



DATA-DRIVEN AGRICULTURE

The Future of Smallholder Farmer Data Management and Use

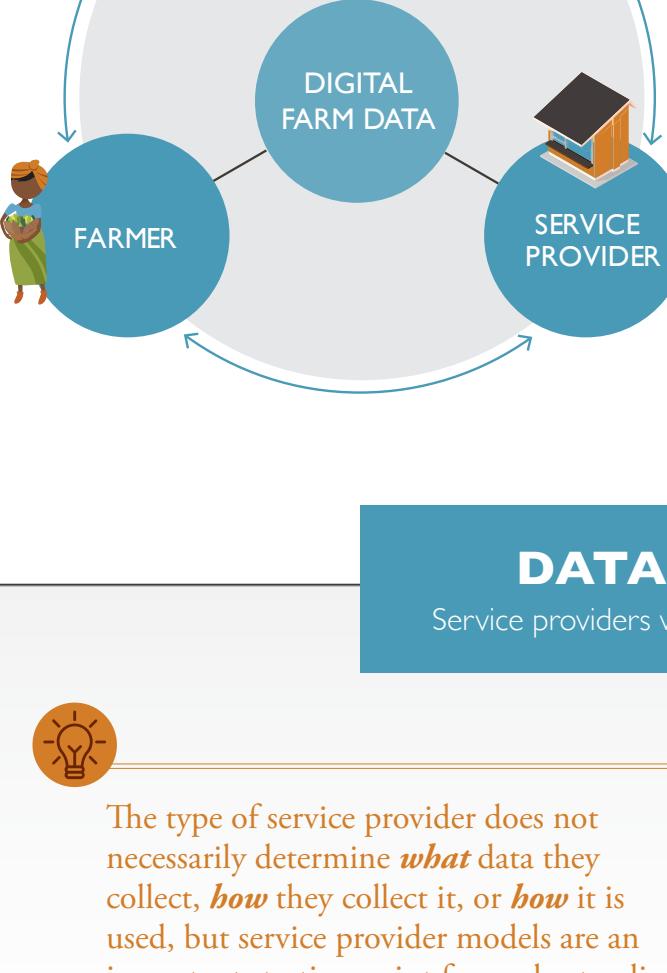
More than **500 million** smallholder farms worldwide play a significant role in food production and genetic diversity of food supply. Mobile technology, remote-sensing data and distributed computing and storage capabilities are changing how smallholder farmers are identified, understood and supported.



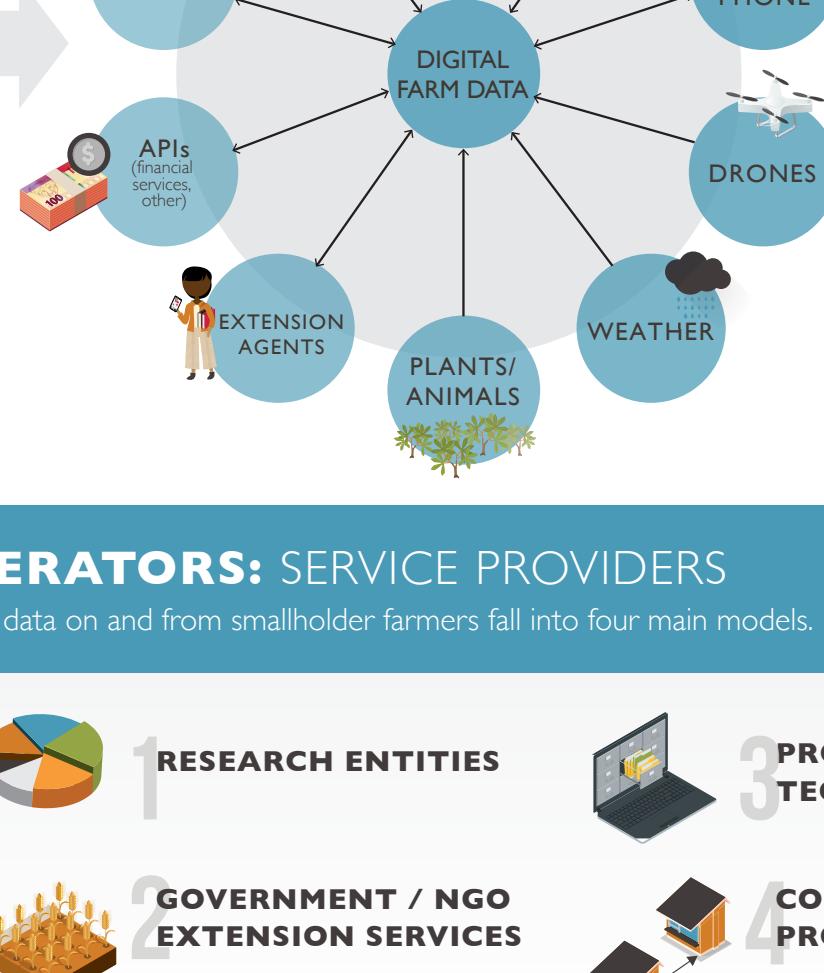
DIGITAL FARMER PROFILES: THEN AND NOW

A digital farmer profile is a profile that can capture comprehensive data on a farmer and their farm. It can be developed over time, provide real-time data flows between farmers and stakeholders, and it can be accessed simultaneously by multiple service providers such as financial service providers, input suppliers, agro-processors and farmer cooperatives.

THEN



NOW



As digital management of farmer profile data becomes the norm, the farmer becomes only one of many sources of that data, and only one of its many users.

DATA GENERATORS: SERVICE PROVIDERS

Service providers who collect data on and from smallholder farmers fall into four main models.



The type of service provider does not necessarily determine *what* data they collect, *how* they collect it, or *how* it is used, but service provider models are an important starting point for understanding farmer profile data management.



1 RESEARCH ENTITIES



2 GOVERNMENT / NGO EXTENSION SERVICES



3 PROJECT MANAGEMENT/TECHNICAL ASSISTANCE



4 COMMERCIAL SERVICE PROVIDERS (B2B AND B2C)

B2B=Business to Business
B2C=Business to consumer

DATA CAPTURE, ANALYSIS AND USE

Digital data capture is the starting point for developing a digital farmer profile ecosystem.

Leveraging the three methods of data capture below increases the accuracy of profiles.

1 PEOPLE FACILITATED

(i.e., extension agents, researchers)



Paper Surveys
Digital Surveys
Human-centered Design
(Qualitative)

Phone-based Capture



SMS
OBD
IVR
Call Center

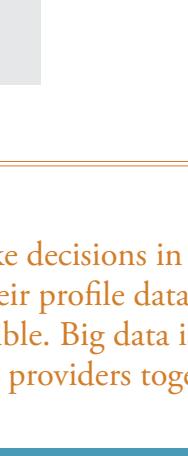
2 MOBILE PHONE

Passive Mobile Capture



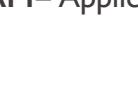
GPS
Phone Usage
Transactions

Mobile Phone Applications



Registration
Usage
Chatbots
Crowdsourcing

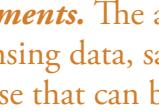
3 REMOTE SENSING OR CAPTURE



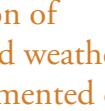
Sensors



Satellite



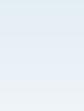
Drones



Weather

National ID Registry
Land Management
Registry Facebook
Phone Data
Other Datasets

DATABASE



Farmers need to make decisions in **critical moments**. The aggregation of information from their profile data, remote-sensing data, satellite and weather data makes this possible. Big data is one promise that can bring fragmented data, resources and service providers together to support a farmer's ecosystem.

DATA AND REVENUE FLOWS

Changing methods of data capture are giving rise to new configurations within service provider models.

NGO / GOVERNMENT

RESEARCH

GOVT.

NGO

TA PROVIDERS

B2B

FARMER

COMMERCIAL

B2C AGGREGATOR

B2C INFORMATION SERVICES

B2C MARKET SERVICES

B2C FINANCIAL SERVICES

DATA AND REVENUE FLOWS

DONORS & INVESTORS

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KEY CONSIDERATION

When assessing how to leverage farmer profile data USAID staff and Feed the Future partners should consider:

- How are smallholder farmers defined?
- What is the landscape of service provider models?
- What is the technology environment for supporting digital capture, analysis and timely use of data?
- What data is commonly collected, what are the gaps and is data being shared?
- Are there farmer profile data sources that can be leveraged to build dynamic farmer profiles?
- What farmer archetypes have been created by programs and can they be leveraged by other service?
- What is the policy and legal environment for data sharing, consumer protection and privacy?
- How is data shared post-project?
- What may be the utility of the projects' data assets for other service providers?
- What investments by USAID and other donors can support the development of a digital data ecosystem for farmer profiles?



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For additional information digital agriculture technologies, including farmer profiles, please visit www.usaid.gov/digitalag.

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