

Digital Agricultural Advisory Services (DAAS)

Powering data sharing across the food and agriculture system in Ethiopia

The Ethiopian government has made significant investments in an extension program to serve the country's 17 million smallholder farmers. Despite this, government entities and other private and civil society organizations still have limited capacity to share and use data for the cost-effective delivery of targeted advisories via digital channels. Additionally, farmers do not receive relevant and timely advisories—which limits their ability to increase their yields, increase their incomes, and stay resilient in the face of climate change.

DAAS is a five-year project (2019-2024) which will help enable sustained increase of incomes from agriculture for 3.5 million Ethiopian farmers (40% women) in Amhara, Oromia, SNNP and Tigray by:

Strengthen Extension System & Develop Use Cases

Strengthening digital extension channels, such as video and interactive voice response, helping the Government better train Development Agents (DAs) and manage their performance; and developing exemplar use cases that use integrated data to deliver customized services

Develop Foundational Platform

Developing a digital infrastructure for an agricultural advisory platform called FarmStack for secured data sharing across agriculture ecosystem actors

Catalyze Ecosystem of Platform Actors

Catalyzing an ecosystem of public, private, and civil society actors to contribute to and use FarmStack, which is facilitated by embedded governance systems and a gender intentional approach

FarmStack Will Enable Organizations to:

1. Securely share data on their own terms
2. Access farmer feedback and relevant data from other sources
3. Use data assets to build and offer refined solutions/apps

Benefits for Organizations

- Business growth, high customer satisfaction
- Coordinated & cost-effective agricultural ecosystem

FarmStack

DAAS is developing and implementing FarmStack—a technology platform that enables peer-to-peer data sharing between individuals and organizations.

FarmStack Will Enable Smallholder Farmers to:

1. Access customized services and content via multiple channels
2. Trust that their data remains secure and private
3. Share data/feedback with organizations to inform and enable even more choice

Benefits for Smallholder Farmers

- Farmers access & adopt better services & advisories
- Increase in yields and incomes

Partners: DAAS is funded by the Bill and Melinda Gates Foundation and the United Kingdom's Foreign, Commonwealth & Development Office and implemented by a consortium led by Digital Green. This consortium includes Precision Agriculture for Development, Ethiopian Agricultural Transformation Agency and Government of Ethiopia's Ministry of Agriculture (MoA), which will be the eventual owners of FarmStack. DAAS will build the capacity of MoA's extension and ICT directorates to support both design and implementation of use cases and to maintain and grow FarmStack. Other private and civil society organizations such as CIMMYT, ILRI, Land O'Lakes, CABI and CARE will serve as content, channel and technical partners and benefit from the enhanced coordination that FarmStack will bring. Since third party applications can be layered onto FarmStack to address a wide range of use cases, other organizations beyond those mentioned can continue to both use and contribute to FarmStack.

BILL & MELINDA
GATES foundation



Digital
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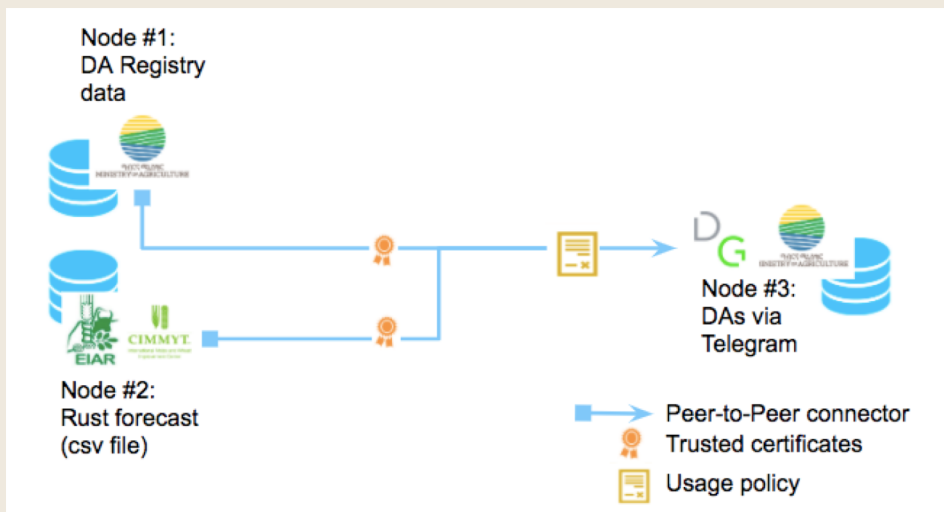
Ethiopian ATA
Agricultural Transformation Agency

Use Cases (specific situations in which products or services can be used): DAAS is initially developing use cases within the wheat and dairy value chains which involve integration of one or more datasets and multiple communication channels such as video, IVR, and telegram. Over time, the learnings from these use cases will inform the design of FarmStack and power other solutions across different commodities and geographies.

Illustrative Example:

Wheat Rust Use Case

FarmStack can help match wheat rust advisories generated by Ethiopian Institute of Agricultural Research (EIAR) with MoA's DA registry (with DA location, contact information) so that DAs receive relevant advisories on likely incidence and severity of rust that they can then pass on to farmers. These advisories can be shared in near-real time via channels like IVR and Telegram which can also be used to collect farmer and DA feedback to continuously improve the quality of advisories.



Magartu Balcha is a wheat farmer in the Oromia region

Without FarmStack

EIAR's weather-based wheat rust forecast is not available to DAs.

DAs offer generic rust management advice which is not relevant to Magartu.

DAs don't have easy ways to collect and incorporate farmer feedback.

Magartu experiences low wheat yields.

With FarmStack

DAs access location and time sensitive, custom wheat-rust recommendations.

DAs share this with Magartu via IVR and Telegram alerts.

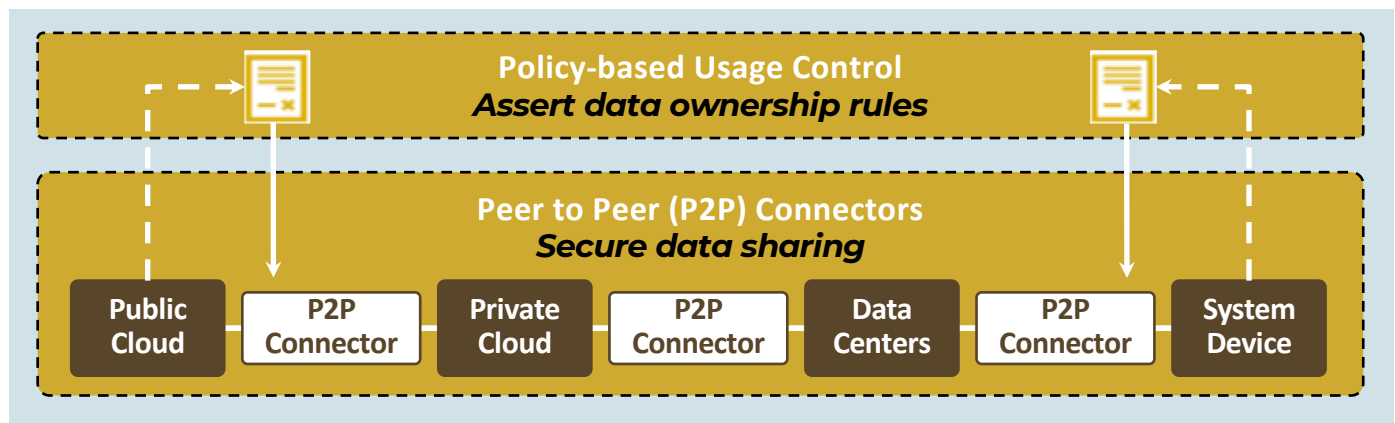
Magartu adopts mitigation practice and offers feedback on what works and doesn't work in her farm.

Magartu's yield increases.

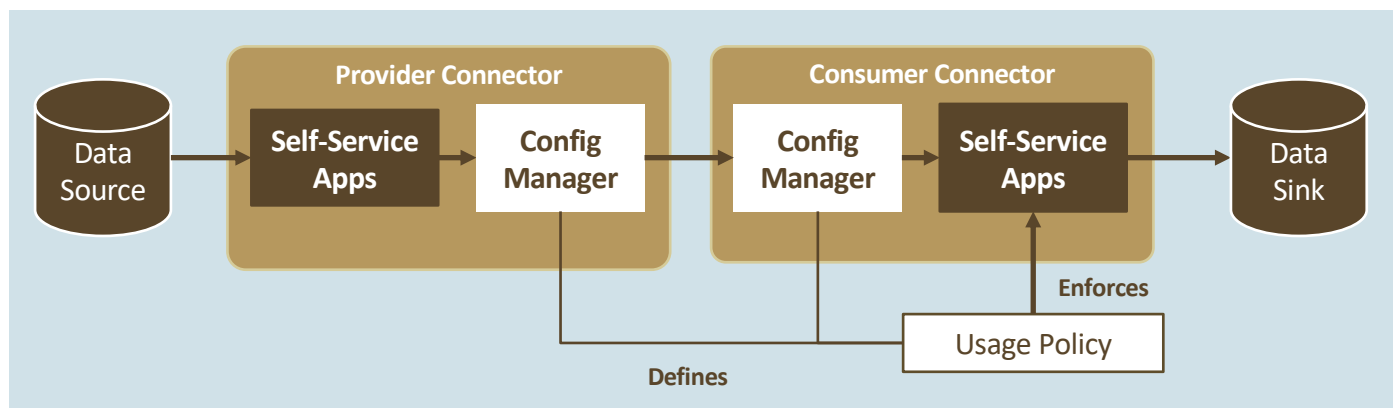
Where are we now?

DAAS continues to strengthen extension channels like video and IVR. It adapted its approaches given Covid-19 to focus on virtual trainings of DAs and farmers by experimenting with new channels such as Telegram. At the request of the Ministry of Agriculture, DAAS is supporting the development of a DA registry which will serve as a foundation to build a performance management tool. We have designed 7 use cases across the wheat & dairy value chains and are now testing each use case for impact and feasibility. DAAS mapped the data availability & data sharing requirements for 60 organizations along with relevant policies that helped inform FarmStack's design using peer to peer connectors. We are drawing on learnings from recent gender analysis to adopt a gender intentional approach while designing use cases and customizing content. All activities are governed by embedded technical and management committees from the district to national levels with government and civil society participation.

FarmStack Architecture: FarmStack is an open-source protocol for the secure transfer of data across the food and agriculture sector. It is currently in design and development phase.



How Does it Work? Data providers and consumers run trusted connectors to exchange data without any third-party. Data providers set data pipelines and usage policies via FarmStack's intuitive interface to codify which parties can access data, for what purpose and for what duration. FarmStack enforces gateway logic so data consumers only use the data they need for specified applications and automates data protection rules with end-to-end encryption. FarmStack will build on solutions offered by existing data exchange platforms like International Data Spaces Association (IDSA). Self-service applications & data sharing templates will help organizations use FarmStack without needing to write their own APIs or developing data sharing protocols from scratch.



Why P2P connectors & usage policies? Consultations with data owners revealed that, above all, organizations would like to maintain control of their own data; ensure data transmission is secure; and that data will be used only for the intended purpose.

Key Features

- **Peer-to-peer** data exchange
- **Automated data processing** rules, like anonymization
- API service-level **data protections**

Governance

FarmStack is governed by a technical working group made up of public, private, research and civil society organizations.

What Will FarmStack Enable?

- **Transfer data across a distributed architecture** across infrastructural, data, and application types.
- **Codify data policies to support use cases.** FarmStack's usage policies provide data protection that meet requirements.
- **Enable ecosystem actors to assert ownership** of data and data sharing connectors by specifying consent, monetization, and right to be forgotten rules.