Lasting Impact

*A Human-Centred Guide to
Digital Health Deployments*



The Goal of This Toolkit

Design that responds to people and the systems that surround them

We turn to digital tools to help facilitate a change. There is an action or change that we desire—recording patient data, remembering follow-up appointments, using services, or consuming new information—that currently is blocked.

When you pick-up this guide, you have probably completed a situational analysis and have some idea of how a digital tool may help with a specific intervention. This guide starts there, with an overarching awareness of the complexities of the situation and basic knowledge about how a digital tool will be one of the factors to address programme and user needs.

However, even when digital tools are technically feasible, they are not guaranteed to be desirable to user or responsive to programme challenges. This is why we must begin by understanding how human perceptions, actions, and distractions figure into the challenge. The tool is then built or adapted to respond to these human needs. Only then does a tool become part of a functional digital solution.

This toolkit introduces human-centred design, a problem-solving process that starts with understanding the community and context surrounding a challenge. Designing for people and their everyday interactions allows us to solve for the right problems. A well-functioning digital solution fails if it only works in theory and does not anticipate issues faced by frontline workers, members of the community, caregivers, and the existing systems that surround them. No health expert or digital strategist has more knowledge than a Community Health Worker or Nurse about how to solve their problem. The methodologies in this toolkit acknowledge this by focusing on observing, interacting with, and designing for the people that we seek to serve in addition to looking at technical constraints and specifications.

This resource was created by the UNICEF Global Innovation Centre in partnership with the UNICEF Health Section to help colleagues apply human-centred design approaches, informed by emerging insights from the behavioural sciences, to challenges that benefit from digital, technological, or data-based solutions.

This toolkit complements UNICEF's Approach to Digital Health which outlines a common vision for digital health within UNICEF programming, examines UNICEF's comparative advantage in using digital technologies to achieve health sector and strategic plan priorities, and identifies strategic opportunities for digital health that align with UNICEF's Strategy for Health (2016-2030), Health Systems Strengthening Approach, UNICEF Strategic Plan (2018-2021) and the Data for Children Strategic Framework. The vision for digital health at UNICEF is a world where the health and wellbeing of children is improved through digitally-enabled health systems, where digital health technologies are used to enhance the quality and reach of vital health information and services, including for the most disadvantaged children and their families.

This human-centred design toolkit is one of the many resources available to reach these goals.



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Steps 1-3 offer guidance on solving the right problem through looking at the existing system and using hands-on, in-person research to observe and listen.

Steps 4-5 offer guidance on designing the right solution by detailing methods tailored to digital interventions and also specific to the human, institutional, and informational components of existing health systems.

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Who This Guide is For

Everyone will come to this toolkit with different past and current experiences. Whether you are completely new to the human-centred approach or the process of designing a digital health solution — or if you are experienced and looking for additional guidance — different modules of the toolkit can be used to help incorporate a human-centred approach into your existing health-systems work.

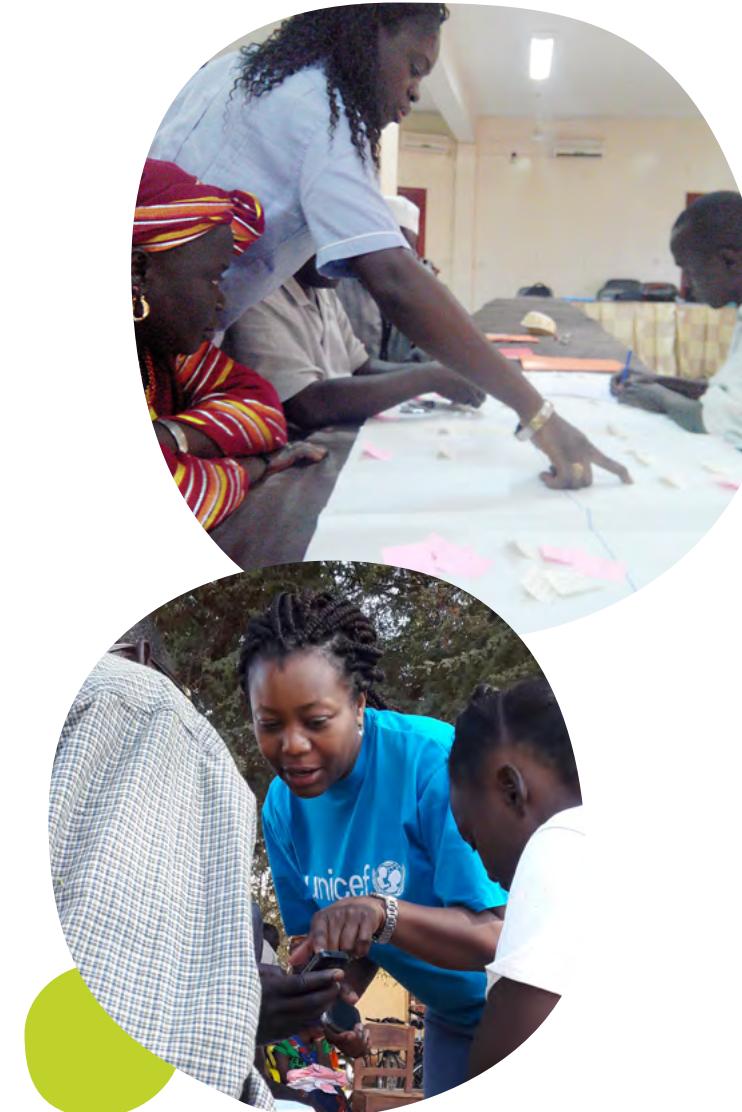
This guide is right for you if any of the following apply:

- You are completely new to this process
- You have a digital solution in mind
- You started implementing a solution, but it's not achieving expected results
- You want to adopt and deploy an existing solution in a new context

This might look like:

- You have completed the groundwork of a situational/bottleneck analysis and one of the potential solutions is digital or has a digital component

- You can describe why you're looking at digital health solutions
- You do not already have a specific solution in mind
- You have an idea for a digital health solution, but do not know if it will work
- You have started the process of creating a digital health solution, but the results are not what you expected
- You are applying for a grant to get funding, but not sure for what digital solution is right
- A neighbor country successfully used a solution, but you are not sure if it will work for you



How This Guide Can Be Used

This toolkit begins with a blank slate (*maybe you have an mHealth grant and are unsure where best to invest the money*) or a hunch (*maybe an idea worked elsewhere and you want to know if the idea is right for your context*) or a pivot (*maybe a pilot is not generating the use and uptake you anticipated*) and ends with a research-backed pitch and development-ready project plan that responds to overarching strategic priorities.

The methods and exercises within the toolkit help guide how to make decisions all along the way that focus on end-users and communities.

The following examples show how this guide can be applied to design, develop, and deploy appropriate digital health solutions in the context of UNICEF health programmes.¹

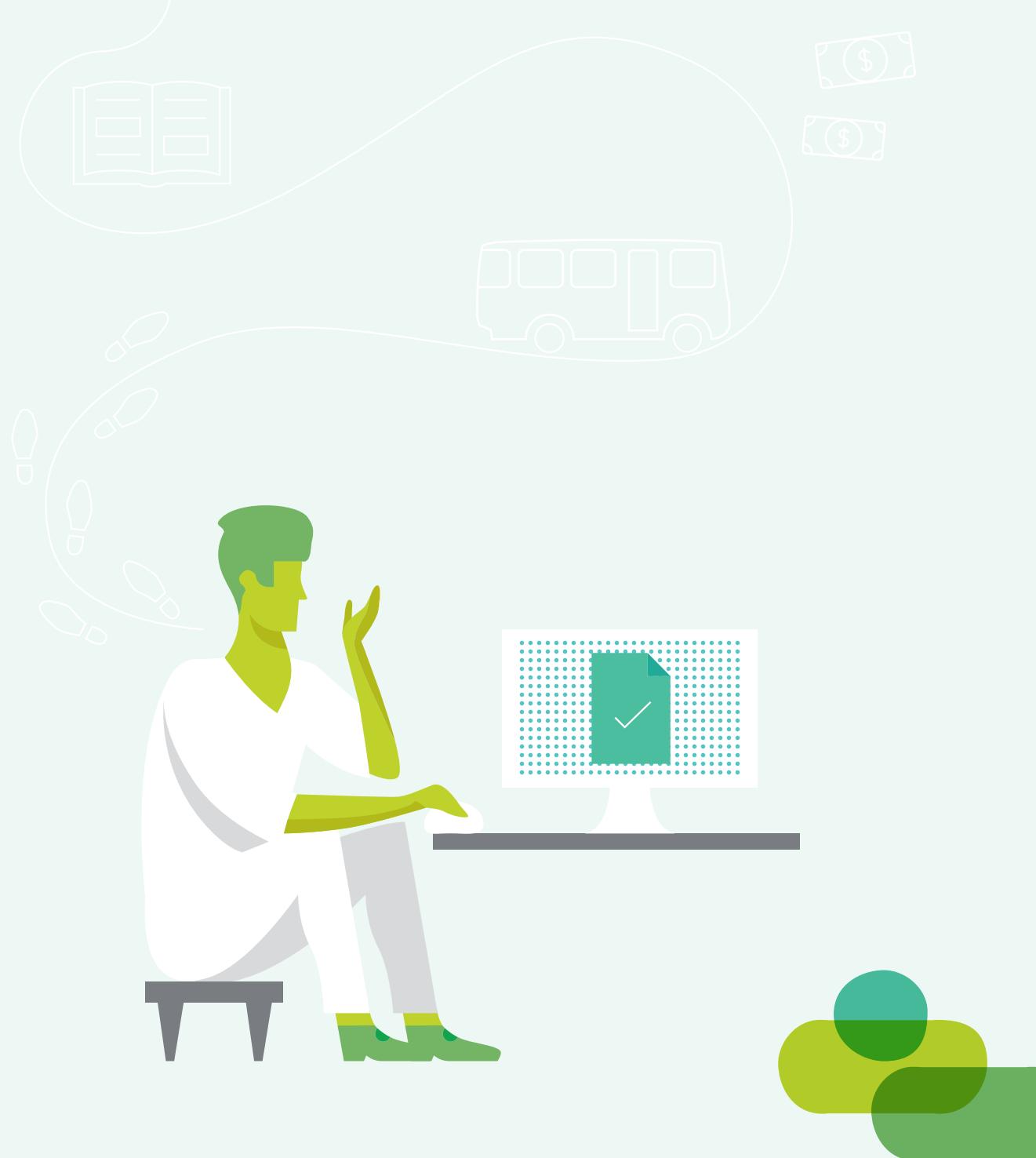


¹ NB: While this Toolkit is framed with UNICEF and its implementing partners as the primary audience, the process and methods offered therein are relevant to a broad range of actors working in the digital health space. We hope that other stakeholders find this guide relevant, and would love to hear from partners who are interested in adapting and deploying this approach in their own programmes.

How This Guide Can Be Used

Understand the user and their environment to design solutions that add value:

Before scaling a digital solution that provides a mechanism for community health workers (CHW) to report on maternal and child health outcomes, a UNICEF country office and partners embark on an in-depth process to understand the role of the CHW and what motivates him in his work. Through an immersive ethnographic approach, CHWs are interviewed in their environments to understand their work life, common challenges and what they perceive to be the strengths and weaknesses of the existing system. The insights gained through this process result in a Motivation Framework that combines a CHW recognition scheme, more frequent support supervision visits, and performance-based mobile airtime credits. This framework is then used to drive the implementation plan for the design and scale-up of the solution.



How This Guide Can Be Used

Test our assumptions
and address
the **right** challenge:

A Ministry of Health (MoH) approaches its UNICEF country office to help deploy a project for behaviour change communication targeted at mothers and other caregivers with children from 6-23 months. The project focuses on nutrition and responsive feeding to prevent overweight and obese children. The MoH and the country office look at existing survey data and see that healthier foods are more expensive and harder to access in the geographic areas of focus.

However, after talking with mothers in the field, the MoH and UNICEF team learn that access is not the key barrier to providing children with healthy meals and snacks.

Mothers need ideas for healthy living rather than access to healthy food. Instead of providing information on where to buy produce, the project will focus on how to help mothers act on their existing intention to nurture a healthy lifestyle. The content changes to include shopping lists and recipes, provide information on the importance of sleep, introduce ways to incorporate physical activity into daily life, and share tips such as replacing sugary beverages with safe water.

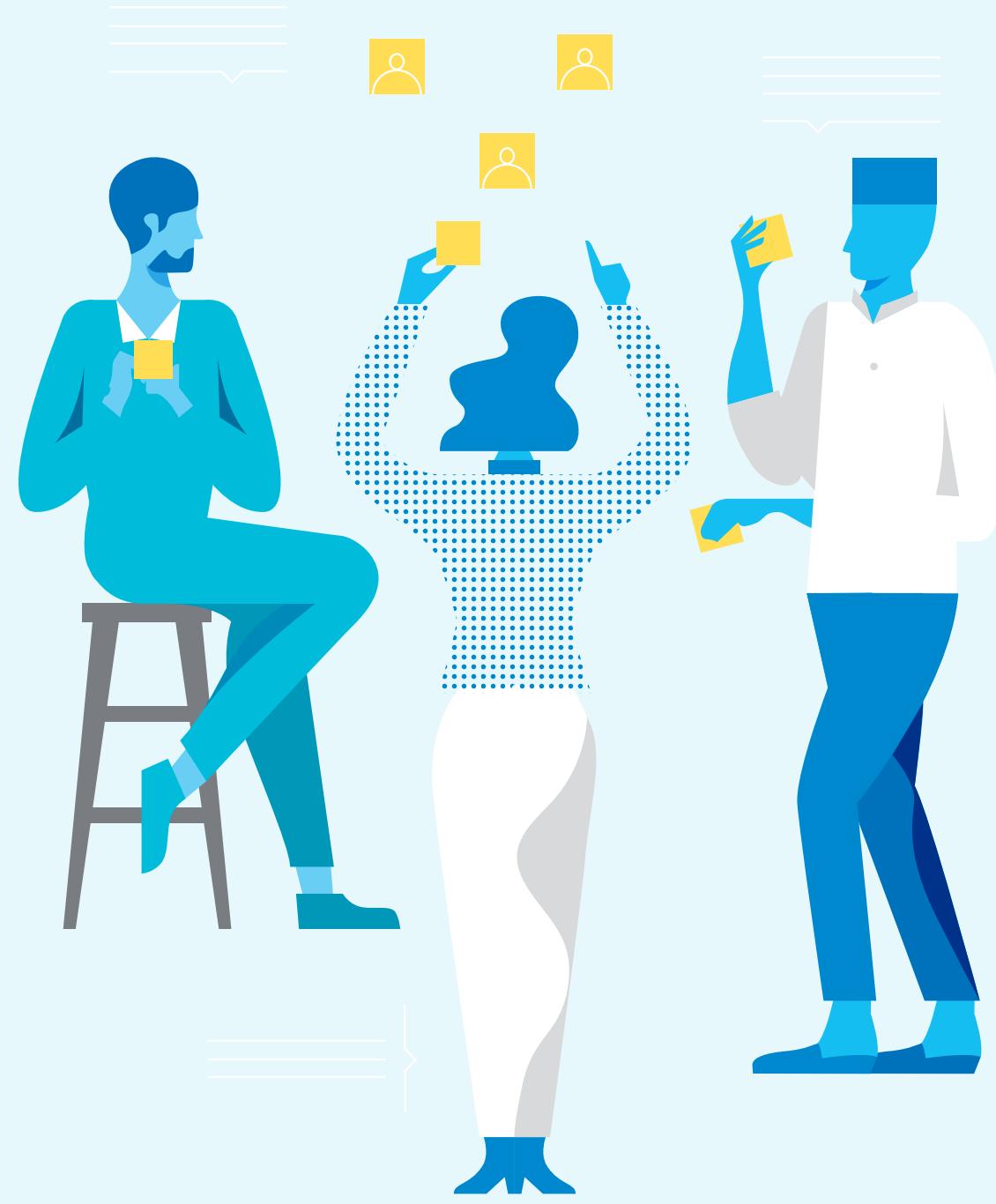


How This Guide Can Be Used

Collaboratively design solutions with users and partners:

A UNICEF country office and its local NGO partner want to design a solution that addresses severe acute malnutrition. A programme to treat acute malnutrition is in place, but real-time information is required in order to plan effectively, monitor and evaluate the programme, and thereby increase access to and coverage of the programme.

Through a four day workshop with relevant stakeholders with representatives from national, regional, and local levels the group identifies all of the actors in the system who contribute to nutritional surveillance. They create persona profiles for each actor in the system and map out their relationships, brainstorm bottlenecks in data transmission and analysis, and identify potential solutions.

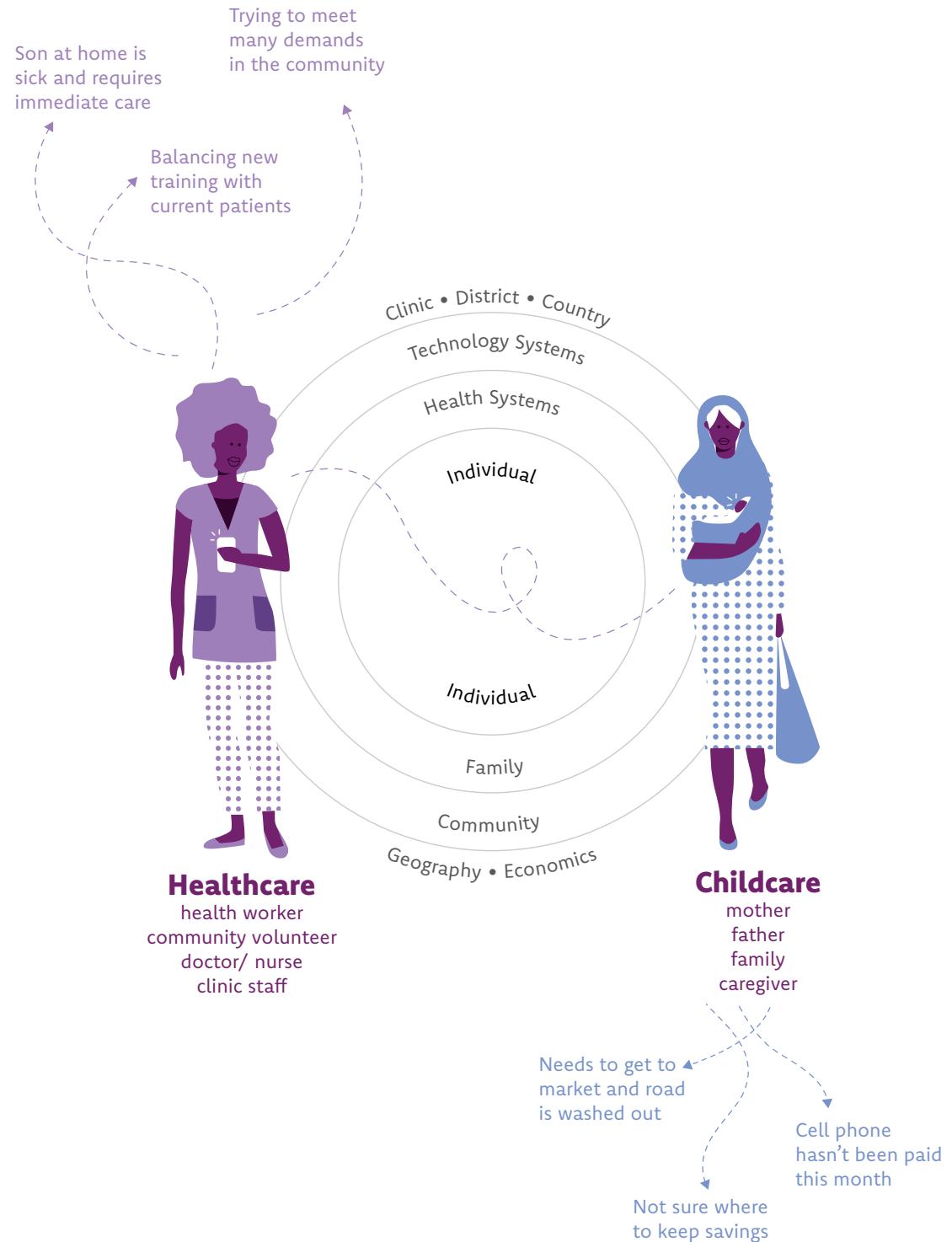


What is human-centred design?

The human-centred approach combines a research methodology that focuses on the needs of people, a design methodology that allows for innovative solutions and an implementation strategy that uses a wide systems view. As demonstrated on this page, the approach demands that we consider the constraints, opportunities and interactions of an existing ecosystem.

The process also accounts and corrects for human error on the side of the researcher, designer, and implementer by starting small and incrementally testing ideas. The people designing health programmes are usually not the same people using them. This creates an empathy gap. As a result, we often end up designing solutions to problems we do not encounter or fully understand ourselves. The research methodologies that comprise human-centred design are grounded in dialogue and observations that help expose and elevate the perspectives of the people that we seek to serve.

Conventional market research can be useful in making incremental improvements to solutions already in place. However, if we want to solve complex system challenges and create something new, we need to start with the people we are trying to reach by going out into their world to speak with them and observe their experiences. Human-centred design works to uncover latent needs that service providers and programme recipients may not even know they have.





Introduction

How can applying a human-centred approach benefit your programme?

Save Time and Money

Make low-cost trials of digital programmes before scaling the solution. Conduct swift, low-cost field research and test iterative solutions before investing in larger-scale implementation.

Pro-Equity

Identify the most important challenges facing the most disadvantaged. By working from the extremes, instead of the mainstream, solutions easily scale to serve a wider population and incorporate an equity lens.

Systems View

A digital application does not solve a problem on its own; it is part of a larger system. This process looks at the full system and health programme, and makes sure we do not design solutions in separate silos.

Find New Solutions

Integrate thinking from fields beyond public health that bring insight, systems thinking and experimentation to build innovative, scalable solutions.

Close the Empathy Gap

Learn from those you are trying to reach, including how they do and don't make decisions and do or do not take actions.



Preparation

i
Get the Mindset

ii
Get Buy-in

iii
Build a Team

iv
Evaluate the Ecosystem

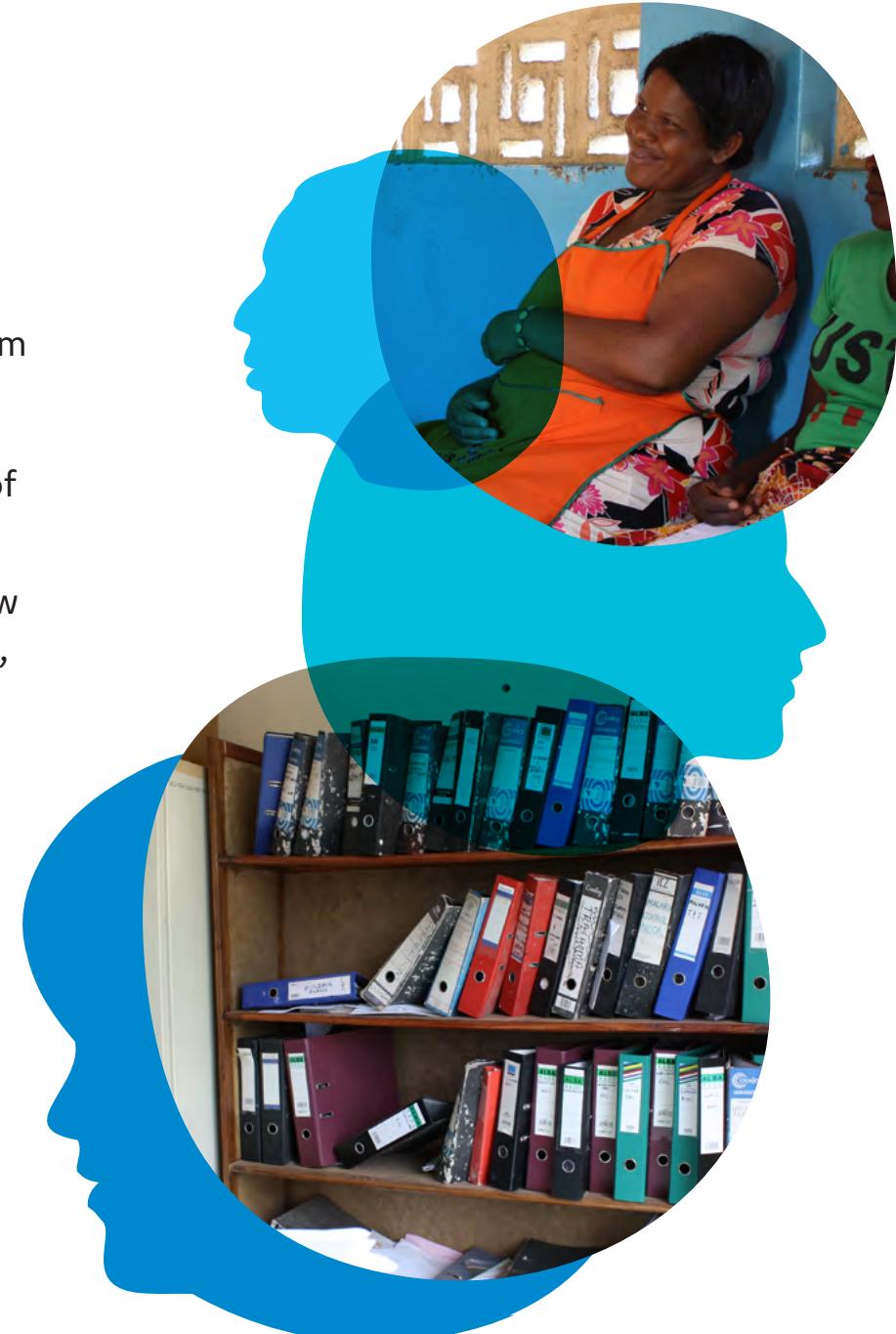
Get the Mindset

i
ii
iii
iv

Health programmes are people-programmes. At every step of the way they involve people, from government officials and service providers to community health workers to mothers, fathers, and children. Perhaps nowhere is the involvement of people more important than with users, or the people for whom programmes exist. Understanding the constraints under which users make decisions and take actions accounts for much of the successes and failures in expanding the reach and impact of health services — particularly for the most vulnerable.

As many public health experts know, the contrast between how a programme is designed and how it works can be stark. Often, that's due to overlooked or less understood factors regarding how people actually behave in the real world, as opposed to how we might assume they will. Behaviours are never right or wrong, but always meaningful.

The following six principles are intended as reminders when investigating and responding to the human challenges facing immunization programmes. They are grounded in what we know to be true about human behaviour and can improve the effectiveness of our efforts.

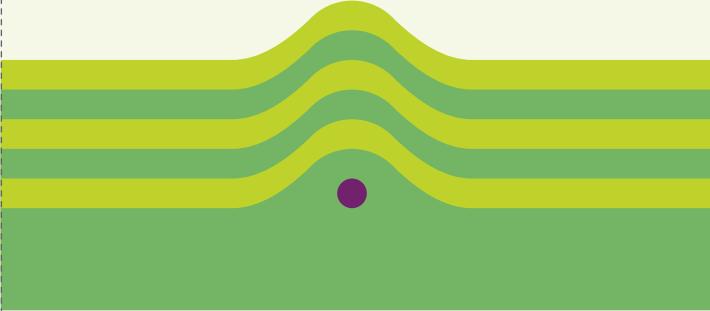


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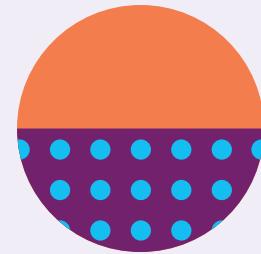
Small Is Big

We have a tendency to overlook the small stuff, like the inconvenient barriers of dealing with health programmes. Because people don't always make reasoned calculations weighing costs and benefits, the small stuff can dominate decision-making.



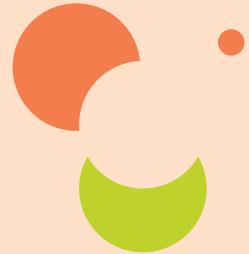
Truths Are Buried

What people believe, say and do can be three different things. How we explain our own behaviour is not always accurate. This makes it critical to disentangle what people self-report about their behaviours from what is actually happening.



Knowing Is Not Enough

Knowing about a technology, how treatments work, or having an accurate understanding of a health benefit does not necessarily correlate to high levels of participation. When we accept that it is possible to alter behaviour without ever changing what is in someone's mind, we open ourselves to more innovative solutions.



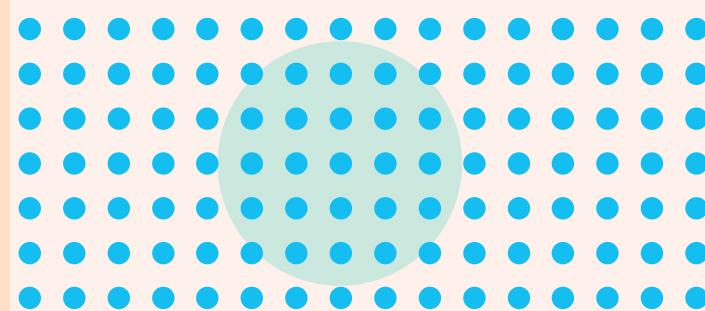
Context Comes First

One of the more common terms in public health is 'behaviour change'. A singular focus on behaviour change can be misleading. Changing the context in which people behave often has more powerful implications for 'behaviour change' than directly asking that people change their behaviour.



Intentions Are Not Actions

Intentions can be poor predictors of corresponding actions. Instead, we should focus on what it takes to get caregivers and health-care workers to act. Behaviour depends as much (if not more) on removing the barriers to taking action as it does on forming intentions.



Attention Is Elsewhere

Most people, most of the time, are not thinking about best health practices. And when they are, it's not always (or often) given very deep reflection. If we remind ourselves that most people spend little time thinking about vaccination, we will ask less of users and make our programmes simpler, and easier to use.

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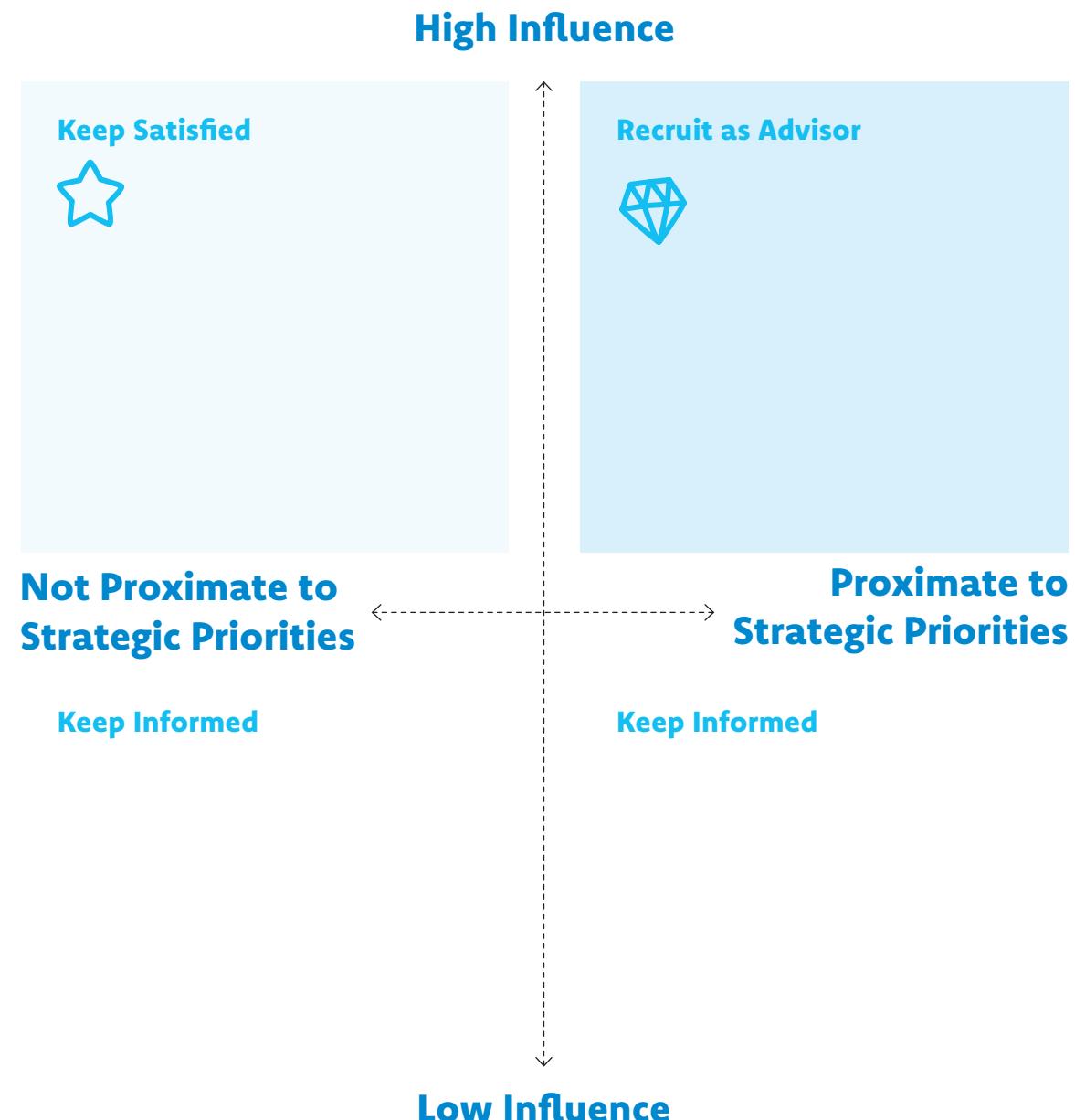
Get Buy-in

Identifying Digital Advisors

Finding the right advisors and aligning with existing priorities will secure political support throughout the process. Even if they are not familiar with digital health deployments or human-centred design, influential leaders can help get approvals during field research, recruit partners, find funding for the implementation, and provide bureaucratic navigation along the way. Consider your health section advisory partner at HQ, Regional ICT Advisor or Business Analyst, or Global Innovation Centre Digital Health Specialist.

The matrix to the right, combined with the questions below, should direct you to choosing 2-3 advisors that have influence and knowledge. Checkpoints throughout the guide will give you steps to collect and share back your progress with advisors. Consider:

- Who must be involved in decision making?
- Who will be affected by this work, and is interested in its success?
- Who should have influence over how it adapts?
- How can we work with existing government and community partners?
- What existing priorities and strategic plans can we align with?



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Build a Team

While input from many parties is important, it can lead to a slow process that tries to appease too many people along the way. To work collaboratively, but not slowly, take these two steps when building a team:

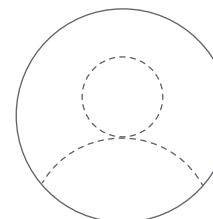
First, start with a “core team” of 3-5 members inside UNICEF that will participate in the entire process. Ideally, each person holds a different role so your team has diverse and complementary perspectives. This team is the advocate of the project, supports consultants when/if they are needed during execution, and creates excitement within UNICEF around the project.

Second, identify 1-2 “champions” in the Ministry of Health to engage the government, local authorities, and local health workers. Alone we may go fast but we cannot go far—so have the support and active engagement of officials capable of instituting change.

How you know your team is right:

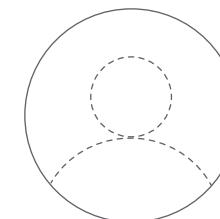
- You watch and listen carefully
- You enjoy working with a team
- You have a diversity of experiences, genders, point of view, and functional areas
- You like asking questions
- You invite diverse perspectives and are not discouraged (entirely) by starting over

While every team will have a different number and mix of people, between everyone a common set of skills should be present. Demonstrated below are five main archetypes that may be five different people, or may be shared characteristics between three.



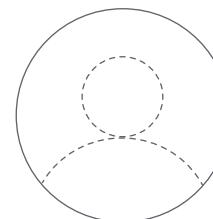
Explorer

Views people with an empathetic, open mind



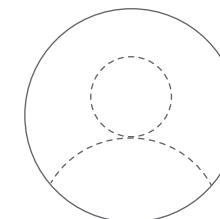
Experimenter

Not afraid to work through a problem in a rough state



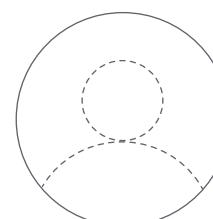
Storyteller

Uncovers the storyline in the data points



Analyst

Finds ways to measure creatively and model value holistically



Connector

Builds rapport and form mutually beneficial partnerships

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- ii
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Team Roles & Responsibilities

Team Member #1

Leads

Assists with

1

2

Team Member #2

Leads

Assists with

1

2

Team Member #3

Leads

Assists with

1

2

Team Member #4

Leads

Assists with

1

2

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Evaluate the Existing Ecosystem

Market Feasibility & Deliverability

Before we begin a process of developing a new solution, we need to assess the information technology ecosystem at the national and sub-national level (health management information systems, electronic medical records or other systems, national data centre, mobile coverage, mobile networks), identifying key components of this ecosystem from the communities up to the Ministry of Health. Through this exercise, we gain awareness of existing digital health initiatives currently in the country or working toward deployment. Here is a checklist to know if a digital solution is appropriate.

Existing Strategies

Is there a mHealth, eHealth, or programme strategy at the national level? If yes:

What is the plan period?

Is there a steering committee?

Is UNICEF is part of this committee?

Existing Services

What systems does the government already have in place? What services might already be enrolled in?

What tools / processes have been trialed or implemented in the past? What past projects and efforts has UNICEF been part of?

Individual

Community / village

Provincial / district

National / ministry

International

Existing Data Infrastructure

Does the Ministry of Health have a data centre? If not, is there a government data centre? What is the department or directorate in charge of data management and computer systems at the level of the Ministry of Health?

Who has access to data for:

Unique identifiers

Facility registries

Health worker registries

Patient registries

Health records

Tip: Register your initiative, and see what else exists in your area by visiting <https://digitalhealthatlas.org/landing>. For more comprehensive assessment guidance, read the MAPS Toolkit from the WHO.

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Existing Ecosystem Map

When starting the project, map the existing ecosystem. This is done to gain awareness of the larger system that the digital solution must work within. By mapping the programme goals and interventions across media and through a person's lifetime, it becomes easier to determine where digital fits and what it can help accomplish. This page shares three emerging typologies for categorizing different components of the health system. These models offer common functions of digital health solutions to use as guidance.

As you map the existing system, focus on functions — what different tools can enable — rather than specific tools themselves. While you may be familiar with a particular tool or set of tools, try to keep an open mind and suggest the common, critical functions that are required for your solution to be a success. This keeps the process human-centred: focusing on what people need or need to be able to do. Identifying the appropriate tool(s) will come as a natural next step.

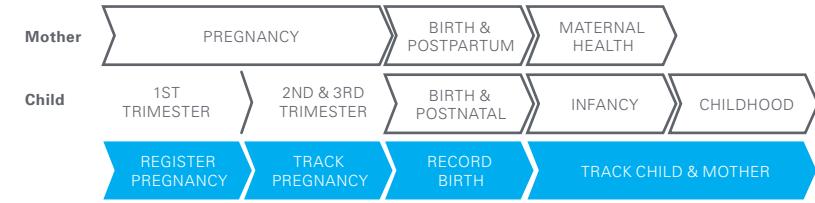
Note: ecosystem mapping is a complex process, and as demonstrated on this page, it can also take many forms. This is not a representative snapshot. Many other tools exist including those tailored to the health sector like the MAPS toolkit by the WHO.

Life-cycle approach

UNICEF and Frog Design (2012)

- First 100 Days Framework

- Mobile strategy to address point of life cycle

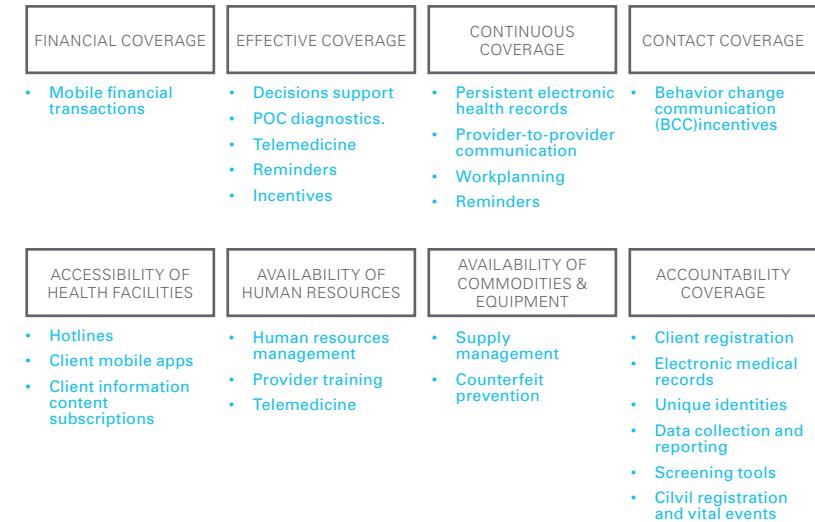


Determinant approach

Mehl and Labrique (2014)

- Determinant

- mHealth strategy to close the performance gap



Domain approach

Labrique, et al (2014)

- Domain where mHealth strategy can intervene



Process Overview

There are five big questions we ask when solving challenges involving users. Look for the  tool icon, which represents that the step has a corresponding tool.

- 1a
- 1b
- 1c
-
- 2a
- 2b
- 2c
-
- 3a
- 3b
- 3c
-
- 4a
- 4b
- 4c
-
- 5a
- 5b
- 5c

Process Overview

These questions are sequential and build upon one another. It is likely that your team has already spent a lot of time considering some of these questions, so consider this the ultimate checklist. Evidence-supported answers to each will help your team understand and respond to the challenges facing users.



What change are we supporting in the community?

Problem Definition: We start with an intended programme outcome. State who you are trying to help, how you are hoping to serve them, and what factors in your political and technical environment should inform the solution you create.

What do we think we know?

Critical Reflection: Take a moment to examine what local knowledge and personal experience you and your team already have. What might we be assuming? What might we suppose we know more about than we really do? Reviewing this will allow you to approach the project with a fresh perspective.

What stands in our way?

User Research: What prevents users from adopting our programmes? What do they do now and what do we want them to do? To find out, we conduct user research. The result is a set of specific challenges to solve.

How could we respond?

Experimental Solutions: Given what we know about users, how can we shape their environments and influence their behaviours to support our ambition? This is a creative and collaborative process: generating ideas and testing them out.

How can we activate our idea?

Continuous Learning: This last phase is about continuous inquiry—measuring how the ideas respond to the challenges identified during user research and making adjustments to improve their efficacy. This step allows us to recognise, report, and correct failure early and without judgement.

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c

Legend: Reading the Tools



Each page in this toolkit describes a step or provides a tool, or worksheet, to help guide you and your team through the process. This page helps you navigate the tools, including how many people will be involved, how much time it will take, and the type of interactions you can expect. Pages with a shaded background are key steps that will need to be included in each checkpoint to communicate your idea and process to advisors along the way.

2c ← The color and number notation where you are in the process

People	Time	Tool Type
 Individual	 hours	 Activity
 Core Team of 3-5	 days	 Analysis Framework
 Invite Additional Participants (community leaders, HCWs, colleagues, NGO & government partners)	 weeks	 Synthesis Documentation
	 more than a few weeks	 Guidance



← People needed for this step



← Time needed for this step



← Tool Type

- 1a
- 1b
- 1c
-
- 2a
- 2b
- 2c
-
- 3a
- 3b
- 3c
-
- 4a
- 4b
- 4c
-
- 5a
- 5b
- 5c

What change are we supporting in the community?

Problem Definition: We start with an intended programme outcome. State who you are trying to help, how you are hoping to serve them, and what factors in your political and technical environment should inform the solution you create.



1a: Prioritize a User-Group

Key User Persona

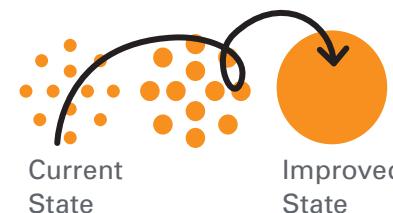
Clearly delineate exactly which community we are concerned with.



1b: Define the Improved State

Define the Changed State

Specify the indicator to change, as defined in the existing work plan.



1c: Describe the Biggest Obstacle

Common Obstacles

Explain the challenge: What might be the direct causes? What are additional contributing factors? Think of all possible causes for the problem, not only the obvious ones.



Final Output: Objective statement. Formulate and document the final objective statement to reference throughout the process.

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c

What do we think we know?

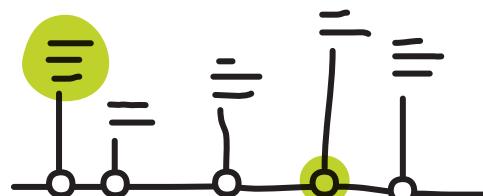
Critical Reflection: Take a moment to examine what local knowledge and personal experience you and your team already have. What might we be assuming? What might we suppose we know more about than we really do? Reviewing this will allow you to approach the project with a fresh perspective.



2a: Assemble Existing Knowledge

Gathering Available Information

Gather available information about the challenge, past efforts, and the individual or community in question.



2b: Examine Past Efforts

Recording Past Lessons

Mark key pieces of information that show what we have learned, what we should keep in mind, and the relevance this information has to the present. What do we have data to back-up?



2c: Recognise Assumptions

Revisiting Our Own Assumptions

To help avoid bias, document the possible assumptions that you and your team might carry with you. Talk through assumptions, expectations, closely-held beliefs, perspectives, hypotheses, and contradictions.



Final Output: Assumption catalogue. To help avoid bias, document the possible assumptions that you and your team might carry with you. This should be no more than a quick reflection exercise.

1a
1b
1c
—
2a
2b
2c
—
3a
3b
3c
—
4a
4b
4c
—
5a
5b
5c

What stands in our way?

User Research: What prevents users from adopting our programmes? What do they do now and what do we want them to do? To find out, we conduct user research. The result is a set of specific challenges to solve.



3a: Explore the User's Environment

Develop a Research Plan

Plan how you will go in the field and talk to people. Choose which activities, including both observations (what we see) and interviews (what others say). Use Build a Discussion Guide to help guide interviews.

Conduct Field Research

Observe intended users within the environments that shape their day-to-day lives and behaviours. Interview intended users and allow them to speak about specific events and experiences.

Record Field Research

After each day of field research, quickly synthesize and record the information you've gathered.

3b: Interpret Collected Stories

Share User Stories

Share information from the field to help everyone internalize what you observed.

Identify Important Information

Analyse key findings to hypothesize why this is happening. Call-out patterns, surprises, and commonalities. Cluster common themes and choose the most important.

Diagnose the Underlying Causes

Ask yourself why this is happening, drawing from research and educated guesses. Which can we validate? Articulate final diagnosis succinctly to help teams make sense of what was gathered in the field.

3c: Propose Opportunities for Design

Final Personas

Identify all possible users and describe them in more detail, including the service recipient and service provider.

Relationship Map

To help analyse and make sense of the user stories, map the relationships between your personas, their needs, and the people responsible.

Prompt Formula

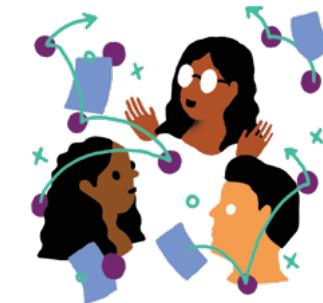
For each final insight, articulate multiple "How might we?" questions that will prompt teams to think about creative solutions.

Final Output: Creative prompts. "How might we" statements respond to the challenges witnessed in the field and are focused enough to inspire specific concepts, but broad enough to not dictate a solution.

- 1a
- 1b
- 1c
-
- 2a
- 2b
- 2c
-
- 3a
- 3b
- 3c
-
- 4a
- 4b
- 4c
-
- 5a
- 5b
- 5c

How could we respond?

Experimental Solutions: Given what we know about users, how can we shape their environments and influence their behaviours to support our ambition? This is a creative and collaborative process: generating ideas and testing them out.



4a: Conceptualise Solutions

Brainstorm Digital Concepts

With an extended team, use **Brainstorming Exercises** to quickly generate many possible solutions for each prompt.

Assess Concepts

Assess the solutions to identify 2-3 promising ideas per prompt.

4b: Design Quick Examples

Map Ideal Relationships

Inspired by the ideas coming out of brainstorming, take the same personas and your Relationship Map to identify improvements you might be able to make.

Design a Prototype

Make ideas concrete through initial outlines, models or rough sketches of ways to implement promising concepts.

4c: Prototype Designs with Users

Digital Prototype Planning

Define learning goals for each design, then select activities that will test (prototype) the design in the field.

Testing the Prototype in the Field

Take draft ideas into the field to trial with, and get feedback from, users. Start with the same people you spoke with during research.

Digital Prototype Evaluation

Record what you learn, and revise the design of the prototype as needed. Re-test complete redesigns.

Final Output: Requirement set. Translates actionable concepts into the distinct pieces that respond to user needs.

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c

How can we activate our idea?

Continuous Learning: This last phase is about continuous inquiry — improving ideas over time in response to the challenges presented in user research and lessons from prototyping. This step allows us to recognize, report, and correct failure early and without judgement.



5a: Plan for Iteration

Reset the Ambition

Review your new system with national partners and front-line workers. Determine whether your plan is feasible and impactful, then work together to further refine the strategy's details.

Create a 'Live' Project Charter

Further detail the project plan including budgetary requirements, service level agreements, and possible risks we might encounter.

Identify the Implementation Team

Review what is required to fully implement the idea. Identify roles and start assigning responsibilities.

5b: Evaluate Effectiveness

Developing the Design

Further develop what it is you are proposing. Give additional details and look into logistics.

Usability Testing

Determine whether critical tasks can be performed quickly and reliably.

Assess Risks & Unknowns

In the field, record the risks and if possible, adapt ideas to be more risk-resilient. Evaluate accuracy of diagnoses and identify what we still do not know much about.

Adjust the Measurements

Revisit the initial Project Charter to improve what you are measuring and learning.

5c: Pitch the Improved Idea

Prepare to Scale the Improved Idea

Continue the implementation process with improvements to both your idea and your Project Charter.

Document Final Use Cases

Clearly document and share how the new idea solves the starting ambition.

Package the Project Case Pitch

For further funding, government buy-in, ministry validation — or whatever is needed to continue scaling the idea — use the provided template to tell the project story.

Final Output: Project pitch. If the idea is working, the final output is a final project pitch and proven ideas that can be scaled. If the idea isn't working, step back into the creative conceiving and design exercises laid out in Question 4, then re-deploy.



Tools & Methodologies

Use the following worksheets to guide your team through a full human-centred process. If you already produced the “output” described at the end of sections 1, 3, or 5 feel free to move forward. This toolkit is meant for improving and reshaping existing ideas, as well as introducing new ones.

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c



What change are we supporting in the community?

Problem Definition

As with any health intervention, we start with the outcome we wish to achieve. Rather than adopt an abstract goal and quickly move on, this section advocates using a structured approach and dedicated time to arrive at a precise objective.

An objective shapes all of the work to come and significantly influences the ways in which we go about solving problems: the research we design, the challenges we focus on, the findings we prioritize and the indicators we select.

By the end of this first question, you and your team will have a straightforward mandate that makes your programme objective clear. Three parts constitute a final, easy formula to arrive at an objective statement: Our objective is the desire for (key user) to change from (existing state) to (ideal state) by addressing (common obstacle) through (digital solution).

- 1a
- 1b
- 1c
-
- 2a
- 2b
- 2c
-
- 3a
- 3b
- 3c
-
- 4a
- 4b
- 4c
-
- 5a
- 5b
- 5c

Methodology

Prioritize a User-group



1a

Begin by identifying the priority group that most immediately requires your attention. Making a specific population a priority prevents wasting time and resources on general activities directed to an unspecified population.

Key User Persona

Define the Improved State



1b

Define the health outcome to change, as defined in the existing work plan. Starting with the current or baseline state, set a goal for improvement. **What change do we aim to see among the prioritized group we identified?**

Depending on your context, goals may be set at the national level and cascaded down, or you may use local programme data to define the desired outcome. Either way, this change in outcomes should ideally **be as closely tied to what you and your programme team are capable of influencing as possible**; the broader and more out-of-reach this change is, the less helpful it will be when shaping and evaluating subsequent activities.

Define the Changed State

Describe the Biggest Obstacle



1c

What keeps users from acting or deciding in a way that is most beneficial for them? What do users need the system to do? What environmental factors contribute to the problem? The biggest obstacle is usually very human, meaning a bias, habit or conflicting priority stands between the user and the desired changed state.

This step requires describing a problem before we really know the details of the problem. Existing experience and knowledge can show us where to start. We are also careful not to go too far—we are not interested in diagnoses, which we will get to after user research (Question 3).

Common Obstacles

Final Output: **Objective Statement**

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c



Prioritize a User-group

Key User Persona

Personas are fictional characters that are used to understand the needs, values, aspirations, abilities, limitations and character traits of different users, along with the challenges they face and their desires for potential solutions. They will help your team consider designs and plans from a point of view that is not their own.

The initial Key User Persona will help narrow the existing information we gather in Question 2 and direct how we plan for research in Question 3. After research we will revisit the Key User Persona and create additional personas to represent their interactions with community leaders, mothers, HCWs, CHWs, and other key players.

Determine realistic combinations of characteristics that together could form a single person. A persona is developed from a range of different sources, pulling together common characteristics of similar people into an “archetype” through which a group can be understood.



Tool #1

WHAT CHANGE ARE WE SUPPORTING IN THE COMMUNITY?

Key User Persona Chilala Mwene

Prioritized User: Community Health Worker



Tool #1



Background

Chilala is a dedicated member of the community with limited formal education. Her phone is used primarily for making calls, so she must learn how to use texting features

Role/Responsibilities

Describe what their job is, or what role they play in the community.

Protector

Aspirations

What are this person's dreams and aspirations? What factors does he/she perceive will either contribute to or hinder pursuit of those dreams?

- ① Be a respected and revered authority figure in the community
- ② Be a reliable source of knowledge on important health issues

Influencers

Think about single behaviors that result from external pressures (rather than regular habits). Who are the influential stakeholders in their life?

Health Worker
Clinic Level

Benefits

What benefits would the user expect from this system? Why would they engage with it?

- ① Take care of reminders
- ② Show they are good CHWs

Needs

What frustrations do they have? What limitations do they encounter? Write as a quote – how would they say this?



I want to help shape the health of my community, not just follow directions. If I understand, I can help improve the system and teach others.



What they do now

(current behavior)

Struggle with technology, and view it as an onerous task to complete

What they should do

(ideal state)

View technology as an easy system to help manage and streamline their reminders to mothers

6

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c



1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c



Key User Persona

Name:

User Type: Prioritized User



Place photo / drawing

Aspirations

What are this person's dreams and aspirations? What factors does he/she perceive will either contribute to or hinder pursuit of those dreams?

1

2

Background

What important life experiences or events have contributed to this person's current situation? What education do they have? Mobile literacy?

Influencers

Think about single behaviours that result from external pressures (rather than regular habits). Who are the influential stakeholders in their life?

Needs

What frustrations do they have? What limitations do they encounter? Write as a quote – how would they say this?

“ ”

Role/Responsibilities

Describe what their job is, or what role they play in the community.

Benefits

What benefits would the user expect from this system? Why would they engage with it?

1

2

” ”

What they do now

(current behaviour)

What they should do

(ideal state)

Define the Improved State

List all possible changes you wish to see, then use the evaluation criteria to select the one that is directly applicable to a human-centred approach and digital solution.

Current State

Improved State

Evaluate Opportunity

- team is capable of influencing
- supported by digital solution
- behavioural, not attitudinal

- team is capable of influencing
- supported by digital solution
- behavioural, not attitudinal

- team is capable of influencing
- supported by digital solution
- behavioural, not attitudinal

- team is capable of influencing
- supported by digital solution
- behavioural, not attitudinal



Tool #2

- 1a
- 1b
- 1c
- 2a
- 2b
- 2c
- 3a
- 3b
- 3c
- 4a
- 4b
- 4c
- 5a
- 5b
- 5c
- 
- 
- 

Common Obstacles

Identify what the possible obstacles may be in your context. A common obstacle simply describes the relationship—or roadblock—between the key user and the desired changed state. Chances are, this is not a lack of knowledge or a lack of desire to act (see page 13). Instead, think about the competing priorities, demands for attention, conflicting beliefs, habituated behaviours, and social pressures that hinder the desired behaviour. Below are some areas of recurring obstacles we find when we look at people first. They are not exhaustive, but might help prompt new thinking about the problems you witness in your local context.

Fear

Action can be scarier than inaction. When given an option between inaction and action, people tend to default to the status quo.

Choice

People value rewards they choose themselves more than rewards they merely receive, even when the rewards are actually equivalent.

Social Norms

Perceived group rules regulate behaviour.

Attention Scarcity

People focus on the most pressing challenge 'now'.

Recent News

The easier to recall, the more personal the story, the more influential.

Hassle Factors

Seemingly minor inconveniences can deter people from acting on their intentions.

Paralysis

Ambiguity, uncertainty, and conflicting information foster inaction.

Bias Toward Optimism

People overestimate the likelihood of positive events occurring and underestimate the likelihood of negative events occurring.

Ignoring the Contrary

People tend to seek out and act on information that conforms to their pre-existing beliefs.

Negative Experiences

Bad experiences from the past outweigh the neutral or good.

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c



1a
1b
1c

2a
2b
2c

3a
3b
3c

4a
4b
4c

5a
5b
5c

Final Output

Objective Statement

Our Objective = desire for U (key user) to C (desired change) by addressing O (common obstacle) through D (digital solution). The tool below helps to separate out each element of the ambition formula. Remember that technology is a platform to collect, analyse, and disseminate communications and information. Why are you looking at digital solutions? How can they connect to or affect the human factors you just listed?

Examples:

Our ambition is for **U CHWs** to **C increase reports on birth outcomes for the mother and child(ren)** within one week of delivery by addressing **O hassle factors** through usability in data transmission.

Our ambition is for **U CHWs** to **C increase reporting stock levels at the community level** by addressing **O attention scarcity** through the unclosed feedback loop.

Our ambition is for **U women in ethnic minority groups** to **C deliver at the facility** by addressing **O cultural barriers** to **accessing health information and services** through communication and decision support.

Our Objective is for

U Key User (1a)

to

C Desired Change (1b)

by addressing

O Common Obstacle (1c)

through

D Digital Solution (from intro)

Over-arching impact to health programmes:

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c

Checkpoint #1

You will know it is time to move to the next step when you have a clear idea of who you are talking to — you can describe the person in detail to someone else, as well as the change they will see if the identified challenges are removed. Right away, secure permission and approval to proceed from your identified advisory team. Tailor your pitch to your supervisor, based on their motivations and goals. Start by introducing the problem that needs to be solved, then present how you will approach solving it.

Advisory Team



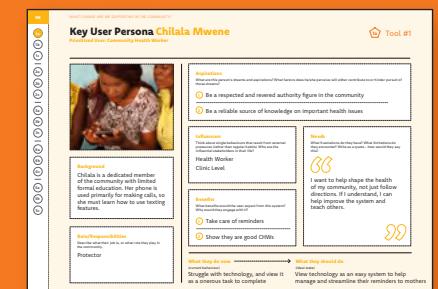
Core Team



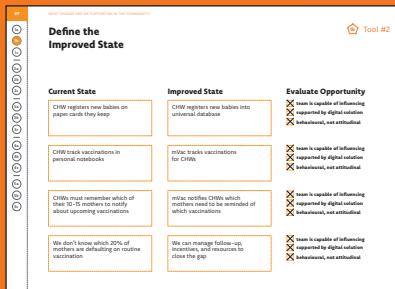
Existing Ecosystem



Key User Persona



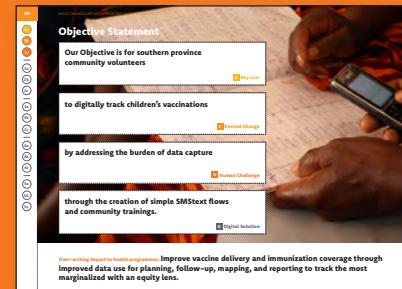
Improved State



Common Obstacles



Ambition



1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c



What do we think we know?

Critical Reflection

It is likely that you have some knowledge about the programme challenge articulated in Question 1.

Some types of knowledge are more valuable than other types when designing solutions that are responsive to the people and the systems that surround them. While general knowledge is helpful, a full accounting of the specific challenges facing the intended users of a programme or service are dependent upon local context and thus require local investigation. Local knowledge—gathered from years of experience, research and reflection—is of primary value.

This phase is about recording the local knowledge that already exists among you, your team members, and your programme. Because this likely is not the first time your team has engaged in the process of investigating and responding to challenges facing your key users, it is helpful to begin the process by methodically reflecting upon your existing knowledge.

Methodology

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c

Assemble Existing Knowledge



2a

Gather available information focused on the following three questions:

- 1: What is already known about the human and/or programme challenge?
- 2: What efforts were made in the past? What efforts or pilots are on-going?
- 3: What has been studied about this user-group?

Gather Available Knowledge

Examine Past Efforts



2b

Map the information between what was tried in the past, what was studied about the community, and the relevance this information has to the key user from 1a. A review of the material you assembled does not have to be exhaustive. Spend more time with the outliers that we can learn from and keep in mind going forward.

Record Past Lessons

Elevate Assumptions We May Have



2c

Discuss and record assumptions the team may bring to weaken their influence in investigating and responding to challenges. Relevant assumptions will be about the challenge, past efforts, and the user-group in question. Do we sometimes assume that providing more information to this user-group is usually better? Do we have data to back-up our assumptions?

Revisit Our Own Assumptions

Gather Available Knowledge



This step keeps your team from duplicating past efforts that may have come up short and gives you and your team an opportunity to elevate assumptions about the problem and the population early on in the process. List the people and resources you should review to gather all available knowledge:

1: What is already known about the programme challenge at hand?

This can include information you have from spending time with the community, data from trusted sources, or case studies.

1

2

3

4

5

6

2: What efforts were made in the past? What efforts or pilots are on-going?

What has worked and what has not—and, most importantly, why?

1

2

3

4

5

6

3: What's been studied about this user-group?

Formative research conducted by either an outside group or your colleagues will be informative.

1

2

3

4

5

6

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c

6a

6b

7



Record Past Lessons

A thorough accounting of past and present efforts will help to avoid missteps and align with existing systems down the road. To help organise the volume of information you may have surfaced during

'Assemble Existing Knowledge,' use the map below to help prioritize stand-out pieces of information: past effort that went very well, or terribly wrong, and lessons learned.

Past efforts that went well

Lesson #1

Lesson #2

Lesson #3

Technology Landscape

Past efforts that didn't go well

Lesson #1

Lesson #2

Lesson #3

Community

User

- 1a
- 1b
- 1c
- 2a
- 2b
- 2c
- 3a
- 3b
- 3c
- 4a
- 4b
- 4c
- 5a
- 5b
- 5c
- 
- 
- 

Revisit Our Own Assumptions

Throughout this problem-solving process we risk viewing ourselves as the experts, and viewing users as the people who require help. Of course, this is not the case. A human-centred methodology treats users as the ultimate experts and ourselves as learners intent on better understanding what is preventing better outcomes. While you may be the one holding this Toolkit, it is unlikely that you also know the problems as well as those affected by them.

Our cognitive abilities are a relatively poor predictor of how susceptible we are to cognitive biases. Educated, high-income people are just as susceptible to forgetting important tasks or exaggerating probabilities as the less well-educated and poor.

Here are three reminders to help us be self-critical of biases and assumptions we might inadvertently bring into this work.

-  1a
-  1b
-  1c
-  2a
-  2b
-  2c
-  3a
-  3b
-  3c
-  4a
-  4b
-  4c
-  5a
-  5b
-  5c
- 
- 
- 



Tool #6

Hearing What We Want

It is unlikely that health professionals approach a problem without any pre-existing experience or knowledge. It is also usually easier for us to get behind familiar ideas than unfamiliar ones. Familiar information is comfortable, and we usually do our best—even if unconsciously—to avoid feeling uncomfortable.

Taken together, these two phenomena can handicap our work: the more we know, and the more uncomfortable it is to process unfamiliar information, the more likely it is that we'll be selective in what we hear

Having an Answer

Being unsure is far better than falsely confident. In any arena where practitioners are tasked with better understanding and responding to the subtle and messy elements of human behaviour, overconfidence can be debilitating. Having no answer is better than having the wrong answer.

Rather than defaulting to an answer for the sake of conclusivity, humility helps us remain open to new insights.

Letting Go

Human-centred methodologies require that practitioners let go of certainty. In the course of the work presented in this Guide, teams will likely articulate an insight, discover a finding or devise a solution that needs to be changed—or discarded altogether.

Resisting overcommitment opens our work up to more possibilities for experimentation and effectiveness in the long run. A human-centred approach to problem solving is accepting that our pre-existing knowledge is incomplete, that definitive answers can be dangerous, and that better findings and new solutions await our discovery.

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c

Final Output

Assumption Catalogue

Good research starts without bias. One of the biggest mistakes people make in conducting research is trying to lead participants down the path they think is right. You cannot go into the process trying to get people to tell you what you already think they know.

This requires effort to ask questions without an agenda on where those questions and the resulting answers will lead you. To help avoid bias, take a moment to document the possible assumptions that you and your team might carry with you. This should be no more than a quick reflection exercise.

To help in the process, here is a short list of general assumptions made in the past.

Assuming that correcting misinformation with accurate information will change minds; in fact, corrective messaging carries the risk of unintended consequences.

Assuming the decision to engage with health services is given full consideration, made after thoughtfully weighing costs and benefits.

Assuming strong intentions are necessary for action-taking.

Assuming making it easier to access services will increase coverage. Similarly, assuming increases in access will adequately explain high coverage.

Assuming that resistance based on religious or other belief-related terms is the only barrier, ignoring rational reasons such as previous experiences.

Assuming that incorrect knowledge, such as misconceptions about side effects, is the reason for not engaging with services.

Start with the “**Common Obstacles**” identified on page 33 and used in the objective statement. Do we really know for certain that this is what stands in our way?

Consider assumptions of misinformation, access, consideration, resistance, intentions, and misconceptions from the examples.

What else do you assume about the culture, barriers, beliefs, and health workers?

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c



What stands in our way?

User Research

This phase introduces human-centred approaches to investigate the challenges facing intended users of your programmes. What prevents the prioritized user-group from engaging with a service or participating in a programme? Through research we identify the variables that might be hindering a behaviour, laying the foundation to generate smart solutions.

While this may be the most intensive part of this Guide, it still stands in contrast to many other resource-intensive approaches to research. Rather than suggest multi-year longitudinal studies, or time and resource heavy cross-sectional surveys, we will introduce the processes and techniques of rapid inquiry. While it may require your steadfast focus, it does not require unwieldy budgets. Basic resources, deliberate attention, and the dedicated team you identified at the beginning of the process are all you need to begin.

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c

Methodology

Explore the User's Environment



3a

Exploring starts broad, gathering as much information from the field as possible. This is about engaging in open-ended inquiry—familiarizing ourselves with an environment, the people in it and the challenges that it presents. We use a judgment-free to lens to objectively gather information.

Plan how you will go in the field and talk to people. Choose which activities, including observations and interviews, should be used while allowing for flexibility later.

-  [Developing a Research Plan](#)
-  [Build a Discussion Guide](#)
-  [Conduct Research](#)
-  [Record Field Research](#)

Interpret Collected Stories



3b

Our next task is to make sense of what we saw during our observations and what we heard in the stories we collected. **The purpose of interpreting is to move from seeing "what is" to establishing "so what."**

To analyse the information we gathered from the field, we **share** the raw material about users and their environments with team members, we **identify** what is important regarding the users' decision-making and action-taking, and we **diagnose** the reasons shaping the challenges we identified.

-  [Share User Stories](#)
-  [Identify Important Information in Stories](#)
-  [Diagnose the Underlying Causes](#)

Propose Opportunities for Design



3c

This step finalizes the user research process. Given our diagnosis, how should we go about solving it? Prompts are the bridge between the research we conducted and the solutions we will generate. They are a way of framing the problems from user research as opportunities for inventive solutions.

Along with creating prompts, we finalize the people we are designing for through personas, and we look at how that fits into the surrounding communities, institutions, and systems.

-  [\(Revised + Additional\) Personas Profiles](#)
-  [Map Persona Relationships](#)
-  [Compose Prompts for Design](#)

Final Output:  [Personas + Creative Prompts](#)

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c



Develop a Research Plan

Observations

When to Use

Rarely will users be able to tell us what to do, but their behaviours provide invaluable cues to identify their unmet needs. Immerse yourself in the context of the challenge—with a curious mindset, inspiration and new perspectives can be found in many places and without much preparation. Sharpen your skills in observing the world around you.

Where to Use

Choose a place where you can have an experience that is relevant to your challenge. Clinics, homes, transportation to and from health centres, community centres, trusted religious or spiritual centres are all potential places for observation. Think about the daily journey of your user—what places do they touch along the way?

How to Use

Choose which activities will best help you learn:

- Observing mothers and families, experts, or clinics
- Shadowing mothers, caretakers, HCWs, or CHWs
- Co-create with the community, learning from peer-to-peer observation



Peer-to-peer Observation

Involve users directly in observation, such as by equipping health care workers with daily journal forms to document what they observe and find important throughout the day.



First-hand experience

Experience an event as the user yourself, such as by moving through a clinic experience as though you are a patient.



Shadowing

Witness activities conducted by a user, such as by working alongside a mother for a day, or accompanying her on a clinic visit.

- 1a
- 1b
- 1c
-
- 2a
- 2b
- 2c
-
- 3a**
- 3b
- 3c
-
- 4a
- 4b
- 4c
-
- 5a
- 5b
- 5c
-
- 
- 
- 

Develop a Research Plan

Interviews

When to Use

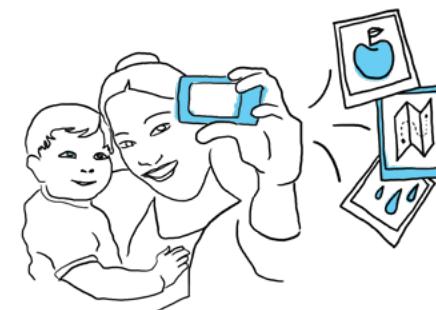
Interviewing should almost always be part of the research plan. Interviews collect what people—caregivers, health care workers, community leaders, families, communities—think and feel, in their own words.

Where to Use

Whenever possible, conduct interviews in the home of the family, or a location where health services are offered.

How to Use

- **Describe the people you want to meet:** Look back at your key persona profile for specific characteristics of the people you would like to meet. How are these people distinct? Who else is part of their life that you can learn from?
- **Select research participants:** Talk with your team, colleagues and partners to help locate the contact the types of people you want to speak with. Send an email describing what you're looking for, post in a common area or reach out to a community leader for help.
- **Develop a discussion guide** but allow for spontaneity (see [Tool 11](#)).
- **Include interactive activities** for interviewees who may be reluctant to share openly through open-ended questions (see examples on this page).



Tool #8

Show and Tell

User-guided tours allow users to show their environment and share their experiences within them. For example, a health-care worker might walk you through a clinic or a typical day.

Card Sorting

Interactive activiteis provide a hands-on way to engage users and allow them to share their perspective through non-verbal means.Using simple pictures or illustrations on index cards, users can sort processes they experience or desire (a sequence of events) or rank preferences (their priorities for the week).

Photo Documentation

This method allows users to self-select what they find important. Equipping a user with a basic camera and loose instructions (for example: take pictures of what makes her think of 'health') gives an intimate perspective.

Research Plan Template

The difficult question for research is: how much is enough? Since we are not trying (at least immediately) to find a representative group whose behaviours reliably can be generalized to the entire population, the number we start with will be small.

We're trying to solve for a distinct group within a population—the prioritized user that we personified in step 1a. We cannot give you an exact number of interviews or observances, but we can give some guidelines:

- Talk to more than one sub-group and visit more than one location
- Visit enough locations or speak to enough people that you start to recognise patterns—if you only see or hear it once, it is anecdotal
- There is no magical number, but talking to seven people is a good rule to have **diversity of perspectives**, and to be able to draw commonalities.

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c



Tool #9

Plan Your Interviews

Prioritized Users

- 1
- 2
- 3

Adjacent Users Type A

- 4
- 5

Adjacent Users Type B

- 6
- 7

Plan Your Observations

In the Home / Community

shadowing, peer-to-peer, first-hand experience

- 1
- 2
- 3

At a Care Facility

shadowing, peer-to-peer, first-hand experience

- 4
- 5

At a Religious/Influential Location

shadowing, peer-to-peer, first-hand experience

- 6
- 7

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c



Build a Discussion Guide

 Tool #10

Having a good conversation with a stranger is not always easy. You have to help them feel comfortable and build trust while collecting relevant information. To manage this delicate balance, prepare a discussion guide to serve as an outline for your conversation — a checklist to ensure you have covered everything.

The exact order of the questions may change to accommodate the natural flow of each conversation. All questions in the guide should be followed up with probing questions such as "Why?" or "How?" or "In what way?".



Identify topics

As a team, brainstorm themes you want to learn about in your conversations with research participants.

- What do you need to learn about your challenge?
- What are you hoping to understand about people's motivations and frustrations?
- What do you want to learn about their activities? Network? Habits? Beliefs?

Write questions

Write questions that are broad enough to encompass the experience of many perspectives. Frame them as open-ended questions (avoid questions with a "yes" or "no" answer) that invite discussion of their experiences, such as:

- Tell me about a time when...
- What are the best/worst parts about...?
- Can you help me understand more about...?
- Take me through a typical day...
- Where do you get your information on...?
- When you cannot solve it the way you want, what coping mechanisms have you developed for...?

Include interactive activities

Activities are fun, interactive and can help uncover the behavioural information you are looking for when interviewees are reluctant to share openly. Consider asking:

- Can you show me how you...?
- Send me three pictures of when you feel (x)...
- Sort these cards in order of importance to (x)...
- Think aloud as you perform (x) process or task

Organise the order

- **Introduce yourself:** Explain what you are doing, and reassure that you are not here to judge them.
- **Start specific:** Begin with questions your participants are comfortable answering.
- **Try an activity:** Activities are a great warm-up, so if they are part of your plan, put them toward the beginning.
- **Go broad:** Ask more profound questions about hopes, fears and ambitions.
- **Concentrate on the interest areas:** Explore your challenge or any interesting theme you picked up on during the conversation in more depth.
- **Close the conversation:** Always thank the interviewee for his or her contribution.

Discussion Guide Template



1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c



Introduce Yourself

Start Specific

Tell me a bit about yourself. Where do you live? Where are you from? What do you do?

1

2

3

Try an Activity

Can you show me how you...? Send me three pictures of when you feel (x)... Sort these cards in order of importance to (x)... Think aloud as you perform (x) process or task

Go Broad

Tell me about a time when... What are the best/worst parts about...? Can you help me understand more about...? Take me through a typical day... Where do you get your information on...? What work-arounds have you found for...?

1

2

3

Concentrate on the interest areas:

Express Gratitude!

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c



Conduct Research

 Tool #12

Conducting research requires that we leave our world behind, and become sponge-like inside the environment, home, community or health centre of our user. This acclimation requires a few general preparations:

General Guidance

- Make sure you are not interested in a particular outcome before you start. If we know what we want to see or hear, we can convince ourselves that we saw or heard it. Be curious and inquisitive without an agenda. If you feel you have an agenda or expected outcome, share this with your team when drawing-out your assumptions.
- Have your team meet somewhere that is not where you will interview or observe users. This ensures you are prepared, gives you time to review the most important questions you have left to answers, and transitions you into a research-ready mindset.
- We want to know about their lives. Make sure you're aware of the social expectations and customs in the region where you are conducting research.

Conducting Interviews

- Interview in pairs (alone can be hard, the entire team can be intimidating)
- Assign roles: one person leads the conversation and reads the participants' body language/facial expressions, the other takes careful notes (get word-for-word quotes where possible)
- If possible, take photographs. Remember to ask permission before taking any photos.
- Hold the interview in a place with minimal distractions or interruptions.
- Allow interviewees to share incorrect answers, it doesn't matter who is right, it matters what they believe
- Do not make the interview about you—even if you identify with stories the interviewee is sharing. Build rapport without dominating the conversation. Any judgement, including positive or negative reinforcement, can influence responses.

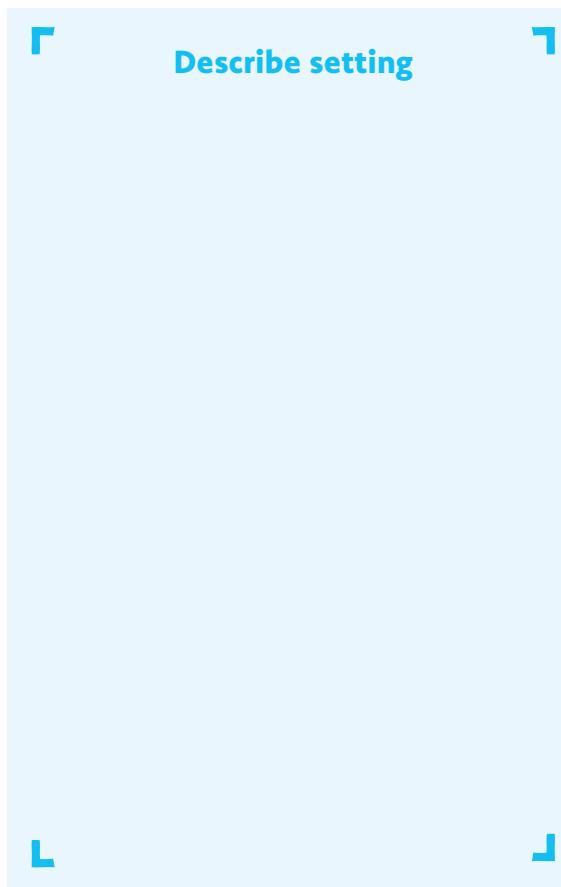
Exploring and Observing

- Explore and take notes. Try to blend in with everyone else during your observation.
- Find a spot that's out of the way.
- Take notes and photos (ask permission where appropriate).
- Capture interesting quotes (and the context in which you hear them).
- Draw sketches, plans and layouts (patient or HCW/CHW journeys).
- Look for interactions between people, and between objects, instructions, and people (key experiences and how they are created).
- Collect objects that facilitate activities, experiences, and interactions.

Record Field Research

Observations

After each day of field research, quickly synthesize and record the information you gathered—what you observed people seeing, doing, and saying. This serves two key purposes: it ensures that important details are not forgotten and helps guide what you look for during additional research.



Describe setting



Tool #13

5 Observations (What are people doing in this situation? How are people doing this? Why might they be doing it this way?)

4 Moments that stood out:

3 Things that were new or surprising:

2 Things that felt familiar:

1 Way we could help our user through a digital health solution:

Record Field Research

Interviews



1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c



Seeing
Describe setting

Doing
4 recent actions
they took:

Saying
5 memorable
quotes

Name
Date

Feeling
3 frustrations/
motivations they
were feeling:

Thinking
2 things they
might have been
thinking:

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c



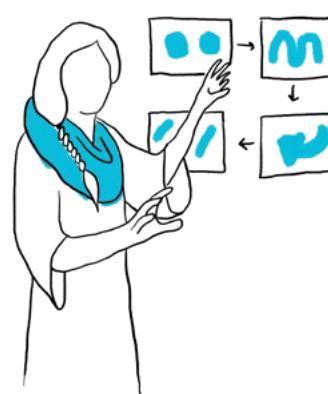
Share User Stories

Using **Recording Field Research** notes and material gathered from the field, transcribe what you saw and heard in the field to your team members. Remember to tell from their experience and viewpoint, not judging from how you think they should behave or what you want them to do.

The personal story allows you to bring the context of the user with you throughout the rest of the process, ensuring you are designing a solution that is addressed to them. These stories can be key points of inspiration for creative ideas.

Tips

- Rely as much on 'sensory' sharing as possible—use visuals of the location or person
- Combine this exercise with 'Identifying Important Information in Stories'—they are meant to go hand-in-hand



 Tool #15

Quote

What was the most memorable thing they said?

Portrait / Photography

Attach Photographs Here

Their Story

Who are they? What type of user do they represent?

Environment

What you noticed about their home, community, or work place.

Connections and Relations

People and organizations they are connected to.

Objects

Physical and digital objects they use.

- 1a
- 1b
- 1c
-
- 2a
- 2b
- 2c
-
- 3a
- 3b**
- 3c
-
- 4a
- 4b
- 4c
-
- 5a
- 5b
- 5c
-
- 
- 
- 

Identify Important Information in Stories

Isolate the most important pieces of information (from **Share User Stories**) to be unpacked further (during **Diagnose the Underlying Causes**). Consider sharing and identifying important information during the same team work session.

Criteria for Important Information



Surprise:



Does the information cause you to raise an eyebrow?

Familiar:

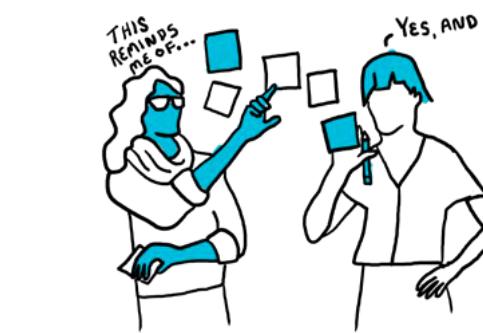


Have you seen this before in other contexts?

Patterns:



Are there recurrences you spot across stories and observations?



Independent Analysis

During or after the team shares stories from the field, individual team members should note important information—one thought per Post-It—according to the criteria below.

Group Analysis and Generation

Share Post-Its from the Independent Analysis in small groups. Use each other's Post-Its to generate additional notes about what seemed important (refrain from rejecting or criticizing what others share).

Cluster Themes

Group the Post-Its by common themes on a wall—what collectively stood out to the group?

Finalize Considered Observations

Combine each theme into one final conclusion of what was observable (not what you think about it). These will be your considered observations to use moving forward.

- 1a
- 1b
- 1c
-
- 2a
- 2b
- 2c
-
- 3a
- 3b**
-
- 3c
-
- 4a
- 4b
- 4c
-
- 5a
- 5b
- 5c
-
-
-
-

Diagnose the Underlying Causes

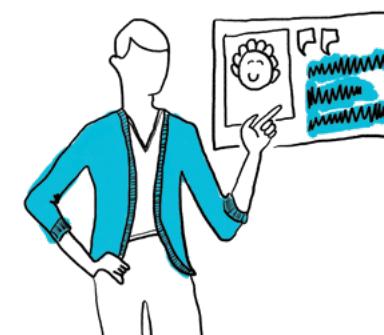
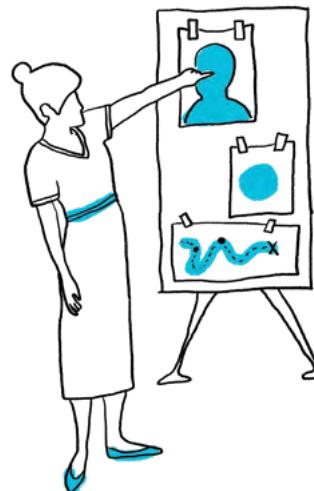
We shared what saw and heard in the field—and forced ourselves to identify the information that seems most important. Diagnoses ask us to hypothesize why the obstacles we identified exist.

Generating hypotheses is the most challenging step, prone to assumptions and error. Moving through a rigorous process will ensure we are fully and accurately investigating the underlying causes.

Diagnosing requires that we develop viable hypotheses about what is going on in the field; referencing evidence from user research that works to either help validate or reconsider those hypotheses before we articulate them as final diagnoses.

Final Diagnosis Examples:

- Poor working conditions keep demoralized HCWs from putting what they have been taught into practice.
- Missing pieces of practical knowledge about the when and the where of a next appointment, created by factors as minor as illegible HCW handwriting and caregivers too nervous to clarify, is preventing mothers from following through on their intentions.
- Users focus on the most visible problems, which is why there are difficulties of transmission, capture, calculation, formatting, or even to the absence of data.



3b Tool #17

i Create 3+ Hypotheses

For each considered observation from Tool #16, write three or more causes that help to explain why this is happening. Why are the individuals involved at one of these “pain points” behaving in this way? What is driving their behaviour? What is constraining their decisions? Think past the direct causes—what are underlying causes?

ii Debate Hypotheses

Can we prove ourselves wrong? What might we have overlooked? What might we have neglected to inquire more about? What might we have misinterpreted?

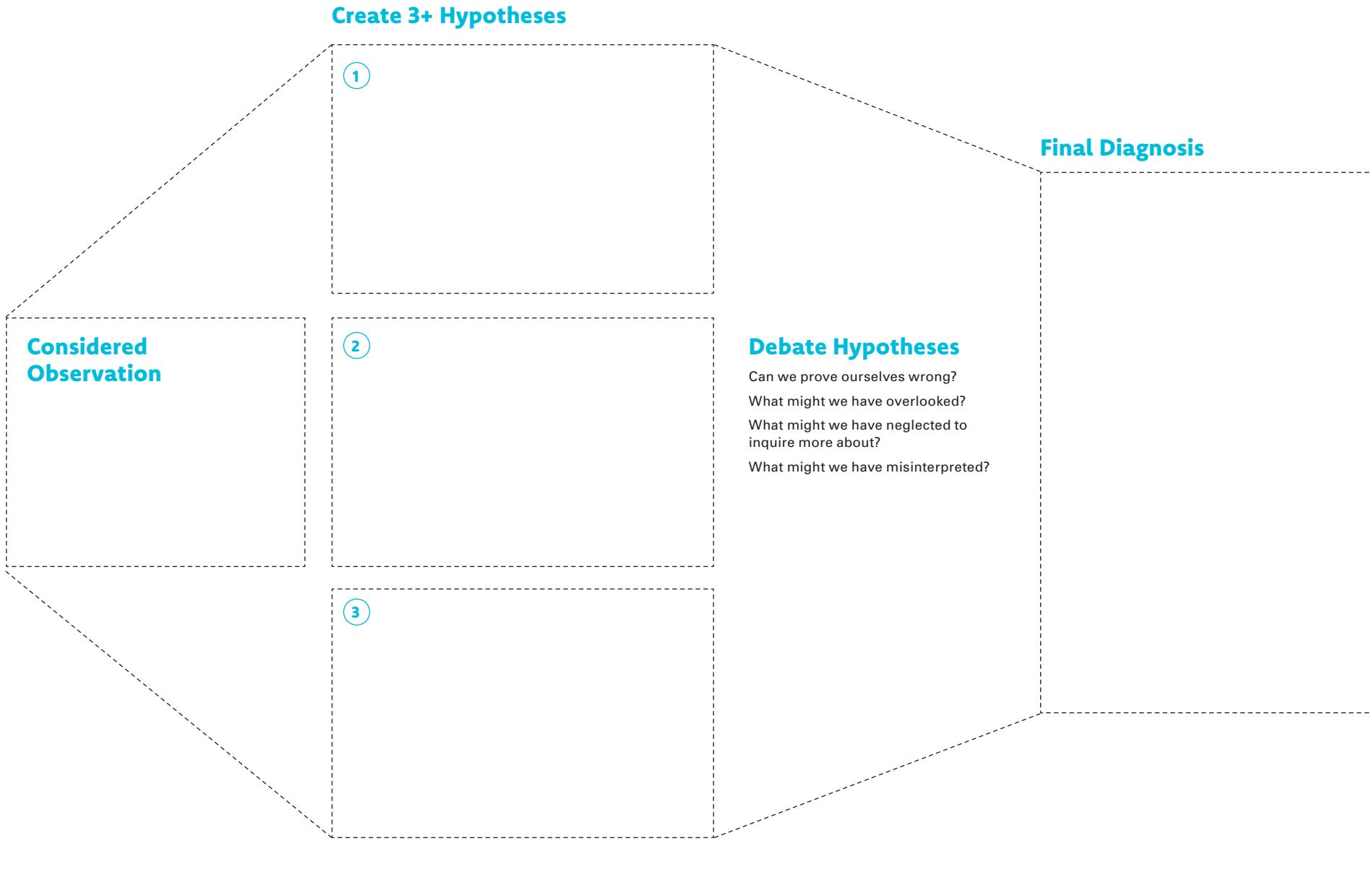
iii Refine Hypotheses

Revisit hypotheses to delete, modify, or rewrite to reflect any new information surfaced during the debate. Articulate a ‘final’ diagnosis for each considered observation.

Diagnose the Underlying Causes



For each considered observation isolated from user stories, create a diagnosis by responding to each of the following:



Final Diagnoses

Choose your top 4-6 final diagnoses to move forward with.

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c





3c Tool #19

Revised & Additional Persona Profiles

Here we revisit and expand upon the **Key User Persona** from 1a. First, look back to see if the descriptions made in Tool #1 are still accurate given the knowledge your team accumulated during research. Then, use the table below to determine how many additional personas need to be defined. Personas can be differentiated by role, routine, motivation, or how they would uniquely interact with this digital product. If possible, validate the persona. Get feedback from stakeholders who understand the real people that these personas represent, or go back and review with interviewees. Once you determine the different personas, use the **Persona Profile** tool on the following page to create a separate profile for each one.

User Type (distinct users)	Role and Responsibilities (position and what they do)	What they need (identified need state)	What they do now (observed behaviour)	What they should do (ideal state)

Key User Persona

Name: _____



- 1a
- 1b
- 1c
- 2a
- 2b
- 2c
- 3a
- 3b
- 3c**
- 4a
- 4b
- 4c
- 5a
- 5b
- 5c

Place photo / drawing

Aspirations

What are this person's dreams and aspirations? What factors does he/she perceive will either contribute to or hinder pursuit of those dreams?

1

2

Background

What important life experiences or events have contributed to this person's current situation? What education do they have? Mobile literacy?

Influencers

Think about single behaviours that result from external pressures (rather than regular habits). Who are the influential stakeholders in their life?

Needs

What frustrations do they have? What limitations do they encounter? Write as a quote—how would they say this?

“ ”

Role/Responsibilities

Describe what their job is, or what role they play in the community.

Benefits

What benefits would the user expect from this system? Why would they engage with it?

1

2

“ ”

What they do now

(current behaviour)

What they should do

(ideal state)



- 1a
- 1b
- 1c
- 2a
- 2b
- 2c
- 3a
- 3b
- 3c
- 4a
- 4b
- 4c
- 5a
- 5b
- 5c



Map Persona Relationships

Often, we blame the moral character of caregivers or human error of health workers for what are really system failures. We draw the false conclusion that the people who made mistakes need to be reprimanded, re-trained, or more closely monitored. Looking at the systems allows us to see beyond the symptoms (mistakes) to uncover the complex network of root causes.

Two main insights emerge from mapping the relationships—or system. First, we can identify what emerges from the interconnected relationships. For example, looking at the responsibilities of a volunteer in isolation may seem overwhelming. Considering the social influence they receive from the local leader may change this view. We can never understand these traits without seeing the societal, technological, and economic ecosystem in which they operate.

The second thing we look for is opportunities for incremental change. Remembering our “Small is Big” mindset from **i. Preparation**, we can look for small changes that can lead to significant improvement instead of, or in partnership with, designing a new solution.



Tool #21

In the beginning during **iv. Preparation** we began our systems thinking by mapping the current technological environment in '**Evaluate the Existing Ecosystem**' and mapping where a digital solutions fits in the '**Existing Ecosystem Map**'. These two maps helped inform our project objective and research plan.

i List Everything

Identify all the users and institutions that are in some way connected to the issue you identified. Start with your final personas, and include additional roles that relate to your challenge.

Now, armed with a better understanding of the people we’re trying to serve and the diagnosis of the challenges we face, we can map the relationships. During this exercise, we will organise the different pieces of the system and show how they connect to and communicate with one another.

For example, you may look for:

- | | |
|-----------------------|-----------------------|
| • Front-line worker | • Service provider |
| • Health worker | • School |
| • Family | • Community volunteer |
| • Health centre | • Religious leader |
| • Child or Individual | • Community leader |

ii Draw Connections

Draw lines between all the users and institutions that are formally or informally connected in some way. Use two different colors: one for social relationships and one for service relationships.

For example, you may look for:

- | | |
|--------------------------|----------------------------------|
| • Chains of command | • Familial links |
| • Decision-making cycles | • Patient-provider relationships |
| • Funding | |
| • Social links | |

iii Mark Barriers + Positive Influences

Note where barriers that impede our goals and influences that support our goals exist. What technologies or tools exist at these intersections? What makes it harder for users to get what they need? What points of leverage make it easier?

For example, you may look for:

- | | |
|---------------------------------|---|
| • Infrastructure solutions/gaps | • People who can/ cannot fulfill their responsibilities |
| • Communication solutions/gaps | • User knowledge about services |
| • Funding/Lack of funding | • Societal norms |

Relationship Map



1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c



International

International NGOs / Global governing bodies

National

National ministries / NGO headquarters / Telecom companies

Regional

Regional governments / Health facilities / NGO offices

Local

Child or Individual / Religious leader / Health centre
Front-line health worker / Community leader /
Marginalized group / School / Community volunteer /
Service provider

- 1a
- 1b
- 1c
- 2a
- 2b
- 2c
- 3a
- 3b
- 3c**
- 4a
- 4b
- 4c
- 5a
- 5b
- 5c
- 
- 
- 

Compose Prompts for Design

Use the prompt formula to build on each of your diagnoses. Prompts inspire and guide your team to generate a lot of solutions and explore new, interesting ideas.

How Might We
+ Verb
+ Response to Diagnosis

Each "How might we" (HMW) question will only address a portion of your challenge so you can create multiple HMWs for each diagnosis. Refine your HMWs by asking:

- Is it broad enough to allow for new ideas?
- Is it narrow enough to be manageable in a digital solution?
- Does it respond to your diagnosis?

Examples:

Too-Narrow Prompt: How might we reduce the burden of data capture by introducing a mobile data collection tool?

Better Prompt: How might we reduce the burden of data capture?

Too-Broad Prompt: How might we simplify the complexity of the system?

Better Prompt: How might we simplify the compiled data to facilitate fast and effective decisions?



		Diagnosis
How Might We	Verb	Response to Diagnosis
How Might We	Verb	Response to Diagnosis
How Might We	Verb	Response to Diagnosis

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c

Final Output

Diagnoses + Creative Prompts

Diagnosis**Prompt #1****Prompt #2****Prompt #3****Diagnosis****Prompt #1****Prompt #2****Prompt #3****Diagnosis****Prompt #1****Prompt #2****Prompt #3**

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c

Checkpoint 1-3

Using the work you just finished, share your completed worksheets for the steps listed below with your digital advisor(s) so they can help identify the type of digital health solution best suited to your challenge. The team will help categorize the prompts and give guidance on which digital tools are right to consider for designing and testing solutions.

(revised) Ambition

Objective Statement

Our Objective is for southern province community volunteers to digitally track children's vaccinations by addressing the burden of data capture through the creation of simple SMS flow and community trainings.

Impact: Improve vaccine delivery and immunization coverage through improved data use for planning, follow-up, mapping, and reporting to track the most marginalized with an equity lens.

Past Lessons

Record Past Lessons

A thorough accounting of past and present efforts to help organize the volume of information surfaced during "Resounding Existing Knowledge."

Lessons that went well:

- Community volunteers take pride in their place and are more likely to stay when given the right tools and training.
- Mother reported that community volunteers activating the right approach.
- Mothers reported additional responsibilities for community volunteers (like tracking neighbors) as double exposure for advancement and ownership.

Lessons that didn't go well:

- Community volunteers take pride in their place and are more likely to stay when given the right tools and training.
- Mother reported that community volunteers activating the right approach.
- Mothers reported additional responsibilities for community volunteers (like tracking neighbors) as double exposure for advancement and ownership.

Testing Information: Never as comfortable as writing down what happened, community volunteers also tend to leave less written information.

Lesson #1: Troubleshooting is difficult for community volunteers who don't know what to do when they get stuck, so they stop testing.

Lesson #2: Overhead costs are preferred by the Ministry of Health.

Possible Assumptions

Possible Assumptions

- The human challenges we face are: attention scarcity, bias toward optimism, fear and biased factors.
- Once we have a plan, the government will pick it up and run with it.
- CHWs are lazy and don't want another task.
- The open source systems that can work together will work together.
- CHWs see the benefit of an automated reminder system, they don't worry that it will replace their role in the community.
- The main barrier to use is financial—CHW is worried about the cost of texting.

Research Plan

Research Plan Template

Plan Your Interviews

- Planned Users:** District Health Worker, Health Worker, Community Health Worker.
- Adjusted Interview Type A:** Headman, Community Coordinator.
- Adjusted Interview Type B:** Mother/Caregiver.

Plan Your Observations

- At Home / Community:** District Health Worker, Health Worker, Community Health Worker.
- At a Case Facility:** First-hand CHW Training.
- At a Clinic/Healthcare Center:** Clinic shadowing, BID Introduction.
- At a Religious/Traditional Location:** Headman interactions with Community Coordinator.

Sharing User Stories

Share User Stories

Tool #15

Tool Story: The impact manager 38 children, and their mothers, under the age of 2 years old. They use a tool to track where each child has been vaccinated. They asked what happens when a child is not vaccinated. The impact manager said that they would be sent a text message. They then said, "but how did they know?"

Environment: The impact manager is working in a rural area. They are facing challenges with low connectivity and language barriers.

Connections and Balances: The impact manager is working with a local NGO to support the community.

Object: The impact manager is working to ensure that all children under the age of 2 years old are vaccinated. They are using a mobile phone app to track the progress of vaccination and ensure that they are reaching their goals.

Impact: The impact manager is working to ensure that all children under the age of 2 years old are vaccinated. They are using a mobile phone app to track the progress of vaccination and ensure that they are reaching their goals.

All Persona Profiles

Persona Profile: Caregiver

Tool #20

Responsibilities: Collect data on mothers and explain the programme to mothers so they understand and trust their data to be collected.

Motivation: Desire to take care of their community – feel obligation to care for their neighbor's family like they would their own.

Highest Needs: Social Standing within the community.

Highest Barriers: Everyone needs to have access to clean water and distances to some families are difficult to make during rainy season.

Persona Profile: Community Health Volunteer

Tool #20

Responsibilities: Collect data on mothers and explain the programme to mothers so they understand and trust their data to be collected.

Motivation: Desire to take care of their community – feel obligation to care for their neighbor's family like they would their own.

Highest Needs: Social Standing within the community.

Highest Barriers: Everyone needs to have access to clean water and distances to some families are difficult to make during rainy season.

Relationship Map

Relationship Map

Province: Analyze Data

District: Manage Resources

Regional: Activate Community

Local: Care for Each Other

Community Health Worker: Responsible for ensuring that the community receives the necessary information and resources to stay healthy. They are also responsible for monitoring and reporting on the health status of the community.

Health Worker: Responsible for providing medical services to the community. They are also responsible for monitoring and reporting on the health status of the community.

Community Coordinator: Responsible for organizing community events and activities. They are also responsible for monitoring and reporting on the health status of the community.

Headman: Responsible for ensuring that the community follows the rules and regulations set by the government. They are also responsible for monitoring and reporting on the health status of the community.

Diagnoses + Final Prompts

Diagnoses + Creative Prompts

Diagnoses: Mothers risk follow-up appointments because they have trouble remembering when to go, and when they do, it's not easy to seek permission.	Prompt #1: How might we design a reminder system for mothers to remind them to attend check-ups?	Prompt #2: How might we support the local health workers to remind mothers to attend check-ups?	Prompt #3: How might we support mothers to use their mobile devices to record their check-ups?
Diagnoses: CHWs don't always remind mothers to follow-up because it's not clear which areas they must cover, and they oversee many mothers at once.	Prompt #1: How might we support mothers to remember which areas they must cover and tracking their routine check-ups?	Prompt #2: How might we support mothers to use their mobile devices to record their check-ups?	Prompt #3: How might we support mothers to use their mobile devices to record their check-ups?
Diagnoses: Absence of key information (who is getting vaccinations and when) hinders timely management at the district level.	Prompt #1: How might we provide timely and accurate information to health workers?	Prompt #2: How might we simplify the complex process of tracking vaccinations and community needs?	Prompt #3: How might we support mothers to use their mobile devices to record their check-ups?

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c



How could we respond?

Experimental Solutions

From research, we have substantiated points of view on the challenges facing users. This phase outlines a three-step creative process to guide your team in generating initial solutions. It will encourage divergent thinking: generating many ideas before converging on the most desirable, viable, and feasible. Top ideas will be rapidly prototyped so that early, promising solutions can be modified and improved, and less promising solutions can be cut prior to investing too many resources.

The creative process of generating and evaluating solutions is experimental. The exercises of conceptualising ideas and getting feedback from the field will be iterative. Some ideas might prove problematic, and we will drop them; others might prove promising, and we will work to improve them. Only through experimentation can we design optimal solutions.

By the end of this question, we will have a set of solutions ready for initial implementation in the field that directly respond to the diagnoses from user research.

Methodology

- 1a
- 1b
- 1c
-
- 2a
- 2b
- 2c
-
- 3a
- 3b
- 3c
-
- 4a
- 4b
- 4c
-
- 5a
- 5b
- 5c

Conceptualise Solutions



4a

This first step is built on the premise that good ideas are born from a lot of ideas. Conceptualising Solutions is the exercise of generating as many ideas as possible that might help to solve the challenges presented in your prompts. It is centred around team brainstorms, which require thoughtful preparation and disciplined facilitation. Conceptualising ends with a short evaluative exercise to categorize the ideas coming out of a brainstorm, highlighting top contenders.

Brainstorm Digital Concepts

Brainstorm Exercises

Assess Concepts

Design Quick Examples



4b

Designing is the process of bringing the candidate concepts to life—making abstract concepts concrete. Initial designs is low-fidelity; for example, rather than designing a functional mobile application, we might sketch the user interface on a piece of paper. Designs give us material to work with when prototyping.

Map Ideal Relationships

Design Quick Examples

Prototype the Design with Users



4c

Prototyping means testing low-fidelity designs with real users. This method allows users to experience and react to simulated solutions within their environment (the home, the clinic, the community). The purpose is not to rigorously measure performance. Instead, we are interested in determining elements of an idea that are working well and elements that require re-thinking. This step precedes full-scale implementation to optimize ideas prior to investing resources in their roll-out. By the end of this phase, your team will have a final set of ideas that have been tested, reassessed and re-designed.

Digital Prototype Planning

Test the Prototype in the Field

Digital Prototype Evaluation

Final Output: **Requirement Set**

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c

Principles to Keep in Mind as You Move into Design:

Check back in with these principles at major steps to ensure your solutions are not working against these reminders.

Principles for Using Mobile

For guidance specific to mobile technologies, UNICEF worked with frog design to create a framework for leveraging the power of mobile phones community for case management: bit.ly/2sEFigB.

Apply Mobile Where Appropriate

Mobile is not a panacea—it has big benefits for some interactions, but in some cases analog might actually still be best. Mobile is a tool, not the total solution.

Consider that Technology Changes Much Faster than the Health Domain

Design for the ideal, and trust the technology to fill in. When designing digital solutions, features or capabilities might have already changed in the market by the time you begin implementation.

Design for Flexibility and Reciprocity

Design for two-way communications. Keep in mind the need for flexibility and reciprocity of communications. Mobile is great at both of these.

Consider Scale from the Outset

Think about creating solutions that can be used elsewhere, that can grow with technology, that can take on more participants.

Principles for Digital Development

The following set of principles represents a concerted effort to capture the most important lessons learned by the development community in the implementation of technology-enabled programmes. For more information, visit digitalprinciples.org.

Design with the User

Understand the Existing Ecosystem

Design for Scale

Build for Sustainability

Be Data Driven

Use Open Standards, Open Data, Open Source, and Open Innovation

Reuse and Improve

Address Privacy & Security

Be Collaborative

Principles for Data Ethics and Protection

For general guidance on data privacy, data protection and data ethics, the United Nations Development Group (UNDG) has created the following guidelines concerning the use of big data. For more information, visit undg.org.

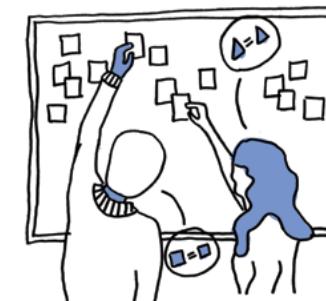
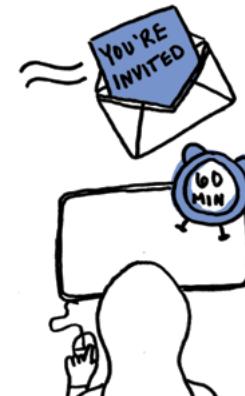
- 1. Lawful, Legitimate And Fair Use**
- 2. Purpose Specification, Use Limitation and Purpose Compatibility**
- 3. Risk Mitigation And Risks, Harms and Benefits Assessment**
- 4. Sensitive Data and Sensitive Contexts**
- 5. Data Security**
- 6. Data Retention and Data Minimization**
- 7. Data Quality**
- 8. Open Data, Transparency and Accountability**
- 9. Due Diligence For Third Party Collaborators**

Brainstorm Digital Concepts

At this stage, you should have feedback on what is possible within the realm of Digital Health, and how digital tools might best be used. Using this as a parameter, generate a large quantity of possible solutions to each of the prompts. As a team, keep this open-ended.

Share the rules of Brainstorming:

- Build off each others' ideas— do not be afraid to suggest alternatives or additions
- Aim for quantity over quality
- Turn off phones! Concentrate on the ideas for short, intense spurts
- Draw what you can—a picture is worth 1,000 words
- Go for ideal, wild ideas!
- Do not eliminate or critique ideas (save for the next step: Assess Concepts)



Tool #24

i Plan

Schedule an uninterrupted period of time and invite additional participants. Divide the available time between each prompt. Collect materials for participants to write and draw on.

ii Share User Stories & Scenarios

A great idea is driven by the collective expertise and knowledge available in the room. Immerse the room in the field research by sharing back user stories, photographs and quotes.

iii Diverge

When brainstorming solutions, always begin by going for quantity—large volumes of ideas that generate as much brainstormed material as possible, no matter the quality.

iv Converge

With a large volume of ideas on the table, coalesce around recurring themes—what “categories” of ideas are surfacing among us? You can also use voting dots (3 stickers each) to let participants select the concepts they find most compelling.

Brainstorm Exercises

Facilitating a productive brainstorm can be challenging—too often, brainstorms become undisciplined conversations. To get the most out of a brainstorm, here are specific exercises that can focus the group on generating unexpected ideas.



- 1a
- 1b
- 1c
- 2a
- 2b
- 2c
- 3a
- 3b
- 3c
- 4a**
- 4b
- 4c
- 5a
- 5b
- 5c
- ...
- ...
- ...

Warm-ups

To get everyone in a creative mindset, start with a less formal activity – like pairing up and drawing each other with your eyes closed. Activities like this make participants less self-conscious later on.

Mash-ups

Take a current digital product or social media platform they are familiar with, and brainstorm what happens if this popular tool was applied to the challenge.

Build Your Own

Have each team create a kit of representational building blocks (key digital functions, features, communications, service changes, etc) for the ideal solution. At the end, rank the features.

Overlay

Overlay perspectives and potential practices inspired by analogous companies, partners and industries. How would a popular news organization handle this? A tech start-up? A respected local school?

Journey Mapping

Think about a key persona's journey. How can you reduce pain-points/challenges throughout? Include other people, media, devices, supporting instruments and systems they encounter throughout the day.

- 1a
- 1b
- 1c
-
- 2a
- 2b
- 2c
-
- 3a
- 3b
- 3c
-
- 4a
- 4b
- 4c
-
- 5a
- 5b
- 5c
-
- 
-
- 
-
- 

Assess Concepts

After brainstorming, use this chart to organise ideas for each prompt you used. (You'll need to create multiple charts — one for each prompt from your brainstorm.)

Place a sticky note (containing one idea each) into the quadrant that seems appropriate. At the end, select 2-3 ideas from the **obvious wins** and **innovative possibilities** that are interesting and show promise.



Very Responsive to Prompt

Obvious Wins

Ideas that are relatively easy to make happen, and directly respond to the prompt.



Innovative possibilities

Ideas that are clearly responsive to the prompt, but may be difficult to implement.



Safe



Unrealistic

Building Blocks

While it is possible that your programme could feasibly implement these ideas, they need work. Adapt these to make them more responsive to the challenge captured in the prompt.



Unsuccessful Tries

These ideas are neither responsive to the prompt nor easy to make happen. Discard them!



Unresponsive to Prompt

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c



Map Ideal Relationships

Inspired by the ideas coming out of **Brainstorm Digital Concepts**, revisit your **Relationship Map** and identify improvements you might be able to make. Create connections between users that do not yet directly communicate, provide new types of information, add incentives to activate the motivations you identified, or combine the information from systems that do not talk to each other.

Remember that the purpose of system mapping is to uncover interconnected relationships and opportunities for incremental change. Map your solutions into the societal, technological, and economic ecosystem in which they operate.



i Re-list Everything

Identify who/what would be involved in addressing the main issue, and map out a more ideal system. Re-draw the **Relationship Map** to reflect any changes in people or institutions that would lead to the user's needs being met.

ii Re-draw Connections

Identify ways to resolve current bottlenecks by improving, adding, or redirecting existing connections.

- Chains of command
- Decision-making cycles
- Funding
- Social or familial links
- Client-provider relationships
- Sources and transfer of data

Tool #27

iii Identify What Functions Need to Be Incorporated into the Design

Looking at your new connections, what functions must be enabled or extended?

- Client education and behaviour change communications
- Sensors and point-of-care diagnostics
- Registries / vital events tracking
- Data collection and reporting
- Electronic health records
- Electronic decision support (information, protocols, algorithms, checklists)
- Provider-to-provider communication (user-groups, consultation)
- Provider workplanning and scheduling
- Provider training and education
- Human resource management
- Supply chain management
- Financial transactions and incentives

Ideal Relationship Map



International

International NGOs / Global governing bodies

National

National ministries / NGO headquarters / Telecom companies

Regional

Regional governments / Health facilities / NGO offices

Local

Child or Individual / Religious leader / Health centre
Front-line health worker / Community leader /
Marginalized group / School / Child or Individual /
Community worker / Service provider

- 1a
- 1b
- 1c
- 2a
- 2b
- 2c
- 3a
- 3b
- 3c
- 4a
- 4b**
- 4c
- 5a
- 5b
- 5c



- 1a
- 1b
- 1c
-
- 2a
- 2b
- 2c
-
- 3a
- 3b
- 3c
-
- 4a
- 4b**
- 4c
-
- 5a
- 5b
- 5c
-
- 
- 
- 

Design Quick Examples

Designing does not require trained interaction designers. Ideas can be designed quickly, easily, and cheaply by anyone with basic materials. For each idea that made it through **Assess Concepts**, or that was identified during **Map Ideal Relationships**, consider how the idea might be made more real while keeping designs 'low-fidelity.'

Explore many different ideas without feeling committed to any single one too early on. Even if you know what platform will be used, it is helpful to start with an economical creation.



Visualizations:

Example: Draw the interface you want to suggest on a paper phone.



Models:

Example: Put a physical mock-up in a space, such as simulating a check-in programme on a phone.



Sequences:

Example: Build a sequence of texts to demonstrate an SMS reminder conversation.

Digital Prototype Planning

For each design, use this worksheet to develop a prototyping plan in preparation for gathering in-field feedback.

F

How will you demonstrate the idea (paper, cardboard, SMS text(s), worksheet, etc.)?

T

L

J

Materials

What additional items do you need (table, chairs, prop phone)?



1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c

4c Tool #30

Learning Goals

Which part(s) of the service or idea are important to test?

①

②

③



Materials

What additional items do you need (table, chairs, prop phone)?

Location

What additional roles (community member, HCW, etc.) do you need to make the test work?

People

Who will execute this prototype (team members, country partners, HCW/CHW)?

Testing the Prototype in the Field

The fundamental method for prototyping is allowing users to experience and react to potential solutions. Prototyping activities should get as close to a real scenario as possible. However, prototyping should also be rapid, allowing us to learn and improve our ideas quickly.

Assume that you will need to run 2-3 trials at different levels of fidelity. This may look like:

- **Round 1:** Taking a paper mock-up into the field to get input on the concept
- **Round 2:** Adjusting how you pitch or recommend the idea to see if it changes traction
- **Round 3:** Simulating the solution using digital prototyping software

The principles on this page serve to guide your in-field efforts:

- 1a
- 1b
- 1c
- 2a
- 2b
- 2c
- 3a
- 3b
- 3c
- 4a
- 4b
- 4c**
- 5a
- 5b
- 5c



Enable Real Use Cases

How can we quickly create the idea in-context with real users? Consider the following when forming a mini-pilot:

- Choose a location where you have partner and administration support.
- Ensure that the desired user-group participates.
- Find HCWs or partners that will help administer the prototype.
- Create a simple tracking system to measure outcomes.

Iterate As You Go

What could we tweak prior to the next prototyping activity? This is especially valuable when certain elements are distracting from the core idea.

Filter Feedback

Look back at the **Record Field Research** worksheets—you will take notes on similar observations and narratives. When recording feedback, place more weight on actions, less on reactions to low-fidelity designs.

Invite User Co-creation

Where are there opportunities to more directly involve users in developing an idea? When a user asks a question, ask how they would solve it before providing your own answer or suggestion.

Digital Prototype Evaluation



For each idea, use this worksheet to capture learnings from prototyping in the field. As a team, consider:

Biggest strengths

Have we missed any roles in our personas?

Are there aspects of the Ideal Relationship Map that are unrealistic?

Observed weaknesses

Have we missed any opportunities?

Do the new user responsibilities seem realistic?

Is this prototype desirable?

- Does the idea easily fit into people's lives?
- Is the idea actually appealing to users?
- Is the idea being correctly understood and used?



Not yet?
Return to
the Design
Phase and
Refine Idea



All
yes?
Move
on!

Is this idea feasible?

- Is the technology required of the idea easily available?
- Is the tech easily sustained over time?
- Can your programme actually make it happen?



Not yet?
Return to
the Design
Phase and
Refine Idea



All
yes?
Move
on!

Is this idea viable?

- What can be projected about possible costs?
- Might the idea actually save the programme money?
- How near-term versus long-term are potential savings?



Not yet?
Return to
the Design
Phase and
Refine Idea



All
yes?
Move
on!

What do we still need to know?

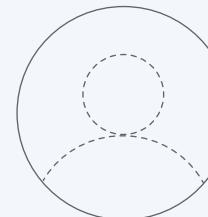
- 1a
- 1b
- 1c
- 2a
- 2b
- 2c
- 3a
- 3b
- 3c
- 4a
- 4b
- 4c
- 5a
- 5b
- 5c



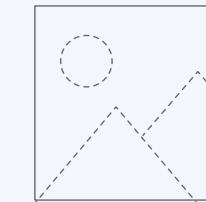
Final Output

Requirement Set

A requirement set is a checklist outlining what the system is supposed to accomplish. After initial prototypes have been evaluated and necessary adjustments have been made, the table below will help your digital advisor(s) translate your user research findings into technical features and technology platforms. Define the full list of functional requirements by reviewing each persona's needs, and what is required to solve for them. Copy and reuse to as needed to accommodate all personas and all needs.



Persona:



Prototype:

Needs

Prompts (from 3c) respond to diagnoses that uncover user needs. What are the persona's most pressing needs?

1

2

3

Top Features

How must the solution or scenario help the persona, as tested during prototyping?

1

2

3

Functional Requirements

For this feature to work, what must be true?

- User must be able to do x
- If the user x, then y
- After action x, then y must be possible
- System must be able to provide two-way communication between x and y
- System must be able to send data to x / accept data from x
- System must be able to track x, y and z

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

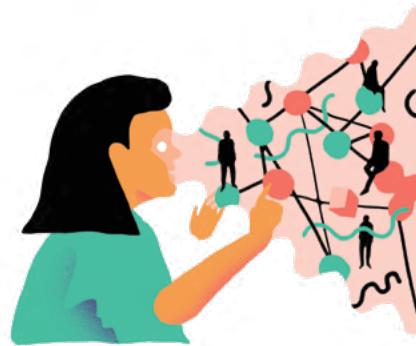
4b

4c

5a

5b

5c



How can we activate our idea?

Continuous Learning

Implementing digital health solutions requires a continual process of discovery, experimentation, and learning. While disappointing, it is possible (and even likely) that our initial diagnoses were incorrect, or only partially correct, and that our evaluations of prototyping were off, or insufficient. Only by implementing our ideas can we fully see what works and what does not in the real world.

In this stage we identify and engage the areas of expertise. Our team evolves to include experts in technology, product development, and user experience testing. We re-shape the concept that worked in the ideal world and the prototype that worked in our neighborhood to seamlessly integrate into the systems and use cases of the larger community. This toolkit focuses on the design, problem framing, and presentation—or pitching—of the tested idea. For step-by-step guidance on implementation, reference the '**Digital Health Implementation Toolkit**' produced by WHO.

Methodology

Plan for Iteration



3a

What do we hope to learn during programme implementation? What are we going to measure? How will we measure it? A Project Charter contains questions that we will return to during the iterative implementation of our ideas. Remember that digital health solutions are not implemented in a vacuum. In almost every instance, a digital health solution will be part of or complementary to a broader health service. In framing your Project Charter, draw on existing documentation and similar project or service planning documents from the Ministry of Health and its partners.

Reset the Objective Statement

Project Charter

Identify the Implementation Team

Evaluate Effectiveness



3b

Whereas Planning happens on paper, Evaluation happens mostly in the field. This step is comprised of two sequential parts: executing the means of verification decided upon in the Project Charter and analysing information as it's collated.

The methods used to execute the means of verification and analyse findings will vary significantly depending upon the chosen initiatives to implement.

Develop the Design

Test Usability

Evaluate External Risks & Unknowns

Pitch the Improved Idea



3c

Continue the implementation process with improvements to both your idea and your Project Charter. Clearly document and share how the new idea solves the starting ambition. For further funding, government buy-in, ministry validation—or whatever is needed to continue scaling the idea—use the template to tell the project story.

Prepare to Scale the Improved Idea

Final Output: **User Journeys**

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

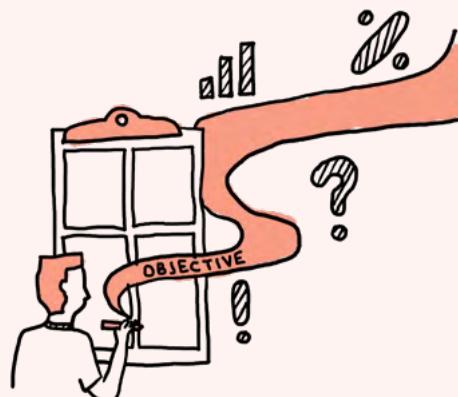
5b

5c

- 1a
- 1b
- 1c
- 2a
- 2b
- 2c
- 3a
- 3b
- 3c
- 4a
- 4b
- 4c
- 5a
- 5b
- 5c
- 
- 
- 

Reset the Objective Statement

Looking back at your original Objective, how big does the solution need to scale to make an impact? What is the minimal viable solution to begin implementing? How reliably and naturally will adoption happen?



Our Objective is for

 **Key User (1a)**

to

 **Desired Change (1b)**

by addressing

 **Common Obstacle (1c)**

through

 **Digital Solution (from intro)**

Over-arching impact to health programmes:

Create a Project Charter

For each idea, use the worksheet on the following page to develop a Project Charter. Referencing the rest **Objective Statement** and the key user **Personas**, define the key evaluative questions and indicators to measure the effectiveness of your solution. You will adjust the plan throughout implementation.

Identify External Variables

Recognise external variables that may jeopardize an idea or interfere with indicators.

External Variable Examples:

- ! Mothers may not have reliable access to the same mobile phone—it could be shared
- ! Mothers may not consistently pay for mobile phone service
- ! CHWs may not have regular access to Internet

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c



Tool #34

i

Define Implementation Questions

Define what you want to learn about and improve from phase to phase during iterative implementation.

Question Examples:

- » Does the SMS reminder programme make it easier for mother to follow-through on their intentions to follow-up?
- » Are more messages better than fewer?
- » How important is timing?

ii

Decide Indicators

Based on your questions, determine what health outcomes you need to measure.

Indicator Examples:

- » percent change in clinic visits
- » percent increase in on-time visits

iii

Determine Means of Calculation / Verification

Determine which methods to use for tracking the indicators and improving the idea (not for definitively evaluating its impact).

Method Examples:

- » Use clinics' administrative data
- » Enroll a sample of CHWs into the SMS reminder programme and track
- » Conduct individual interviews with mothers after experiencing the programme

iv

Articulate Justification

Document why each indicator and its associated means of verification were selected.

Justification Examples:

- » The two indicators address two related issues (forgetfulness leading to non-access or late-access)
- » Admin data from clinics is a more suitable means of verification given short timeframe and limited budget

Project Charter Template



1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c



Remember the Ambition

What your continuous learning should support

Add additional rows as needed.

i



Implementation Question ?

What you want to learn about and improve from phase to phase

ii



Indicator %

What you need to measure

Identify External Variables

Variables that may jeopardize an idea or interfere with indicators

iii



Means of Verification 📈

Methods for tracking the indicators and improving the idea

iv

Justification ✌

Why each indicator was selected

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c



Identify the Implementation Team

The core team that has been guiding the project to date may remain involved, but as we begin to build out digital solutions, additional responsibilities may require additional expertise. Depending on what your solution entails, roles may include:

Core Team works as Product Manager

- Determine the financial feasibility
- Plan how to maintain your infrastructure
- Develop a workplan
- Define a governance model
- Get the partners / agreements you need

Data Providers Departments, agencies, private corporations, NGOs, or government agencies that can provide access to data

Data Engineer Establish the architecture and technical infrastructure to collect, store, transfer, and process data securely

User Experience Researcher Investigate what the architecture, inputs, and outputs must be

Interaction Designer Create flows and everything in a beta state, such as RapidPro

Content Strategist Develop a database for SMStext questions and response

Marketer Start marketing campaigns to gather interest and spread knowledge

Graphic / Interface / Data Visualization Designer Create sketches, dashboards, and diagram mock-ups



List all Partners on the Project

Additional Technical Roles

1

2

3

Additional Development Roles

1

2

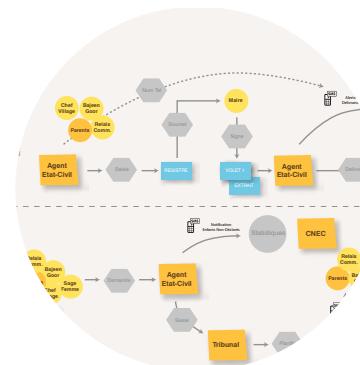
3

Develop the Design

- 1a**
 - 1b**
 - 1c**
 -
 - 2a**
 - 2b**
 - 2c**
 -
 - 3a**
 - 3b**
 - 3c**
 -
 - 4a**
 - 4b**
 - 4c**
 -
 - 5a**
 - 5b**
 - 5c**

Before we go into the field again, we need to refine our low-fidelity prototypes into something that, while not perfect, more closely resembles the final product.

This page contains some of the sketches, diagrams and dashboards you may consider creating to clarify your prototype to your user or team



System Map:

Example: The top image shows the system design—the connection in time, order and technology between the pieces that need to work together.



Visual Demonstration:

Example: This design demonstrates the programme to the user by showing what they will text, and the text they will receive in return.



Swim Lanes:

Example: This design was created by team in Indonesia mapping the sequence of the newborn registration programme.

Test Usability



During Question 4, we tested our prototype in the field to help determine the feature set and requirements (what we are making). During the planning stage, we test our initial design for its intuitive usability and aesthetic experience (how we use it and what it looks like). A usability test is typically performed in-person, where participants are asked to complete a series of routine tasks. This page shares basic methods to evaluate the initial design. For more information, visit usability.gov.

Setting up:

- Identify the concerns, questions, and goals for this test. You will probably have several general and several specific concerns to focus on.
- Pick a location, time of day, and locate the type of equipment you will be using in the test; desktop, laptop, mobile, etc.
- Invite the number and types of participants you will need to represent all of your distinct personas.
- Decide the number and types of tasks included in testing.
- During the session, start by introducing what you are testing, then outline the number of task you will ask participants to complete. After each task, ask follow-up questions like: How easy was this? How likely would you be to use this? What could be improved?

Sample methods / activities:

- Goal based task: Without giving step-by-step direction, ask the user to perform a basic task.
- Think aloud: understand participants' thoughts as they interact with your solution by having them think aloud while they perform a task. Encourage them to keep a running stream of consciousness so they verbalize their interactions and frustrations.
- Follow-up: Test to make sure the right incentives are in place by asking questions about when they would or would not complete the requested task. Is there a limitation of time, complexity, or number of clicks that needs to be considered?

What to look for:

- Observe where they pause, get confused, or get frustrated.
- See if the task can be successfully completed without a lot of training
- Consider the time it takes to complete a task, and the number of errors along the way

- 1a
- 1b
- 1c
- 2a
- 2b
- 2c
- 3a
- 3b
- 3c
- 4a
- 4b
- 4c
- 5a
- 5b**
- 5c



Evaluate External Variables & Unknowns

Watch out for the following three categories of challenges as you finalize your pitch:

External Variables

The **Project Charter** lays out the potential external variables (risks) beyond the immediate control of your team that can jeopardize the effectiveness of an idea once implemented.

If you cannot resolve them you must adapt ideas to be more risk-resilient. It may not be possible to fully address the risks facing an initiative. Evaluating those risks is still critical to any measurement exercise, as it helps to explain how the implementing team will ensure the effectiveness of the initiative through mitigation of identified risks.

Incomplete Diagnoses

Our research (during Question 3) did its best to identify and explain issues challenging the users we hope to reach. Our diagnoses captured why these issues exist.

However, no amount of research will produce definitive diagnoses. Part of the benefit of iterative implementation is the opportunity to use the real world to test our findings: are the solutions we developed actually responsive to the challenges articulated in our diagnoses? If not, what might we have missed?

When we recognise evidence of incomplete diagnoses, we should see this as a mandate to refine them, adjust their corresponding prompts, and re-visit idea generation and design. This iterative loop ties our implementation (Question 5) back to our research outputs (Question 3) and creative efforts (Question 4).



Unknowns

Finally, one of the most important aspects of an honest evaluation is acknowledging what we don't still know much about.

One obvious example of a predictable unknown is the degree to which an idea, at least during its iterative implementation, is effectively supporting a programme's objective. This measurement of impact will likely only come from rigorous evaluation over a longer time horizon.

However, our evaluations will certainly be incomplete in many other ways. Data will be imperfect, or inconclusive—and explicitly identifying those 'unknowns' at the end of an implementation phase will help us to adjust the **Project Charter** for a subsequent phase, such as by adjusting what we choose to measure and/or how.

Prepare to Scale the Improved Idea

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c



System Requirements

1

2

3

4

5

6

7

8

9

10

Concept

Primary User

Secondary User

Tertiary User

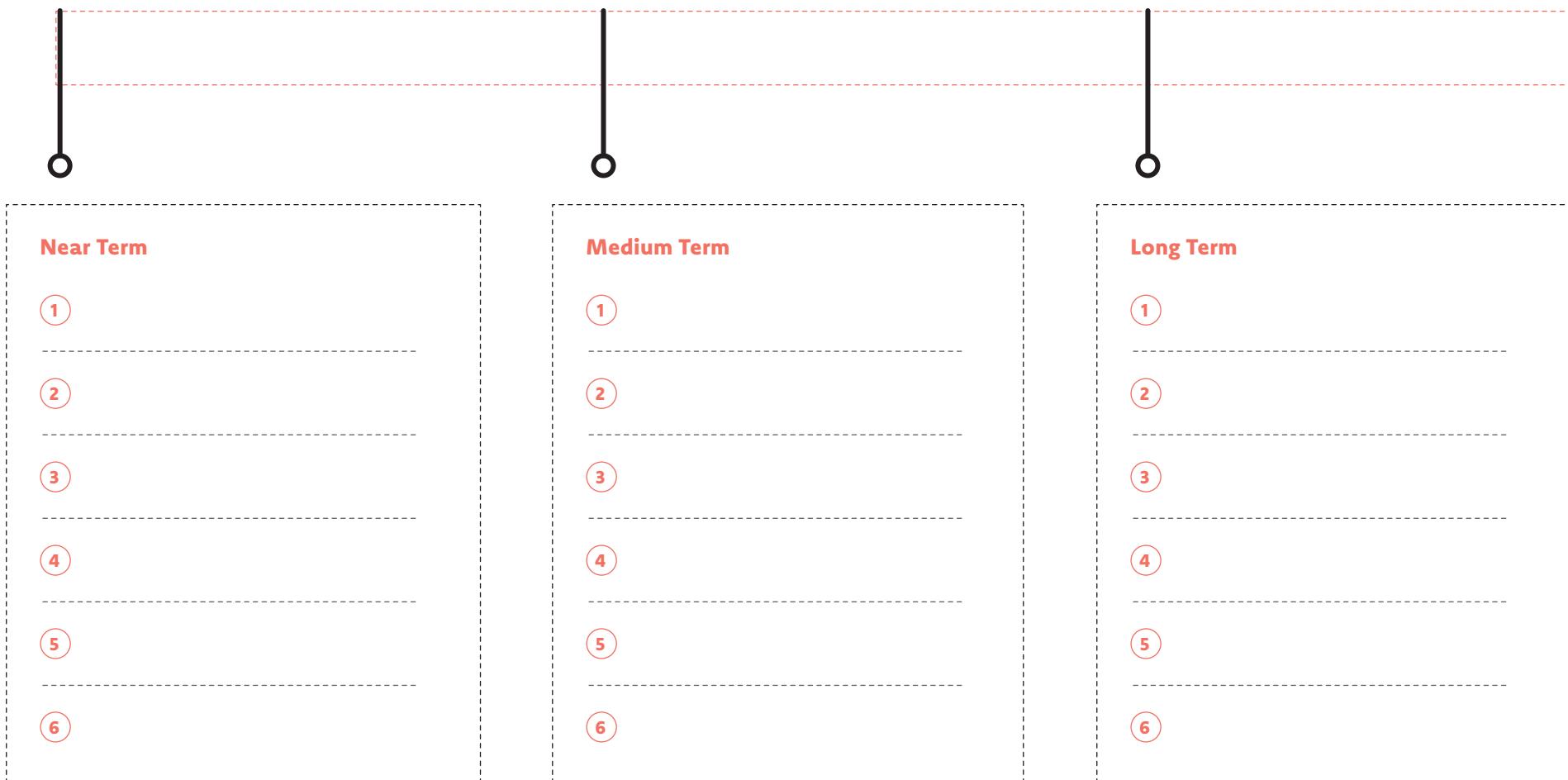
Findings from User Testing

Hypotheses that were validated or invalidated

Next Steps

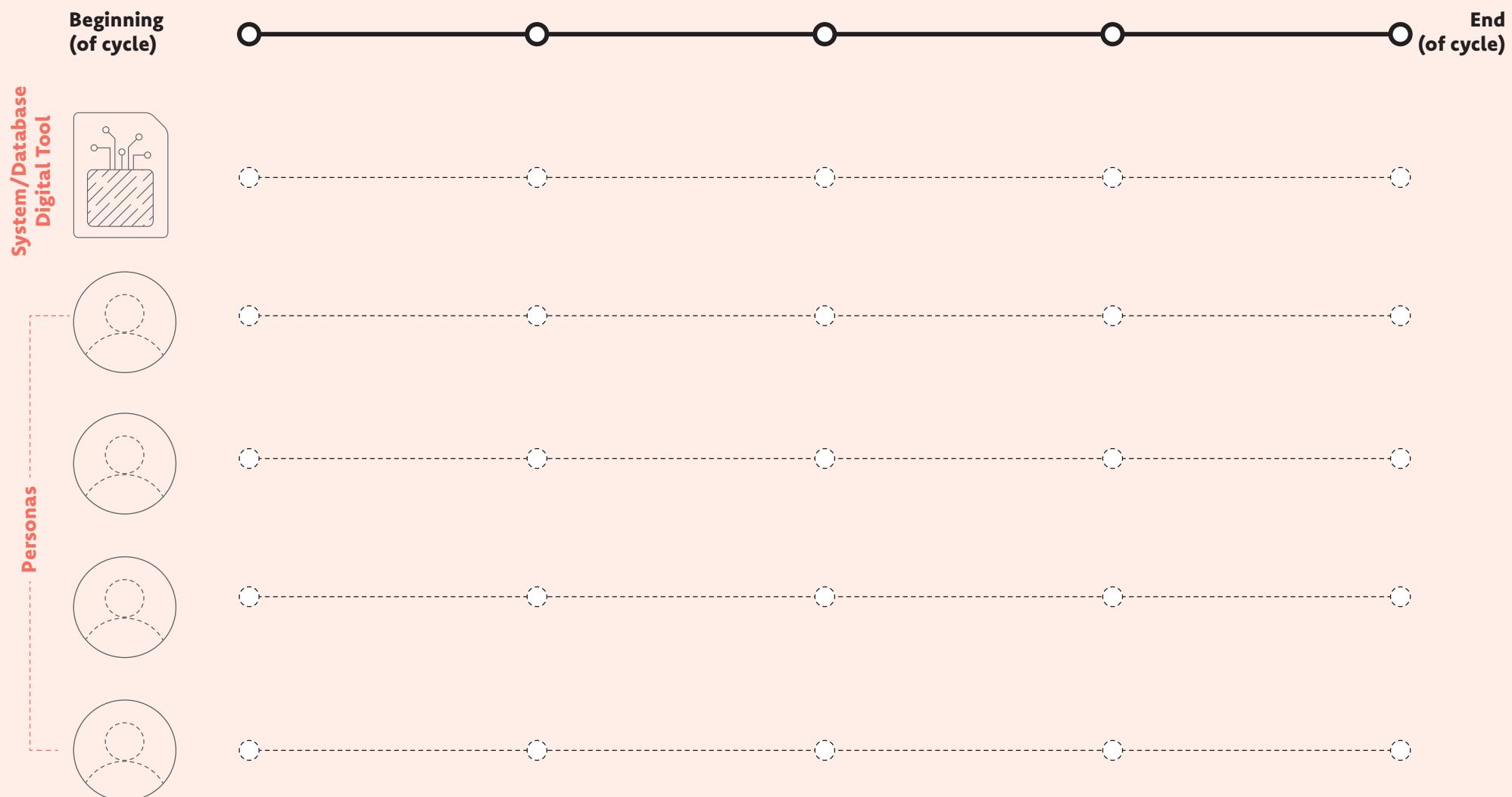


Map out the next steps needed in this process. Use the time line below to look at what needs to be done, and when:



Final Output: User Journeys

The final output is a final set of use cases that demonstrate how the proven ideas respond to human needs over a fixed period of time or 'service journey'. Map the sequence of events along the top, and the digital tool along with each user persona on the side. Draw connecting lines where actions, reactions, key functions, and interactions are needed to support the process. This journey summarizes how the system assists and interacts with its users.



Checkpoint 4-5

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c

Map the story of your project, starting with your ambition, the human needs you identified during field research, the underlying causes, how your design responds to these challenges, and how your initial testing shows improvement. Back this up with the implementation plan you mapped out during Question 5. Below are the pages from the toolkit to include in your “Project Opportunity Brief.”

Team

Existing Ecosystem

Key User Persona

Changed State

Human Challenge

(revised) Ambition

Past Lessons

Possible Assumptions

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c

Checkpoint 4-5 (continued)

Research Plan

Sharing User Stories

All Persona Profiles

Relationship Map

Diagnoses + Final Prompts

Designed Ideas

Prototype Round 1

Prototype Round 2

Digital Prototype Evaluation

Requirement Set

Project Charter Template

User Journeys

Case Study:
**Approach
to Activate
Follow-up**

*mVaccination Pilot in Sinazongwe
and Mazabuka, Zambia*



Project Overview

An Approach for Active Follow-up:

The Ministry of Health with the support from UNICEF Zambia undertook an innovation project to increase immunization awareness, improve access to immunization services and sustain use of immunization services. The programme personalizes the challenge of the follow-up gap. To move from unfocused communication and advocacy to person-to-person assistance requires data input, individual communication, and the direct involvement of the community.

The current prototype, a SMS based platform, allows health facilities to collect immunization data and follow-up of caregivers, push scheduling reminders to community health workers and share general information with communities. Outcomes include a reduction in drop-out rate and the ability for health facilities to monitor vaccine stocks, distribution and use.

With ongoing support from GIC, the project has made iterative progress including:

- Launch registration and vaccine report flows in Mazabuka and Sinazongwe
- 700 children have been registered as part of this prototype
- Dashboard version 1 is live

How It Works:

1 Register Baby



Community Health Volunteer

When a child is born, the Community Health Volunteer assigned to their household adds children and caregivers to mVac via SMS.

2 Receive Reminders & Record Visits



Caregiver Community Health Volunteer

Community Health Volunteers and caregivers receive SMS reminders throughout their routine vaccination schedule.

Each time caregivers take their child to the clinic, Community Health Volunteers update mVac via SMS, so it can send the next reminder.

3 Analyse Data & Improve Services



District Level Province Level

Health Workers at the District Level have information to manage clinic resources (what vaccines were used and when) and send updates and information to the field via SMS.

Stakeholders at the Province Level can follow dashboards that indicate community registries, coverage by level/vaccine, and focus attention on areas that struggle with follow-up.

The Advisory Team

i
ii
iii
iv



Ministry of Health

Representative:
Dr Andrew Silumesii,
Director Public Health

- Government Partner
- Holds influence over how it adapts



Chief, Health and Nutrition UNICEF

Representative:
Dr Paul A.N. Ngwakum

- Involved in decision making and overseeing process



PATH/BID

Representative:
Mandy Dube

- Community Partner
- Their product is affected by this work, and they are interested in its success
- Align with their product (work toward products talking to each other)

The UNICEF Team

**Givas****local knowledge****Community Organiser**

Views people with an empathetic, open mind and activates communities to participate

**Ngawa****local knowledge****Connector**

Builds rapport and form mutually beneficial partnerships

**Vincent****expert knowledge****Experimenter**

Not afraid to work through a problem in a rough state

**Nason****local/expert knowledge****Analyst**

Finds ways to measure and model business value quickly

Evaluate the Existing Ecosystem

Existing Strategies

Existing mHealth or eHealth strategies:

Does a national strategy exist?

Yes.

What is the plan period?

BID launching in 2017

Is there a steering committee?

BID + MoH

Is UNICEF is part of this committee?

Yes.

Existing Services

Existing systems, services, tools, projects, efforts, and processes:

Individual / Community / Village

Children's Clinic Card

Provincial / District

BID Child Registry



Existing Data Infrastructure

Existing data centers, data governance, computer systems and access:

Networks

Zamtel, Airtel, MTN

Dashboard Management

CasePro

Contact Database

Customization Needed

Patient registries

Collection started with BID

Health records

None

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c

Key User Persona Chilala Mwene

Prioritized User: Community Health Worker



Background

Chilala is a dedicated member of the community with limited formal education. Her phone is used primarily for making calls, so she must learn how to use texting features.

Role/Responsibilities

Describe what their job is, or what role they play in the community.

Protector

Aspirations

What are this person's dreams and aspirations? What factors does he/she perceive will either contribute to or hinder pursuit of those dreams?

- 1 Be a respected and revered authority figure in the community
- 2 Be a reliable source of knowledge on important health issues

Influencers

Think about single behaviours that result from external pressures (rather than regular habits). Who are the influential stakeholders in their life?

Health Worker

Clinic Level

Benefits

What benefits would the user expect from this system? Why would they engage with it?

- 1 Take care of reminders
- 2 Show they are good CHWs

Needs

What frustrations do they have? What limitations do they encounter? Write as a quote—how would they say this?

“I want to help shape the health of my community, not just follow directions. If I understand, I can help improve the system and teach others.”

“View technology as an easy system to help manage and streamline their reminders to mothers”

What they do now

(current behaviour)

Struggle with technology, and view it as a onerous task to complete

What they should do

(ideal state)

View technology as an easy system to help manage and streamline their reminders to mothers



Define the Improved State

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c

Current State

CHW registers new babies on paper cards they keep

CHW track vaccinations in personal notebooks

CHWs must remember which of their 10–15 mothers to notify about upcoming vaccinations

We don't know which 20% of mothers are defaulting on routine vaccination

Improved State

CHW registers new babies into universal database

mVac tracks vaccinations for CHWs

mVac notifies CHWs which mothers need to be reminded of which vaccinations

We can manage follow-up, incentives, and resources to close the gap

Evaluate Opportunity

-  team is capable of influencing
-  supported by digital solution
-  behavioural, not attitudinal

-  team is capable of influencing
-  supported by digital solution
-  behavioural, not attitudinal

-  team is capable of influencing
-  supported by digital solution
-  behavioural, not attitudinal

-  team is capable of influencing
-  supported by digital solution
-  behavioural, not attitudinal

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c

Common Obstacles

(assumptions to be tested)



Attention Scarcity

People focus on the most pressing challenge 'now'.



Bias Toward Optimism

People overestimate the likelihood of positive events occurring and underestimate the likelihood of negative events occurring.



Fear

Action can be scarier than inaction. When given an option between inaction and action, people tend to default to the status quo.



Hassle Factors

Seemingly minor inconveniences can deter people from acting on their intentions.



- 1a
- 1b
- 1c
-
- 2a
- 2b
- 2c
-
- 3a
- 3b
- 3c
-
- 4a
- 4b
- 4c
-
- 5a
- 5b
- 5c

Objective Statement

Our Objective is for southern province community volunteers

U Key user

to digitally track children's vaccinations

C Desired Change

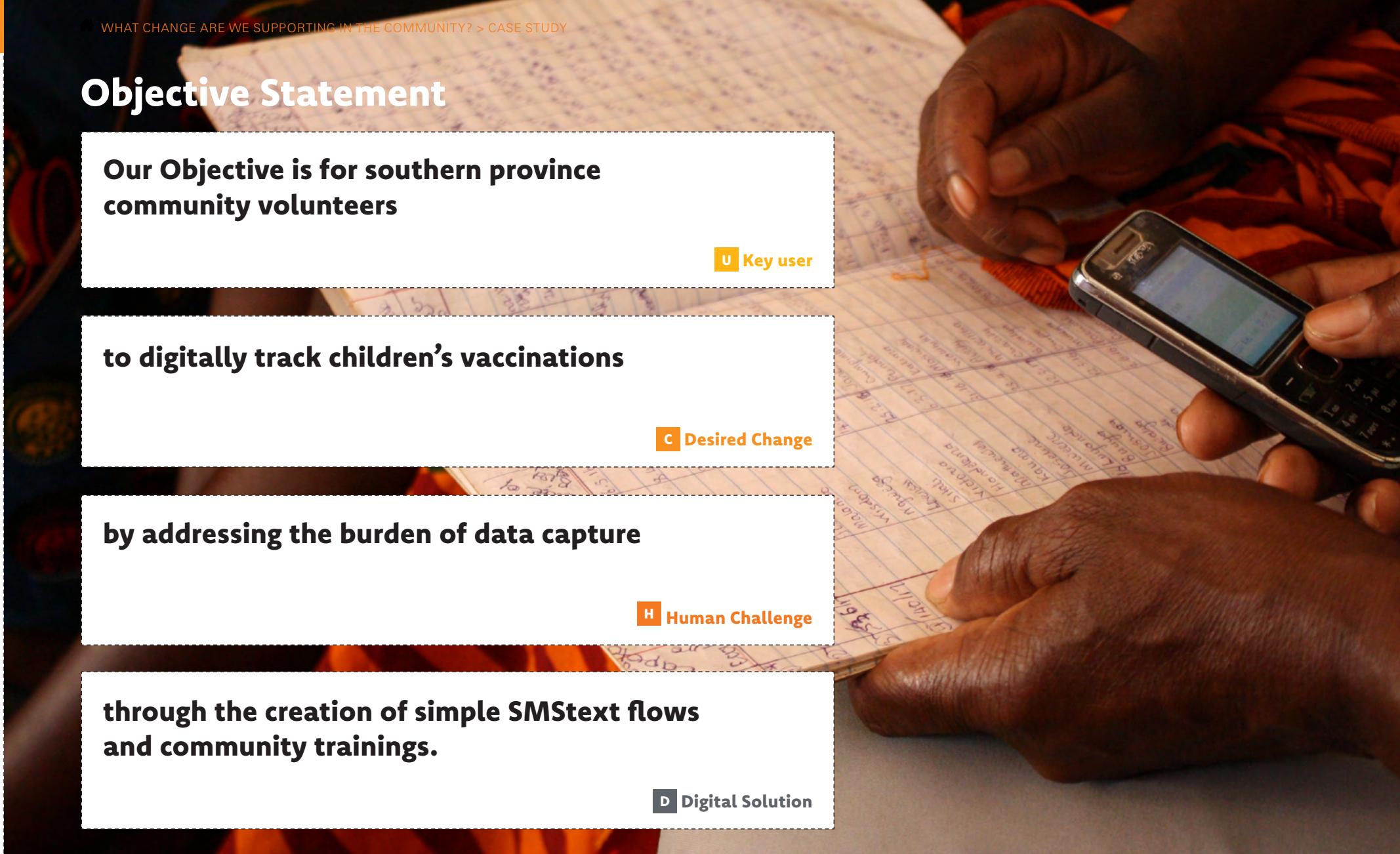
by addressing the burden of data capture

H Human Challenge

through the creation of simple SMS text flows and community trainings.

D Digital Solution

Over-arching impact to health programmes: Improve vaccine delivery and immunization coverage through improved data use for planning, follow-up, mapping, and reporting to track the most marginalized with an equity lens.



Record Past Lessons



A thorough accounting of past and present efforts to help organise the volume of information surfaced during 'Assembling Existing Knowledge.'

Past efforts that went well

Lesson #1

Community volunteers take pride in their place in the community – they are passionate about the community's health and willing to try new tools that assist mothers'.

Lesson #2

Mothers respond well to community volunteers. Activating the community is the right approach.

Lesson #3

Additional responsibilities for community volunteers (like teaching and onboarding neighbors) double as opportunities for advancement and ownership.

Technology Landscape

Airtel

MTN

Zamtel

Community

User

Most have a phone

Many do not read well

Child ID number is confusing

Religious Leaders

Past efforts that didn't go well

Lesson #1

Texting information is never as comfortable as writing information. Most community volunteers also keep a notebook with the written information.

Lesson #2

Troubleshooting is difficult. Community volunteers don't know where to reach out to when they get stuck, so they stop texting.

Lesson #3

Ownership is necessary, preferably by the Ministry of Health.

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c

Possible Assumptions

The human challenges we face are: attention scarcity, bias toward optimism, fear and hassle factors

Once we have a plan, the government will pick it up and run with it.

CHWs are lazy and don't want another task.

The open source systems that can work together will work together.

CHWs see the benefit of an automated reminder system, they don't worry that it will replace their role in the community.

The main barrier to use is financial — CHWs are worried about the cost of texting.

Research Plan Template

Plan Your Interviews

Prioritized Users

- 1 District Health Worker
- 2 Health Worker
- 3 Community Health Worker

Adjacent Users Type A

- 4 Headman
- 5 Community Coordinator

Adjacent Users Type B

- 6 Mother/Caregiver

Plan Your Observations

In the Home / Community

shadowing, peer-to-peer, first-hand experience

- 1 District Health Worker
- 2 First-hand CHW Training

At a Care Facility

shadowing, peer-to-peer, first-hand experience

- 3 Clinic shadowing
- 4 BID Introduction

At a Religious/Influential Location

shadowing, peer-to-peer, first-hand experience

- 5 Headman interactions with Community Coordinator



1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c

Share User Stories

One example of sharing back stories from the field



"This will be good because it will remind mothers and they won't miss vaccines."

Lillinae Simtiyaba (health-care worker, left), Raquel Mondega (Mazabuka district health office, middle), and Milambo Sibanga (community volunteer, right) are looking at the current paper log and entering mother's and their children's information into the mVac system.

Their Story

The outpost manages 36 children, and Milambo is a volunteer for 15 children under the age of 2.

They deal with families moving around the Zambia Sugar plantation and questioned what happens when a child comes from another community, and their registration number is already taken (A: they treat them, but have their community volunteer report it).

Environment

The families live in 2 nearby areas. They do not believe they experience issues with follow-up.

Connections and Relations

The clinic is paid for by Nakambala Sugar Estate but open to the community.

Objects

Babies are registered three times: in the BID app, on paper cards, in paper logs and in the mVac system. They believed they would let one group down if they did not enter into all systems.

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c

Persona Profile: Caregiver



“

It's a good that you are told to go in if you forget, so you can take your child to be immunized.

”

Role/Responsibilities:

Must be forthcoming with information, usually shares a phone with family, neighbor or husband.

Motivation:

Having a healthy child

Bigest Benefit:

Don't have to remember dates or keep track of vaccination card.

Bigest Barrier:

Everyone needs to have access to a phone.

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c

Persona Profile: Community Health Volunteer

****Prioritized User**

“

Here in Zambia, it's in us that we have to take care of everyone and we have to find time to take care of everyone. If my neighbor's child is not doing well—it's on me.

”

Role/Responsibilities:

Collect data on mothers, and explain the programme to mothers so they understand and allow their data to be collected.

Motivation:

Desire to take care of their community – feel obligation to care for their neighbor's family like they would their own.

Bigest Benefit:

Social Standing within the community.

Bigest Barrier:

Everyone needs to have access to a phone, and distances to some families are difficult to make during rainy season.

Persona Profile: Community Coordinator

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c



“

The supervisor's role should be that of improving — it's not that it's difficult, but it's new.

”

Role/Responsibilities:

Coordinates, trains and supervises (with community leader) the Community Health Volunteers. Engage community volunteers (10-20 babies per volunteer).

Motivation:

Keep everyone engaged and doing good work.

Bigest Benefit:

The network of CHWs allows the coordinator to personalize care — providing individualized information and dedicated help to each mother.

Bigest Barrier:

Need support from community influencers, such as headman.

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c

Persona Profile: Health Worker



“

[This programme] will be good because it will be reminding mothers, and they won't miss vaccines.

”

Role/Responsibilities:

Provide health care and administer vaccination.

Motivation:

Follow directions and guidelines provided by district/regional/province office to be regarded as successful in their caretaking.

Bigest Benefit:

Reduced workload through immunization registry, gives time to think through data/collect better data.

Bigest Barrier:

Unclear what is possible or how it works.

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c

Persona Profile: District Level



“

I was very interested because information gets lost, and the perception is that we lost it — so it was a solution to a problem we had at hand.

”

Role/Responsibilities:

Save time/resources by knowing exactly which communities are being reached and how many supplies they will need month-to-month.

Motivation:

Improve efficiency and effectiveness of job.

Bigest Benefit:

Keeps them from losing data, tracks who hasn't received which vaccinations, allows them to monitor supplies by facility (helps with budgeting).

Bigest Barrier:

Entering all of the children. By the end of this year all the children should be entered so the programme can launch.

- 1a
- 1b
- 1c
-
- 2a
- 2b
- 2c
-
- 3a
- 3b
- 3c**
-
- 4a
- 4b
- 4c
-
- 5a
- 5b
- 5c

Relationship Map

Province: Analyze Data

District: Manage Resources

Regional: Activate Community

Local: Care for Each Other



Caregiver



Community Health Volunteer

Atriziamgama Chicamcantri

Must be forthcoming with information, usually shares a phone with family, neighbor or husband.

Chilala Mwene

Collect data on mothers, and explain the programme to mothers so they understand and allow their data to be collected.



Community Coordinator

Mbandama Simbuwalanga Ali

The network of CHWs allows the coordinator to personalize care—providing individualized information and dedicated help to each mother.



Health Worker

Lilliane Simtyaba

Reduced workload through immunization registry, gives time to think through data/collect better data.

[BID LIVES HERE]



District Level

Maggie Mukuta

Save time/resources by knowing exactly which communities are being reached and how many supplies they will need month-to-month.

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c

Diagnoses + Creative Prompts

Diagnosis

Mothers miss follow-up appointments because it's hard to remember when to go, and when they do, it's not easy to seek permission.

Prompt #1

How might we remind mothers of appointments in a helpful, instead of intrusive, manner?

Prompt #2

How might we earn permission for mothers to attend clinic appointments?

Prompt #3

How might we provide personal support to increase understanding of vaccinations and build intrinsic desire to vaccinate?

Diagnosis

CHWs don't always remind mothers to follow-up because it's not clear which areas they must cover, and they oversee many mothers at once.

Prompt #1

How might we simplify the onus of registering newborn babies and tracking their routine immunizations?

Prompt #2

How might we reduce the overall workload of CHWs?

Prompt #3

How might we help CHWs focus on small tasks instead of overarching responsibilities?

Diagnosis

Absence of key information (who is getting vaccinations and when) hinders resource management at the district level.

Prompt #1

How might we provide timely analysis to district health manager?

Prompt #2

How might we simplify the compiled data to facilitate fast and effective decisions?

Prompt #3

How might we automate better communications between district and community levels?

Design Quick Examples



Designed Examples to Help Demonstrate and Activate Ideas

Visualization: Mamba Community Map

Prompt: How might we **remind mothers of appointments** in a helpful, instead of intrusive, manner?

Initial Concept:
Text Reminder

Prompt: How might we **earn permission** for mothers to attend clinic appointments?

Initial Concept:
Community Activation

Prompt: How might we **provide personal support** to increase understanding of vaccinations and build intrinsic desire to vaccinate?

Initial Concept:
Community Health Worker Recruitment



Sequence: Registering a baby

Prompt: How might we **simplify the onus of registering** newborn babies and tracking their routine immunizations?

Initial Concept:
Text Reminder

Prompt: How might we **reduce the overall workload** of CHWs?

Initial Concept:
Digital Database

Prompt: How might we **help CHWs focus** on small tasks instead of overarching responsibilities?

Initial Concept:
Text Reminders

2 Baby's Information

Send SMS with this format:
UNDER5_ID + SEX + DATE OF BIRTH (Format DD/MM/YY)

4 Delivery place

Visualization: Dashboard

Prompt: How might we **provide timely analysis** to district health manager?

Initial Concept:
Dashboard

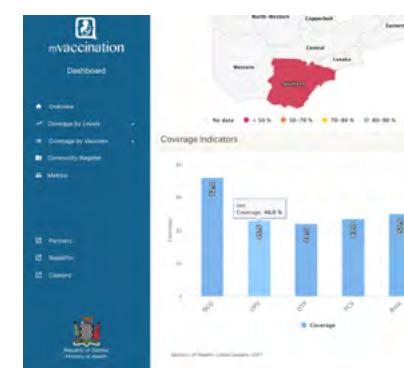
(Dashboard mockup designed with support from the UNICEF EPI and C4D officers.)

Prompt: How might we **simplify the compiled data** to facilitate fast and effective decisions?

Initial Concept:
Data Visualizations

Prompt: How might we **automate better communications** between district and community levels?

Initial Concept:
Rapid Pro



1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

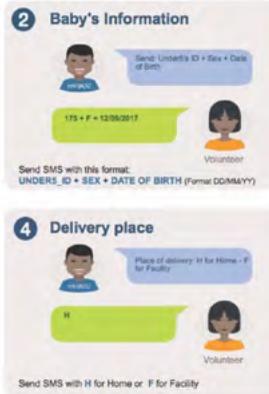
5b

5c

Test the Prototype in the Field: Round 1

In the field, further refinement was achieved through collecting user's feedback and customization by conducting 1) prototyping tests at district and province geographies and 2) interviews, expectation assessment, and user testing with caregivers, environmental health technicians (EHTs), and volunteers.

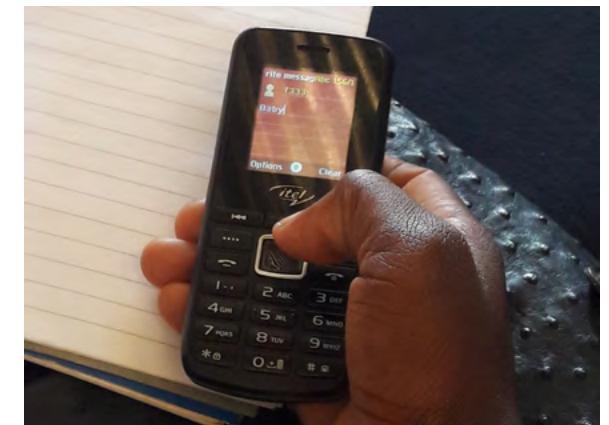
Add a new Children and Caretaker on mVaccination. As Child, the new child could start vaccination schedule based on the birth of date and monitor vaccination. As Caretaker, the new parent will receive information from CBV and reminders for each child.



Tool #31

Digital Prototype 1 Evaluation

- **Engage telecommunications company early.** Engagement of telecommunications companies can take several months, is complex and contract preparation requires involvement of both the country office and global support
- **Involve Central, Province and District levels from the beginning.** Having all levels of participants present from the concept stage increases understanding and support of government for deployment steps.
- **A user guide is imperative.** UNICEF Zambia has a training and community engagement strategy which formed the basis for the training for EHT, but a simple user guide is necessary to help both district and CHWs understand and remember the process.



Test the Prototype in the Field: Round 2

4c Tool #31

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

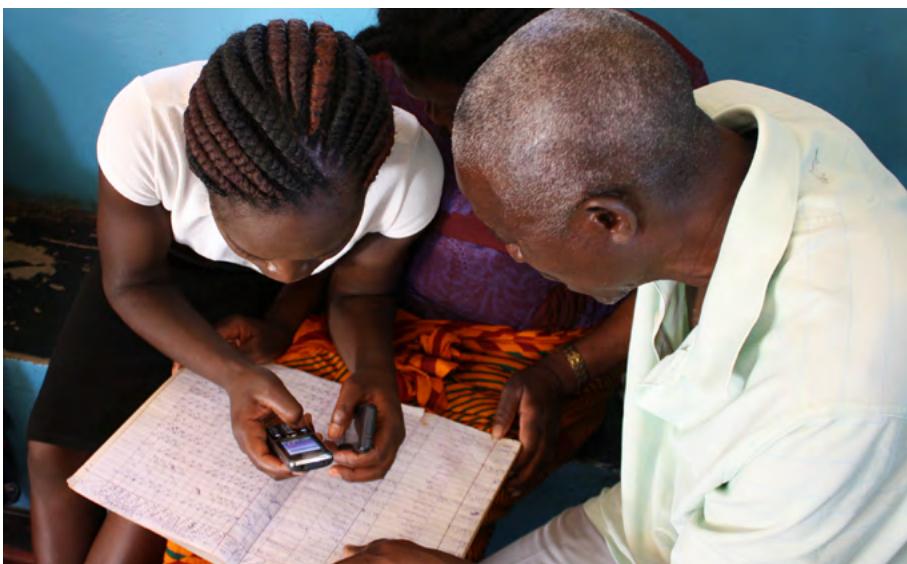
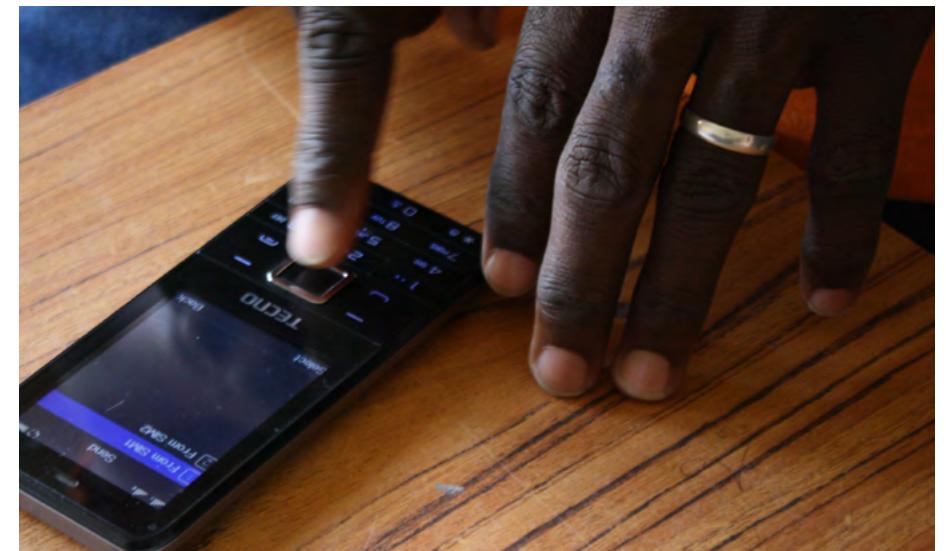
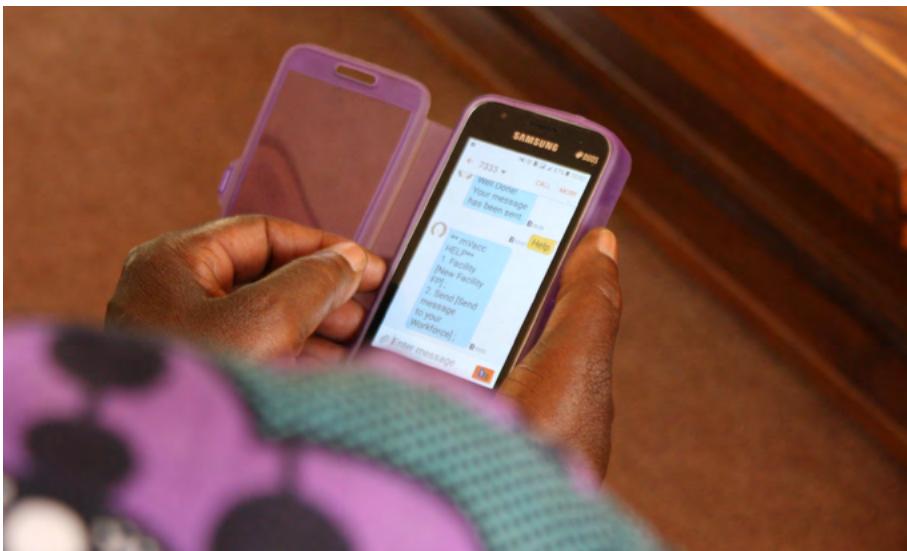
4b

4c

5a

5b

5c



Digital Prototype 2 Evaluation

Biggest strengths

Enthusiastic CHWs ready to learn a new process that helps their community.

Observed weaknesses

- (1) Data input can appear complex at first, especially to those not used to texting.
- (2) The digital database is not trusted enough to be the only input (paper records still used).

Is this prototype desirable?

Does the idea easily fit into people's lives? Yes, almost all have a mobile phone

Is the idea actually appealing to users? Somewhat. They understand it's important, but it's not saving them time yet.

Is the idea being correctly understood and used? Somewhat. They know what to do, but not how to troubleshoot when things go wrong.



Have we missed any roles in our personas?

Ownership of training is unclear.

Have we missed any opportunities?

Community can be more involved in teaching and scaling.

Is this idea feasible?

Is the tech required of the idea easily available? Yes, Rapid Pro is open source, working well and the first training for MoH ICT went well.

Is the tech easily sustained over time? Yes.

Can your programme actually make it happen? If structures are given to have ICT participation and ownership, as well as a designated project manager, yes.



Are there aspects of the Ideal Relationship Map that are unrealistic?

No.

Do the new user responsibilities seem realistic?

Yes, but they require 2 rounds of training; 1 is insufficient.

Is this idea viable?

What can be projected about possible costs? Airtel must continue to cover the cost of texting for CHWs.

Might the idea actually save the programme money? Yes, the programme helps manage resources and prioritize interventions.

How near-term versus long-term are potential savings? Saving can be seen within 6 months, as soon as a region's mothers are mapped.



What do we still need to know?

Track to make sure the follow-up training is sufficient to make users confident and comfortable using the platform. Difficulties of transmission, capture, calculation, or even formatting of data are making the current numbers lower than they should be.

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c

Newborn Registration

Requirement Set Example



Persona:

Community Health Worker (CHW)



Prototype:

Model (RapidPro) with example text

Needs

- 1 I need to know every child in my community — including children born at home
- 2 I need to know when children need to go to the clinic for vaccination
- 3 I need to be able to correctly report child vaccination

Top Features

- 1 The solution must register every child and mother with 2 or 3 SMS texts
- 2 The solution must send reminders two days before the vaccination appointment so I can visit the mother and remind her to visit the health facility
- 3 The solution must quickly inform the system when children receive a vaccine and automatically log the next vaccine date

Functional Requirements

CHW will register for every newborn:

- A unique ID number
- Basic information about the mother: full name, location, age, telephone number
- Basic information about the baby: ID, name, date of birth

The system will schedule:

- A reminder to send the CHW 3 days before appointments with the mother's name, the child's ID and the vaccine needed
- A second reminder to send CHW 7 days after missed appointment, if CHW has not reported back that the child received the vaccination

After each vaccination session:

- CHW will report 5 vaccines maximum in one SMS providing date and the child's ID.
- Any update will reschedule the next vaccination.

Project Charter Template

Remember the Ambition

What your continuous learning should support

Our objective is for southern province community volunteers to digitally report children's birth and vaccinations by addressing the burden of data capture through the creation of simple SMStext flows and community trainings.

i ----->

Implementation Question ?

What you want to learn about and improve from phase to phase

ii ----->

Indicator %

What you need to measure

Identify External Variables

Variables that may jeopardize an idea or interfere with indicators

Not knowing the total number of children in each community will keep us from knowing what percentage of the populations is reflected in the increase we see in registration.

iii ----->

Means of Verification

Methods for tracking the indicators and improving the idea

iv

Justification

Why each indicator was selected

Do CHWs understand the registration process?

Total number of CHWs registered, and how many babies they register each year (average 10-20)

RapidPro SMStext

Indicates when additional training, or modification to the technology, must be made

How many children are we trying to vaccinate?

Total number of babies registered

RapidPro SMStext

Baseline for coverage percentage, and necessary for supply management

Has coverage increased?

Routine vaccines given to each baby

RapidPro SMStext

Shows if we are closing the default gap

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

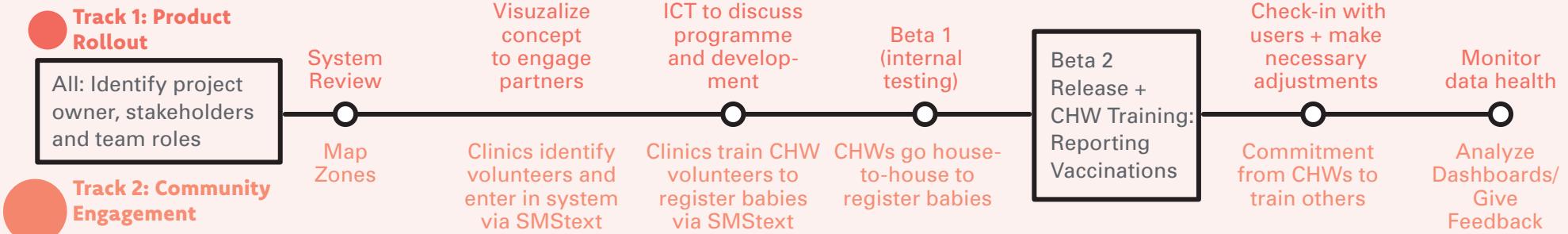
5b

5c

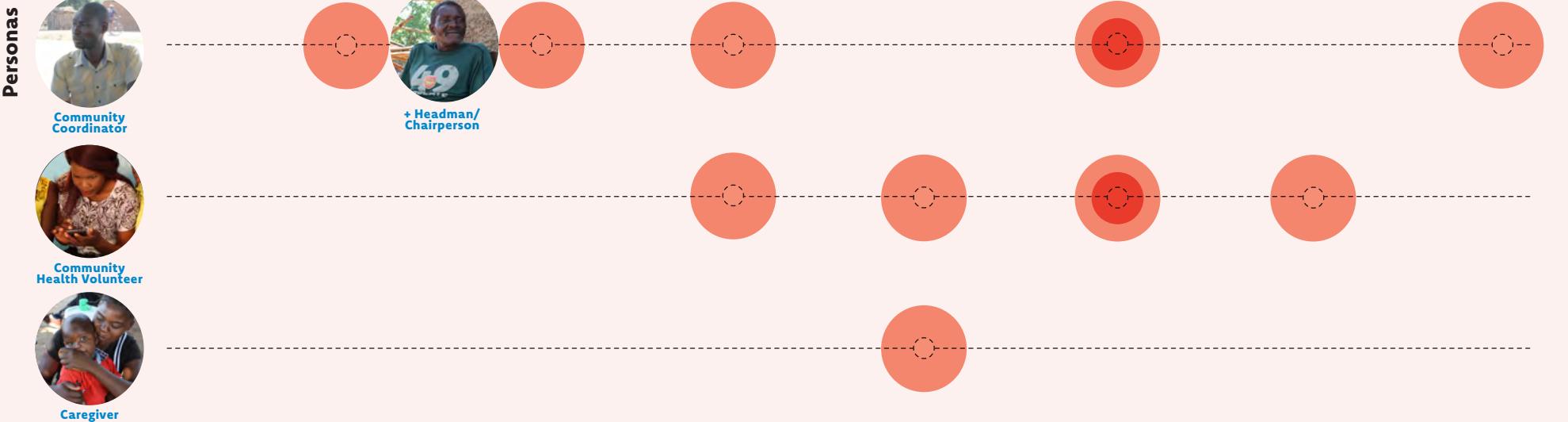
User Journeys



Province Level



District Level



1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

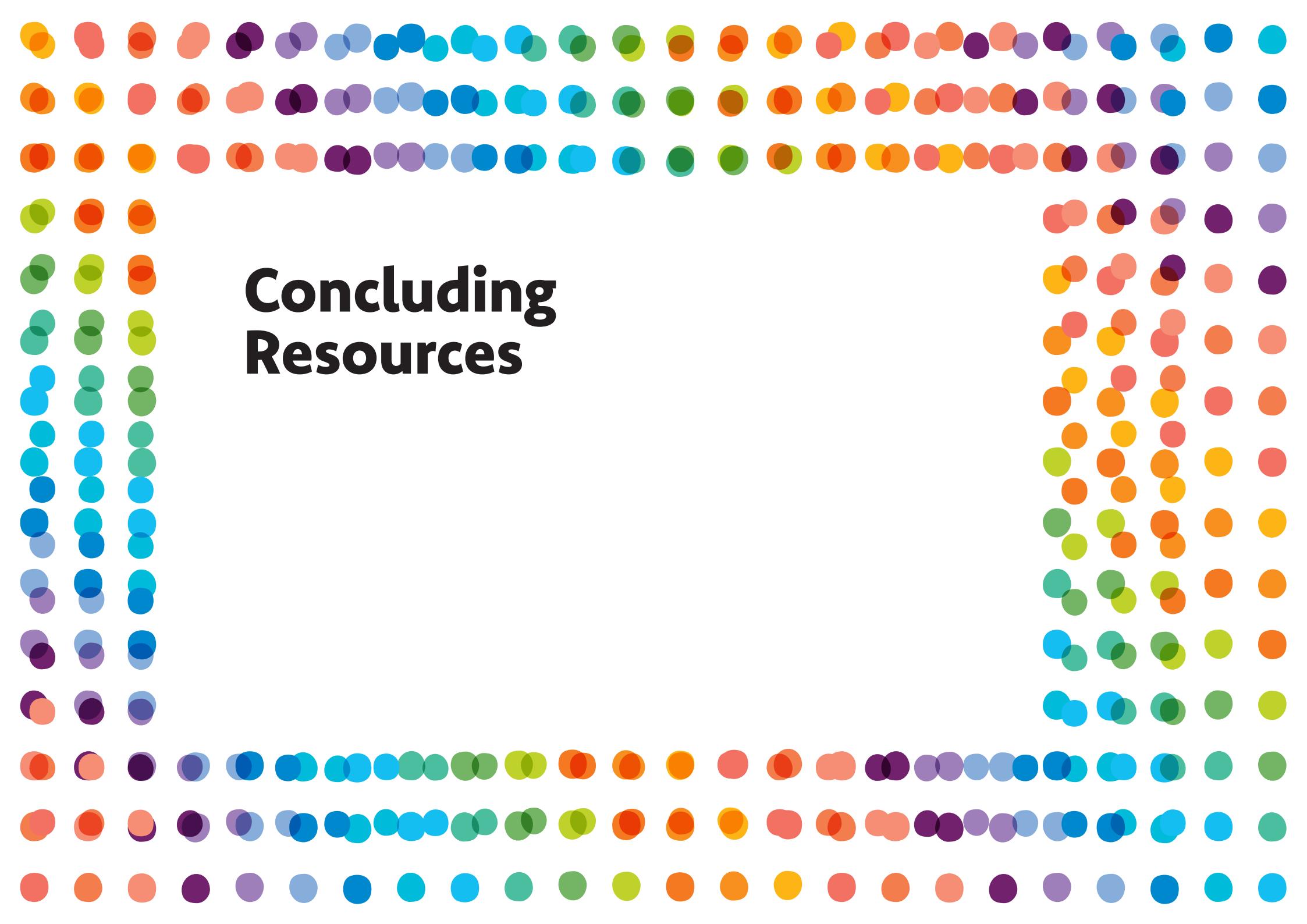
4b

4c

5a

5b

5c



Concluding Resources

Additional Resources

HCD Overview and Methods

Demand for Health Services

by: UNICEF

A field guide that introduces human-centred design as an approach to addressing challenges related to community demand for basic health services like immunization

hcd4i.org

Courses for Human-Centred Design

by: Acumen

Introduction to human-centred design

plusacumen.org/courses/hcd-for-social-innovation

Collective Action Toolkit

by: frog design

Design-thinking tools focused on social impact and designed for “local change agents”

frogdesign.com/work/frog-collective-action-toolkit.html

DIY Kit

by: Nesta + Rockefeller Foundation

Practical tools to trigger and support social innovation

diytoolkit.org

d.school Tools for Taking Action

by: d.school

Tools for taking action are generic—helping with “solving the right problem” but light on “designing the right solution”

dschool.stanford.edu/resources-collections/browse-all-resources

Design Kit

by: IDEO.org

Overview of human-centred design and a complete kit of methods to apply throughout the process

designkit.org

Interviewing Users

by: Rosenfeld

Information on interviewing users and creating a discussion guide

rosenfeldmedia.com/books/interviewing-users

Interviewing Users

by: Social Innovation (Columbia University + foundations)

How to set-up and conduct an interview

socialinnovationtoolkit.com/data/skills/downloads/pi_skill_interview_v1.pdf

Additional Resources (continued)

HCD for Digital Deployment

RapidPro

by: UNICEF

Open-source platform of applications that can help governments deliver rapid and vital real-time information and connect communities to lifesaving services

unicef.org/innovation/innovation_75975.html

Mobile Technologies & Community Case Management

by: frog design

UNICEF and frog brought together public health, mobile health and design constituencies to create an adaptable model for how mobile can best support Community Health Workers as they diagnose, treat and refer the most common killers of children

bit.ly/2I2A29B

Elements of User Experience

by: Jesse James Garrett

Introductory document to demystify UX by defining UX terms and clarifying the underlying relationships among elements

jjg.net/elements/pdf/elements.pdf

HyperIsland Toolbox

by: HyperIsland

Tools for collaboration and brainstorming

toolbox.hyperisland.com

Persona Mapping

by: UX Mag

Primer on personals, why they exist, how to use them

bit.ly/2IUplSh

Execution / Implementation Resources

WHO Digital Health Implementation Toolkit

by: WHO

Step-by-step technical guidance throughout the deployment process

ToR, Negotiation, Contract

by: mHealth

Finding and engaging resources to develop and deploy refined idea

email HCDigitalInterventions@gmail.com and we can share

Beginning with the end in mind

by: WHO

Planning pilot projects and other programmematic research for successful scaling up

bit.ly/2ISAFnv

mhealth Design Toolkit

By: GSMA + frog

Ten principles to launch, develop and scale mobile health services

bit.ly/2IUWtPI

Lexicon

Some terms used in this guide may be foreign in health programme or digital deployment fields, but their meaning is probably not as foreign. Terms common to the human-centred process are listed below. The language is also meant to be human-centred: simple terms that can be understood outside technical jargon and specialized acronyms.

Brainstorming

A group activity for generating ideas collectively

Challenge

Difficulties in the research process (affecting team members)

Diagnosis

The identification of the root cause of a behaviour, perception, or other challenge by examination of the symptoms

High fidelity

A refined plan, sketch, or rough drawing that serves to more closely approximate the final version of the idea

Hypothesis

Initial or proposed explanations, made on the basis of available evidence, as a starting point for further investigation

Low fidelity

A draft plan, sketch, or rough drawing that serves to quickly to make an idea real

Obstacle / Challenge

Factors in the field (affecting users) that hinder the success of health programmes

Project Charter

An implementation plan that will continually change during the implementation process to become better suited for the initiative and its changing environment

Prototype

A mini-pilot that acts as the a first preliminary model of an idea

User

The person who will be *using* or interacting with our solution: the child we are trying to reach, the caregiver we are trying to help and health-care workers



Legend: Reading the Tools



Each page in this toolkit describes a step or provides a tool, or worksheet, to help guide you and your team through the process. This page helps you navigate the tools, including how many people will be involved, how much time it will take, and the type of interactions you can expect. Pages with a shaded background are key steps that will need to be included in each checkpoint to communicate your idea and process to advisors along the way.

2c

*The color and number
note where you are
in the process*

People



Individual



Core Team of 3-5



Invite Additional Participants
(community leaders, HCWs,
colleagues, NGO & government
partners)

Time



hours



days



weeks

more than a
few weeks

Tool Type



Activity



Analysis Framework



Synthesis Documentation



Guidance

1a

1b

1c

2a

2b

2c

3a

3b

3c

4a

4b

4c

5a

5b

5c



← People needed for this step



← Time needed for this step



← Tool Type

Thank you

This resource was created by the UNICEF Global Innovation Centre in partnership with the UNICEF Health Section to help colleagues apply human-centred approaches. Please direct questions or requests for further guidance to HCdigitalinterventions@gmail.com.

