The **GSMA** represents the interests of mobile operators worldwide, uniting nearly 800 operators with more than 250 companies in the broader mobile ecosystem, including handset and device makers, software companies, equipment providers and Internet companies, as well as organizations in adjacent industry sectors. The GSMA also produces industry-leading events such as Mobile World Congress, Mobile World Congress Shanghai, and the Mobile 360 Series conferences.

For more information, please visit the GSMA corporate website at www.gsma.com. Follow the GSMA on Twitter: @GSMA.

**mAgri**

GSMA’s mAgri Program catalyzes scalable, commercial mobile services that improve the productivity and incomes of smallholder farmers and benefit the agriculture sector in emerging markets. The mAgri Program is in a unique position to bring together mobile operators, the agricultural organizations and the development community to foster sustainable and scalable mobile services that improve the livelihoods of smallholder farmers. This report is part of the mNutrition initiative, launched by the GSMA in 2014 in partnership with the UK Government’s Department for International Development (DFID).

For more information, please visit the GSMA M4D website at http://www.gsma.com/mobilefordevelopment. Follow us on Twitter: @GSMAm4d

**frog**

frog is a global design and strategy firm. We transform businesses at scale by creating systems of brand, product and service that deliver a distinctly better experience. We strive to touch hearts and move markets. Our passion is to transform ideas into realities. We partner with clients to anticipate the future, evolve organizations and advance the human experience.


For more information, please visit the frog website at www.frogdesign.com. Follow frog on Twitter: @frogdesign.
The mAgri Design Toolkit is a collection of instructions, tools, and stories to help develop mobile agriculture products by applying a user-centered design approach.

The mAgri Design Toolkit is one of the outcomes of a two-year initiative led by the GSMA mAgri Program. From 2014 GSMA worked closely with six mobile network operators (MNOs) — Airtel Malawi, Dialog Sri Lanka, Grameenphone in Bangladesh, Ooredoo Myanmar, Telenor Pakistan, and Vodafone Ghana — to develop and launch life-changing mobile agriculture services.

The MNO-led services target smallholder farmers with a focus on providing agriculture information and advisory services, as well as nutrition-sensitive agricultural information and tips, and in some cases mobile financial services.

The GSMA mAgri Program partnered with frog to bring the user-centered design approach into the product development process, to better connect the mAgri services with the needs of farmers and other key actors in the ecosystem. frog has been coaching UX experts within each of the MNOs, working closely with them to establish and practice user-centered design methods tailored to the mobile agriculture context and needs. All the tools provided as part of the mAgri Design Toolkit have been tested, proven, and refined multiple times on the ground before being included in this collection.

The design toolkit is intended as an instrument to provide operational guidance to the development and implementation of mAgri services. Designing services around the needs of the rural user is critical to the success of mAgri services. Besides service design, MNOs and value-added-services (VAS) providers must form partnerships with ecosystem players, including agriculture content providers. They must also identify the best-suited technology delivery channels for their target markets, and then implement viable marketing strategies, including both above-the-line (ATL) and below-the-line (BTL) marketing. All of these elements are intertwined with user design and are critical to a viable and sustainable mAgri business model.

Please see the appendix for the suggested GSMA resources that should be used alongside this toolkit.
User-centered design helps MNOs and VAS providers to understand what farmers really need, thereby increasing the chances of launching successful mAgrí services.

Many mAgrí services that have launched in emerging markets have suffered from low user adoption, despite coming from leading mobile network operators and value-added service (VAS) providers.

The rural segment is highly price sensitive, requiring service providers to consider highly competitive pricing and freemium models. Reaching scale is therefore critical in order to derive commercial benefits.

Tackling these challenges can be daunting for any service provider, but the size of the agricultural sector and the number of people who rely on farming for their livelihood in emerging markets, means that service providers can’t ignore the opportunity to deliver services to this largely under-served segment. GSMA mAgrí estimates the labor force in agriculture to be 552 million, and agricultural workers with a mobile phone to be close to 200 million in Sub-Saharan Africa and South Asia in 2015.

I feel adopting a user-centered design process is a must when you develop mobile products for a segment such as farmers. It gave me the confidence that we have got the basic elements of the product right in order for it to be accepted by the users. We are continuously sharing our learning with fellow product teams in Dialog to help them understand the user better.

Inas Jenabdeen, product manager, Dialog
The user-centered design approach helps mAgri service providers get a much better understanding of this customer segment and their ecosystem, and then design appropriate products and services that meet the real needs and challenges of the customer. This approach is not typically followed by many MNOs or VAS providers, which has resulted in several poorly designed products that do not meet the demand and have gained little traction with farmers.

The user-centered design approach puts farmers and their experience at the center of the product and service design, and is grounded on a continuous and structured interaction with end users. This approach helps to translate the solid understanding of users who are into a product and value proposition, and ensures that all aspects of the service — from the overall experience to each detailed feature — are verified with target users.

The work that frog Design has been doing to support key actors to design products and services for smallholder farmers is really revolutionary and has certainly changed the way I think about serving the rural poor, even after 20 years of experience. Frog’s meaningful and compelling client-centric insights are helping field staff, management and boards of directors to design for and meet the needs of smallholders, making sense of how technology can have a human face and be impactful, while being sustainable.

Leesa Shrader, AgriFin Accelerate program director, Mercy Corps

While exploring a complex value chain like agriculture, we believe that the GSMA mAgri Toolkit can effectively translate user-centered design into sustainable social impact.

Muhammad Farooq Shaikh, director digital services, Telenor Pakistan

By integrating a deep understanding of the user when designing or adapting an mAgri product, service providers can drive successful innovation in the mAgri sector and generate services that can be commercialized faster and become more widely adopted.
PRODUCT DEVELOPMENT CYCLE

- Concept Development
- Concept Realization
- Execution & Scaling
- Plan
- Learn
- Create
- Develop
- Maintain
- Launch
The mAgri Design Toolkit displays a process together with a set of methods and tools to integrate user-centered design at any stage of the product development cycle.

The mAgri user-centered design process focuses on engaging the farmer at any stage of the product development, from the early moment of identifying the opportunities and generating concepts, to the advanced stages of product realization, execution, and scaling.

We can distinguish five moments in the user-centered design process, and map those against specific phases of the product development cycle.

1) The **plan, learn, and create** steps focus on building a foundational understanding of farmers and their ecosystem, preparing the team for field research (plan), gathering insights from users (learn), and transforming the data collected into opportunities and service ideas (create). The create step represents the transition from concept development to realization, dictating design and strategic decisions.

2) The **develop** stage looks at ways to extend the interaction with users during concept realization by providing tools and methods that allow the team to continuously evaluate the service idea, value proposition, and detailed features. The feedback collected is then used as input to refine the product execution and strategies.

3) After launch, the **maintain** phase evolves the tools and methods used during product realization to look at new design iterations and extensions of the product based on the actual user experience. The maintain phase also loops back into the planning phase, setting the stage for new cycles of research and idea generation.

It is important to note that this mAgri Design Toolkit does not cover other aspects that are critical to making an mAgri product successful (e.g., getting C-level buy-in). Please see the appendix for the suggested GSMA resources that should be used alongside this toolkit.
To apply a user-centered process, you need to first align on team setup, existing knowledge, and assumptions. Discuss the overall goal for your mAgri service and how to set up user research to ensure that farmers’ voices and their ecosystem are integrated into the mAgri service.

To create meaningful products, you need to be closer to user, market, and context of use. This understanding starts with going out in the field, asking the right questions, and testing hypotheses with farmers to guide you throughout the design process.

To develop a mAgri concept that is deeply rooted in insights captured in the field, you need to analyze the information collected, and identify the right opportunities for your mAgri service, considering all the diverse voices of the farmers and their ecosystem.

To shift from concept to realization, you need to prioritize features and plan how to create value, deliver, and capture it over time. While the product starts to take shape, organize additional validation sessions with the user to make sure you are going in the right direction.

The launch is only the beginning of the journey, not the goal. When the product launches, you need to continuously gather feedback from farmers and the ecosystem to refine and improve the product, looking at all the aspects that shape the final user experience.
## Tools

### Preparation
- Organization Readiness
- Team Setup
- Collaboration Tools
- Discussion Guide
- Note-Taking Template
- User Archetypes
- Life Cycle Mapping
- User Validation Plan
- Monitoring Plan

### Activities
- Success Criteria
- Mission Countdown
- Hypothesis Generation
- Ecosystem Mapping
- In-Depth Interview
- Farming Life Cycle
- Trust Circle
- House-Farm Tour
- Intercept Interview
- Ideation Exercises
- Customer Journey
- Card Sorting
- Low-Fidelity Prototypes
- Content Considerations
- Agent Training
- Go-To-Market Strategy

### Outcomes
- Recruiting Criteria
- Research Plan
- Research Insights
- Refined Hypotheses
- Value Proposition
- Service Blueprint
- Minimum Viable Product
- Advocate & Skeptics Map
- Business Model
- Customer Journey Issues
- Product Iterative Planning
WHEN TO APPLY IT

How the Design Toolkit can help you come up with a new service idea.

If you have not yet developed an mAgri service, or the product you have in the market has not been successful, the user-centered design process can help to build a deep understanding of farmers and the complex system of cultural, societal, financial dynamics they are part of. The learnings collected in the field become the foundation for your team to generate ideas for new mAgri services or to redesign the existing ones, giving the opportunity to always verify any design or strategic decisions against user insights.

RECOMMENDEDTOOLS:

- Organization Readiness, Success Criteria,
- Ecosystem Mapping, Recruiting Criteria,
- Research Plan, Discussion Guide, In-Depth Interview, Intercept Interview, Research Insights,
- User Archetypes, Customer Journey, Value Proposition, Minimum Viable Product

How the Design Toolkit can help refine the product you are developing.

If you are developing a new mAgri service and you are unsure how it will be perceived in the market and generate adoption, the user-centered design process can help verify and adjust the product design and strategy before launch. You can test the mAgri service idea by creating rough prototypes of the service, evaluating the value proposition and prioritizing certain features with farmers, assessing the distribution strategy with all the actors in the ecosystem, and integrating your lessons into the product development process.

RECOMMENDEDTOOLS:

- Ecosystem Mapping, Recruiting Criteria,
- User Validation Plan, Discussion Guide,
- In-Depth Interview, Card Sorting, Low-Fidelity Prototypes, Trust Circle, Farming Life Cycle,
- Content Planning, Agent Training, Go-To-Market Strategy, Customer Journey Issues
Following a user-centered design approach does not guarantee a successful product; other factors need to be in place to get the desired outcome.

It is important to consider these factors when you adopt a user-centred design approach for your mAgri service:

1. **Internal Buy-In**  
   Make sure you have the buy-in and support from the right people in your organization. mAgri products that don’t have C-level visibility and support often struggle.

2. **Market Size Assessment and Business Case**  
   Conduct a market sizing assessment and develop a business case for your mAgri service. This will be critical to get C-level and organizational buy-in.

3. **Budget**  
   Secure budget for the research and design process. After reading the toolkit, work out the budget required to do all the activities relevant for your stage of product development.

4. **Partners**  
   Find the right partners to work with. MNOs and other mobile service providers need to partner with organizations that can bring the agriculture knowledge and support the research.
ALIGN ON THE OVERALL GOAL FOR YOUR mAgri SERVICE AND SET UP THE USER RESEARCH TO ENSURE FARMERS’ VOICES AND THEIR ECOSYSTEM ARE INTEGRATED INTO THE mAgri SERVICE. REMEMBER TO CHECK BACK OFTEN ON THE GOAL AND RESEARCH, AS YOU CAN KEEP ITERATING ON THESE WHEN YOU LEARN MORE ABOUT WHAT FARMERS WANT AND NEED.
We started by analyzing a high-level product road map and listing all the internal teams that were relevant at each stage of the road map. For example, we recognized that in the development phase the tech team would have been key, while in the go-to-market phase the marketing team would have become more important.

Based on that analysis, when we set up the first team for the initial phases of field research, we tried to form a core team with representatives from all the functions (UX, marketing, and technology), but we didn’t manage to have them involved. We thought it was fine, because we could have involved them later in the process. However, this actually turned out to be a problem.

We now have to keep sharing the user perspective and suggest changes to the materials that marketing proposes based on the insights we have on farmers. This consumes a lot of our energy, as we must fill a gap that could have been easily avoided by having them participate in the field research.
It’s important to get the core team together starting from the initial stage, especially research. In particular, people from the marketing department are key, as they create the materials targeted for farmers. 

I am now trying my best to get other teams joining us in the field. 

[Inas, Dialog product manager]
At the very beginning, we were absolutely convinced that Airtel could take the product directly to the farmers through the conventional go-to-market strategies that have been applied to many other products. The assumption was that different sources of information would have reached the different types of farmers, covering a good range of the spectrum.

At that point, we did the ecosystem mapping exercise to understand a bit better the different players involved and get ready for the research.

We used a set of cards, named with different population groups and roles in the society. We mapped their connections and importance for the farmers, who represent our target market.

During the mapping activity, we identified the links between the different players in the ecosystem and reflected on how they influence each other either economically or in the decision process.
Through the exercise, we identified that other farmers play a critical role in sharing information. We then tested this in the field, and found that the lead farmers are actually the most trusted source of information. This insight completely changed our go-to-market (GTM) strategy. Instead of using Airtel agents, we decided to rely on lead farmers to promote the product.

In conclusion, the insights about the ecosystem made the role of the lead farmers strategic in the GTM definition.

The exercise gave us a bigger picture about how complex the agriculture system is. [Airtel, product manager]

It was interesting to investigate what role mobile operators have on farmers’ lives. We realized that we didn’t know much about it.
To create something meaningful, you need to be closer to the user and to the market and contexts of use. This understanding starts with going out in the field, asking the right questions, and testing hypotheses with farmers to guide you throughout the design process.
The trust circle exercise was a fundamental exercise that helped inform our mAgri product. We learned many surprising insights about who the farmers trust for information, and it was very different from what we expected. To prepare for the exercise, we identified eleven players who are part of the farmer’s day-to-day life for information and made a card to represent each one. We could bring the cards into the fields. The trust circle exercise was great to do at the beginning of in-depth interviews with farmers, because the farmers enjoyed the hands-on activity and the discussion.

While each farmer had some differences in whom he or she trusted, it was overall quite consistent across all the interviews. There were three key insights from the exercise that surprised us. First, we learned that farmers don’t really trust other farmers, and mainly see each other as competitors. Second, we were surprised that mobile network operators (MNOs) are not trusted for farm information. Third, we learned that farmers gain trust by validating the information with many sources (e.g.,中间人, input dealer shop, TV, and radio), and won’t just trust a single source of information instantly.

We assumed that farmers would just trust the information sent out to them, but we realized that farmers don’t automatically trust information from mobile network operators (MNOs). They see us as experts about phones, but not farms.
Based on these trust dynamics, we designed the mAgri service that incorporates these learnings. We wanted each farmer to feel the mAgri service is customized for him or her only and not the whole community. We want farmers to get information that makes them more competitive.

Also, we have been working closely with popular farmers in the community and the government to build more trust with the mAgri service, as we know that the mobile operator brand isn’t enough to get farmers’ trust. Also, we decided to make the content sound like a conversation between many different types of people, so that farmers feel they are getting a diverse set of voices on the advice.

We have just completed the user testing with some farmers, and received positive feedback about farmers trusting the mAgri service.

The go-to-market strategy and content for the mAgri service was heavily influenced by the findings from the trust circle exercise.

[Lilian, frog program manager]
Our team developed an initial mAgri concept before going into the field. The aim of the product was to develop a stronger link between farmers and buyers by providing better access to information (e.g., prices, amount of crops to sell).

Before our first interview, the team took some time to write down the assumptions about farmers that led to the concept. After spending about three weeks in the field, we revisited each hypothesis and found that many of them were not correct. For example, we thought that farmers lacked access to pricing information. During the field research, we learned that farmers have multiple ways to learn about pricing, such as radio, TV, and other farmers who just went to the market. However, just knowing the price doesn’t empower them, because they are located far away and their quantity of crops isn’t large enough to negotiate for a better price. So, what farmers actually lack is negotiation power. Having more information about the latest prices doesn’t necessarily mean a farmer is more empowered to get a better price.

We are really happy that we tested the hypothesis in the field rather than sticking to them and failing once we launch the product.

The initial hypothesis was significantly updated after the field research.
The hypothesis exercise was important for the team to realize that basic assumptions we make about the farmers aren’t always correct, and it’s important to speak with the farmers themselves to make sure we aren’t imposing our own values and beliefs into the design.

Farmers don’t have access to latest market prices and buyers, resulting in diminished bargaining power and income.

Farmers don’t follow best agricultural practices and misuse chemicals because they lack expert knowledge and advice.

The mobile device is an unfamiliar channel for accessing agricultural information.

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**INITIAL ASSUMPTIONS**

<table>
<thead>
<tr>
<th>Assumption</th>
<th>Revised Hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmers don’t have access to latest market prices and buyers, resulting in diminished bargaining power and income.</td>
<td>Farmers do have timely access to market prices and buyers, but access to information alone does not necessarily improve negotiation power.</td>
</tr>
<tr>
<td>Farmers don’t follow best agricultural practices and misuse chemicals because they lack expert knowledge and advice.</td>
<td>When expert advice seems risky and not validated, farmers deliberately ignore the advice and follow their own instinct and experience.</td>
</tr>
<tr>
<td>The mobile device is an unfamiliar channel for accessing agricultural information.</td>
<td>The mobile device is an unfamiliar channel for accessing information, and it won’t replace the other channels in the short term as a key, trusted source of farming information.</td>
</tr>
</tbody>
</table>

Even though my family farms, most of my hypotheses about the farmers were proven to be wrong.

[Sathyan, Dialog UX expert]

After doing research we realized that it is always better to step out of the office and understand the user better before creating products.
ARE YOU CREATING AN mAgri SERVICE THAT IS DEEPLY ROOTED IN INSIGHTS FROM THE FIELD?
CREATE IS ABOUT IDENTIFYING THE RIGHT OPPORTUNITIES AND FIGURING OUT HOW THEY AFFECT YOUR mAgri SERVICE. IT’S CRITICAL THAT THE CREATE PROCESS TAKES INTO ACCOUNT THE DIVERSE VOICES OF THE FARMERS AND THEIR ECOSYSTEM.

**PREPARATION**
- Make sure you have the right assets to start generating ideas
- USER ARCHETYPES
- LIFE CYCLE MAPPING

**ACTIVITIES**
- Methods and tools that can help you generate concepts
- IDEATION EXERCISES
- CUSTOMER JOURNEY

**OUTCOMES**
- VALUE PROPOSITION
- SERVICE BLUEPRINT
- MINIMUM VIABLE PRODUCT
- ADVOCATE & SKEPTICS MAP
- BUSINESS MODEL
SHIFT FROM CONCEPT TO REALIZATION BY PRIORITIZING FEATURES AND PLANNING HOW TO CREATE VALUE, DELIVER, AND CAPTURE IT OVER TIME. WHILE THE PRODUCT STARTS TO TAKE SHAPE, ORGANIZE ADDITIONAL VALIDATION SESSIONS WITH THE USER TO MAKE SURE YOU ARE GOING IN THE RIGHT DIRECTION.

PREPARATION
Plan how to collect user feedback during the service development

USER VALIDATION PLAN

ACTIVITIES
Methods and tools that can help you collect feedback

CARD SORTING
LOW-FIDELITY PROTOTYPES

OUTCOMES
Methods and tools to adjust what you are doing

CONTENT CONSIDERATIONS
AGENT TRAINING
GO-TO-MARKET STRATEGY
Stories from the field

Low-Fidelity Prototypes

Bangladesh
GSMA + Grameenphone

You have to rapidly update your prototypes, everyday.

How we used paper prototypes to assess the experience and brainstorm new ideas.

We started to create the first paper prototypes during field research, and we continued across the different stages of the design process. The assumption was that the paper prototype was the most easy and intuitive way for the user to understand the interaction concept.

During the in-depth interviews, we wanted to cover all the different aspects of the service delivery, from registration to content access.

The paper prototypes were helpful to discuss the registration process, reviewing it with the users step by step, screen by screen.

The most important learning we developed through this activity is that the paper prototype is an evolving tool, that you need to be ready to rapidly change during the field activities. Every day.

Thanks to the prototypes, users could get almost the real experience of the product and were able to discuss pain points and benefits, providing additional ideas. Based on the feedback we could develop the mobile radio-like dynamics (which has not changed in the development) and re-think the payment process.
I got real feedback about what farmers really want and changed the design. [Maq, Grameenphone UX expert]

I’ll work with paper prototypes on any other future project.
The way in which we approached the go-to-market strategy was by relying on the sales agents and lead farmers as key advocates for our product, based on the level of trust they have in the farmers’ ecosystem.

We believed that the best way to get people on board was going to be through individual sales with sales agents. We also believed that the training of sales agents and lead farmers would have been relatively easy. With these assumptions in mind, we organized the first training.

A few days before the event, a local in the community organized farmers by creating a notice to organize our arrival. By the time the Vodafone Farmers Club team arrived, there were a lot of people waiting.

At that point, we realized that engaging people as a group was much more beneficial than involving single individuals. But we needed a group sales strategy to make it a quick and friendly user experience.
In fact, during the group training with sales agents and lead farmers, a lot of questions were raised, clearly demonstrating that the manual needed to be easier to understand for our audience. The training with the sales agents and lead farmers needs to be intensive, and enable them to convey the right message to the farmers.

Training a group is of course different from training a single user. We needed to adapt.

[Nana, Vodafone Ghana product owner]
THE LAUNCH IS ONLY THE BEGINNING OF THE JOURNEY, NOT THE GOAL. WHEN THE PRODUCT LAUNCHES, CONTINUOUSLY GATHER FEEDBACK FROM FARMERS AND THE ECOSYSTEM TO REFINE AND IMPROVE THE PRODUCT, LOOKING AT ALL THE ASPECTS THAT SHAPE THE FINAL USER EXPERIENCE.
Download the full toolkit and learn how to use each tool:

SECTION COVER
Each section opens with a description of the product development phase and a summary of the tools suggested for preparation, activities, and outcomes of the phase.

TOOL DESCRIPTION & INSTRUCTIONS
Each tool is described with indication of time, materials, complexity, and resources needs (on the left side) and detailed instructions (on the right side).

STORIES FROM THE FIELD
Some of the tools include real stories from the field that help put a specific tool into context and provide additional suggestions on how to apply it.

TOOL TEMPLATE
When needed, a blank worksheet or template is also provided: you can easily print out the worksheets you need and start practicing!
Further reading on Agri VAS

MARKET OPPORTUNITY AND BUSINESS CASE

**Agricultural value-added services (Agri VAS): market opportunity and emerging business models (2015)**
Estimates the size of the potential Agri VAS market in South Asia and Sub-Saharan Africa and presents an in-depth analysis of the business models in the market today.

**Agricultural machine-to-machine (M2M): a platform for expansion (2015)**
GSMA investigates the opportunity for mobile operators in the Agricultural M2M space.

TECHNOLOGY

**Guidelines for agricultural call centers (2014)**
Lays out a step-by-step process for establishing an agricultural call center.

**Agri VAS functional requirements and best practice: SMS & IVR (2014)**
Outlines the different types of Agri services that can be delivered with SMS and IVR, common pitfalls, and best practices.
CONTENT

Mobile market information for Agri VAS operators: a quick start guide (2013)
Applying the concept of market information systems to mobile delivery service channels.

Guidelines for creating agricultural VAS content (2013)
A guide to understanding the scale and scope of different agricultural content requirements and a step-by-step process to deliver against them.

PRODUCT & MARKETING

Women in Agriculture: a toolkit for mobile services practitioners (2014)
Outlines the case and considerations for designing an Agri service “through a gender lens.”

Mobile user analytics: a case study in mAgri (2014)
This guest study from the M4D Impact team discusses the value of user analytics for improving mobile agriculture services.
AGRI VAS

**Agricultural Value Added Services (Agri VAS): Market Entry Toolkit (2011)**
This comprehensive document explores the opportunities for Agricultural VAS and covers emerging best practices on marketing, service design, and business modeling.

mAgri CASE STUDIES

Outlining progress and best practices in mobile agriculture services.

**Vodafone Turkey Farmers’ Club (2015)**
An Agri-VAS and bundled service

**Airtel Green SIM (2015)**
An Agri-VAS service in India

**mFarmer case studies and deep dive analyses of Tigo Kilimo, Airtel Kilimo, Orange’s Sènèkèla and Handygo’s mKisan services**, co-funded by the mAgri team under the mFarmer initiative (2014-15)

**Micro-insurance in mobile agriculture (2015)**
Analysis of ACRE, a Kenyan micro-insurance product for farmers

**mKilimo (2011)**
An agricultural call center funded by the mAgri Program
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