

# AGRILINKS



## Beyond Hype: Digital Trends, Scale and Evidence

**Speakers:**

*Karl Wurster, USAID Bureau for Food Security*

*Jehiel Oliver, Hello Tractor*

*Ben Addom, Technical Centre for Agricultural and Rural Cooperation*

*Brian King, CGIAR Platform for Big Data in Agriculture*

*Sarah Mackay, Wefarm*

**Moderator:**

*Zachary Baquet, USAID Bureau for Food Security*

**Date:**

December 11, 2019

## Karl Wurster, USAID Bureau for Food Security



Karl Wurster is a Foreign Service Officer for the US Agency for International Development. He currently works in USAID's Bureau for Food Security as the Digital Agriculture and Natural Resources Management Advisor. He has held positions in USAID field missions in Morocco, the Democratic Republic of Congo, Bangladesh, and Nepal. He has a keen interest and extensive experience in using technology to help find effective and efficient ways to answer pressing food security and natural resource management development problems. Karl developed extensive geospatial analytical skills while attaining his PhD in Geography and enjoys applying them to cross-cutting development questions.

## Benjamin Addom, Technical Centre for Agricultural and Rural Cooperation (CTA)



Dr. Benjamin K Addom is the Team Leader, ICTs for Agriculture at the Technical Centre for Agricultural and Rural Cooperation (CTA), the Netherlands. He is an expert in digitalization in agriculture - the intersection of digital solutions for agriculture, big data and analytics, innovative business development, and the enabling environment for scale and sustainability. He has over 20 years of experience with smallholder farming; agribusiness development; extension and advisory service; project design and implementation; resource mobilization and grant management.

## Sarah Mackay, Wefarm



Sarah Mackay leads on managing Strategic Partnerships for Wefarm - the world's largest digital network for small-scale farmers. The Wefarm digital ecosystem for small-scale farmers connects farmers to information, products and services, and markets all by SMS. Sarah is working with companies, international development organisations, grant providers and bilateral institutions to deliver projects which empower small-scale farmers to increase their prosperity. Previously Sarah worked for UCL and small NGOs in similar partnership development roles

## Jehiel Oliver, Hello Tractor



Jehiel Oliver is the founder and CEO of Hello Tractor, an agricultural technology company that connects tractor owners with smallholder farmers in need of tractor services. At Hello Tractor, Jehiel is responsible for overall management and strategy. He has been honored with numerous awards for his work in social entrepreneurship including being recognized by Foreign Policy Magazine as a Top 100 Global Thinker for 2016. He was appointed under the Obama Administration to serve two years as a member of the President's Advisory Council on Doing Business in Africa, where he most recently chaired the technology subcommittee. Prior to Hello Tractor, Jehiel worked in consulting and investment banking. He lives with his wife and daughter in Nairobi, Kenya.

## Brian King, CGIAR Platform for Big Data in Agriculture



Brian King leads the Platform for Big Data in Agriculture, a global program of the CGIAR consortium centered on digital transformation of food systems worldwide. He has led programs leveraging successive waves of transformational digital technologies including establishing early internet networks and policies, building sustainable rural internet, licensing of mobile operators, governance of submarine cables and cross-border backbone networks, developing digital strategies for an array of clients, and building more inclusive mobile financial services, most of this in developing economies. He is a former agriculture extensionist and a California rice farmer.

# Digitalisation for Agriculture (D4Ag)



*Benjamin K Addom, PhD*

*AgriLinks Webinar  
December 11, 2019*



## 1. Digital Agricultural Solutions

1. Development of new & innovative digital solutions
2. Boundary spanning of emerging digital solutions
3. Promoting access to digital agricultural services/solutions



## 4. The Enabling Environment

1. Digital strategies/policies/infrastructure
2. Non-digital enablers - transport, energy, etc.
3. Knowledge generation and exchange



## 2. Big Data & Analytics

1. Source of reliable content for digital solutions
2. Digital farmer profiling – digital identity
3. Other data sources, satellites, UAVs, Open data

## 3. Business Development

1. Digital entrepreneurship – incubation, coaching, etc.
2. Digital literacy and skills for agriculture
3. Business linkages and networks



# THE DIGITALISATION OF AFRICAN AGRICULTURE REPORT

2018-2019



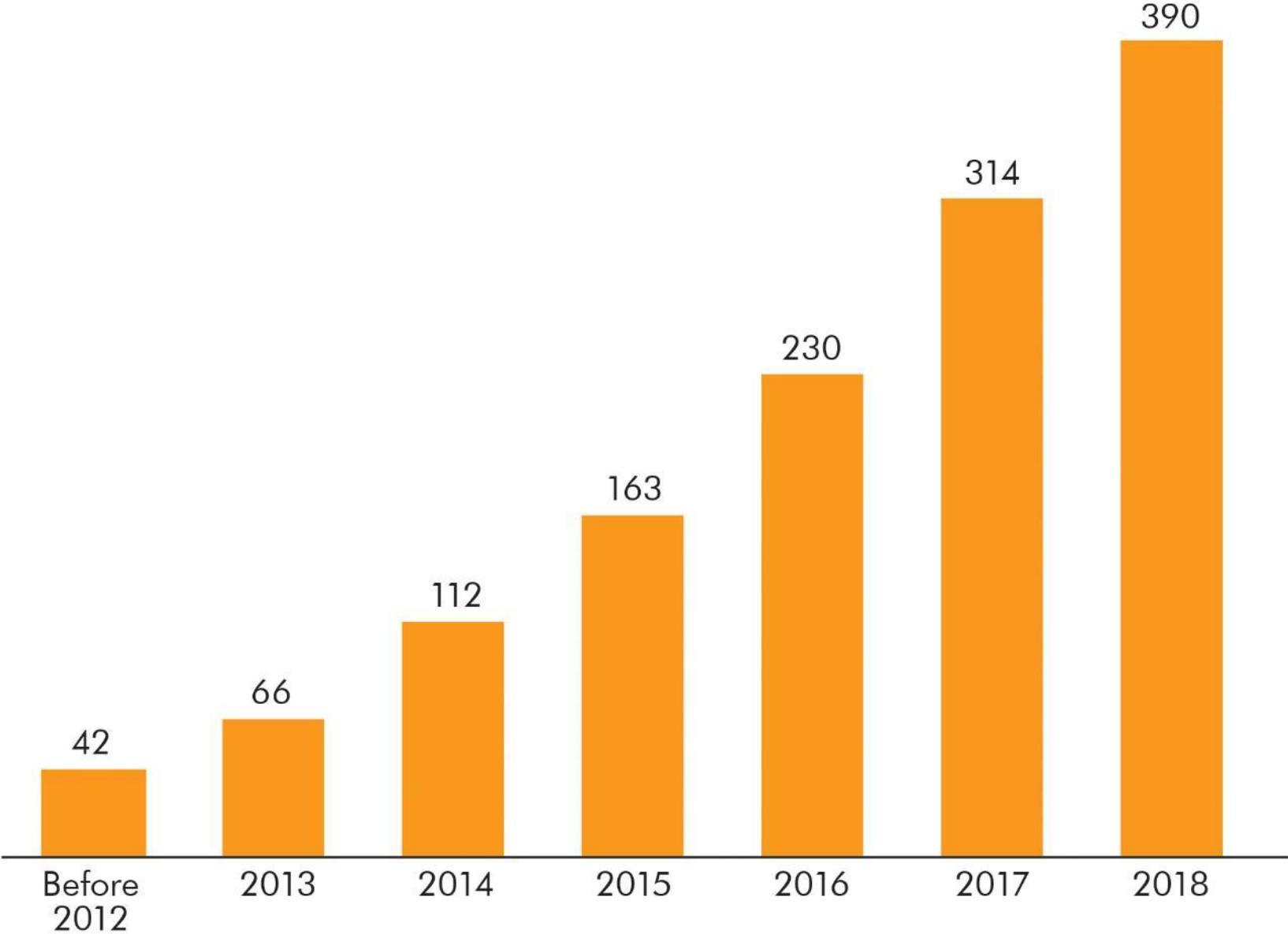
Dalberg Advisors



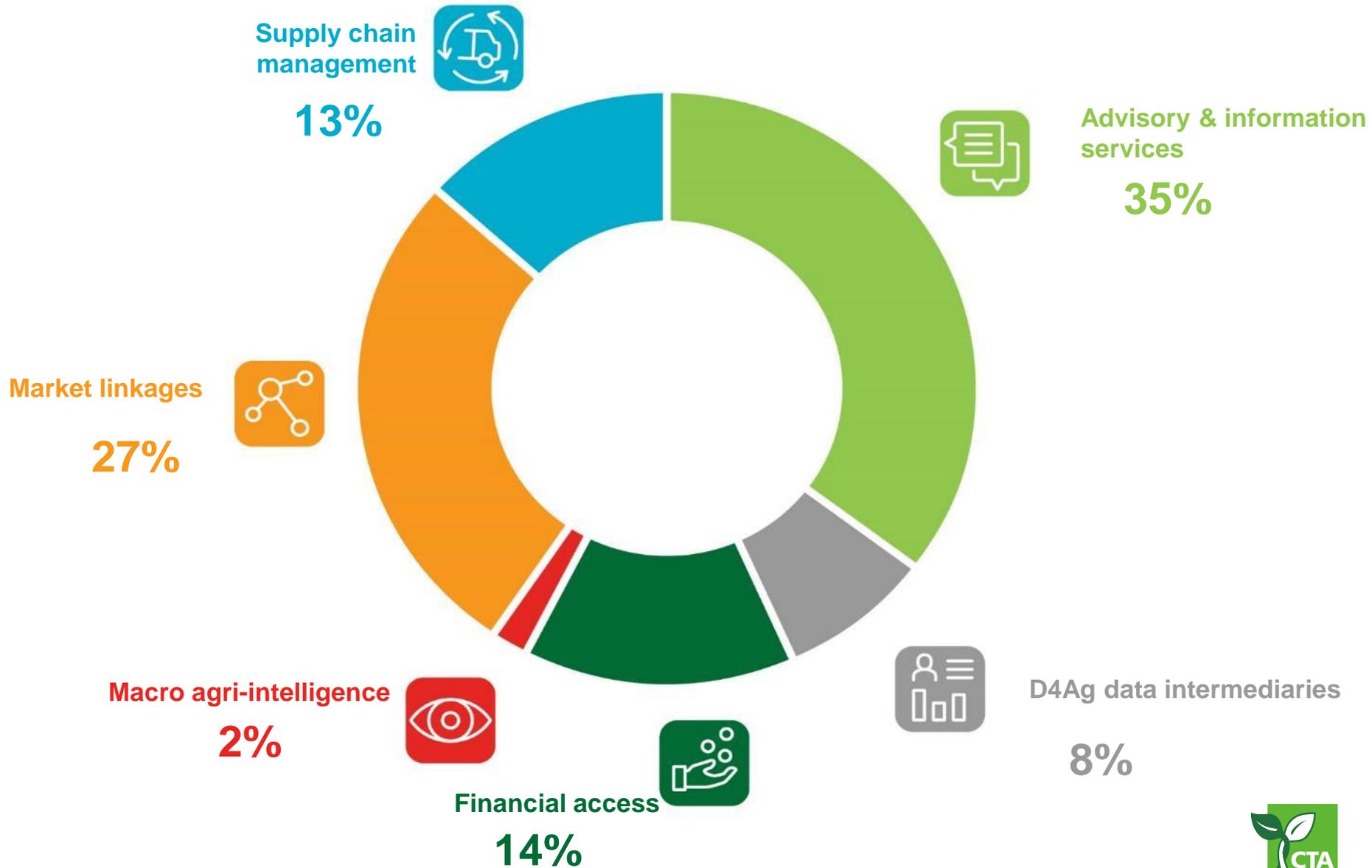


**Current State**

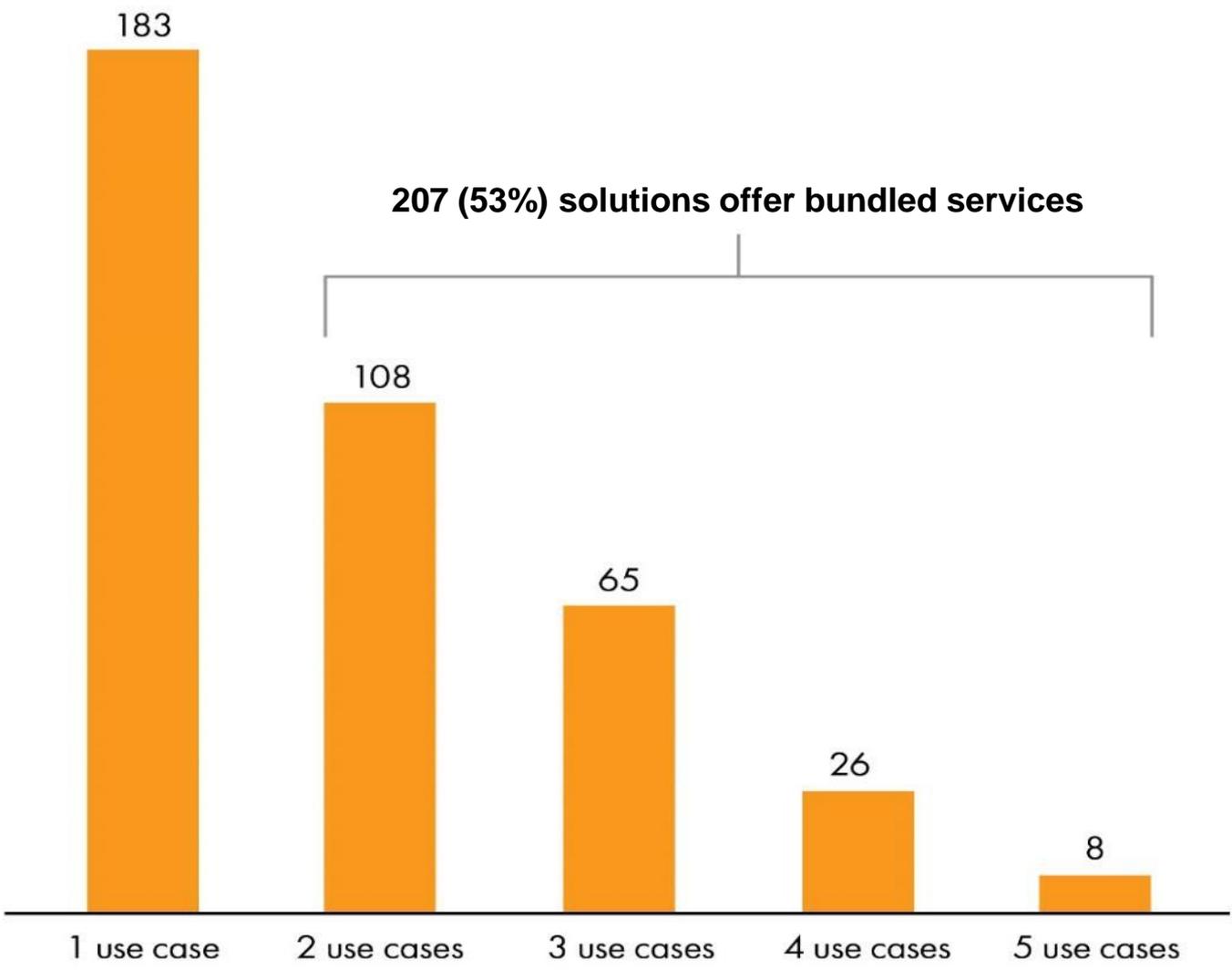
# Rapid Growth of Digital Solutions



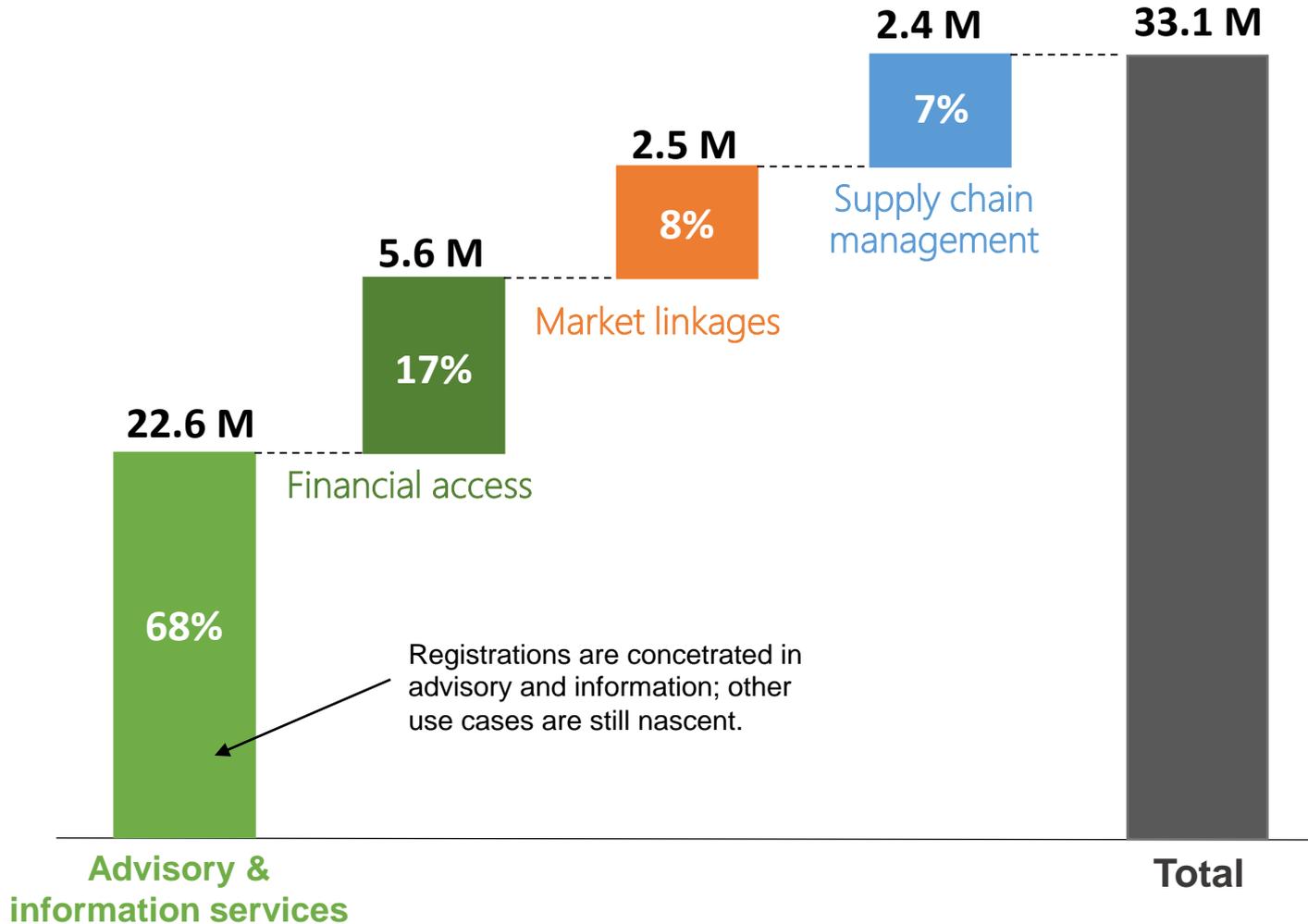
# Solutions by Use Case



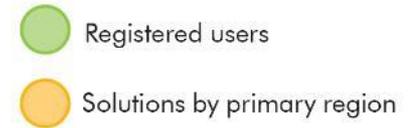
# Bundling Services



# Registrations by Use Case



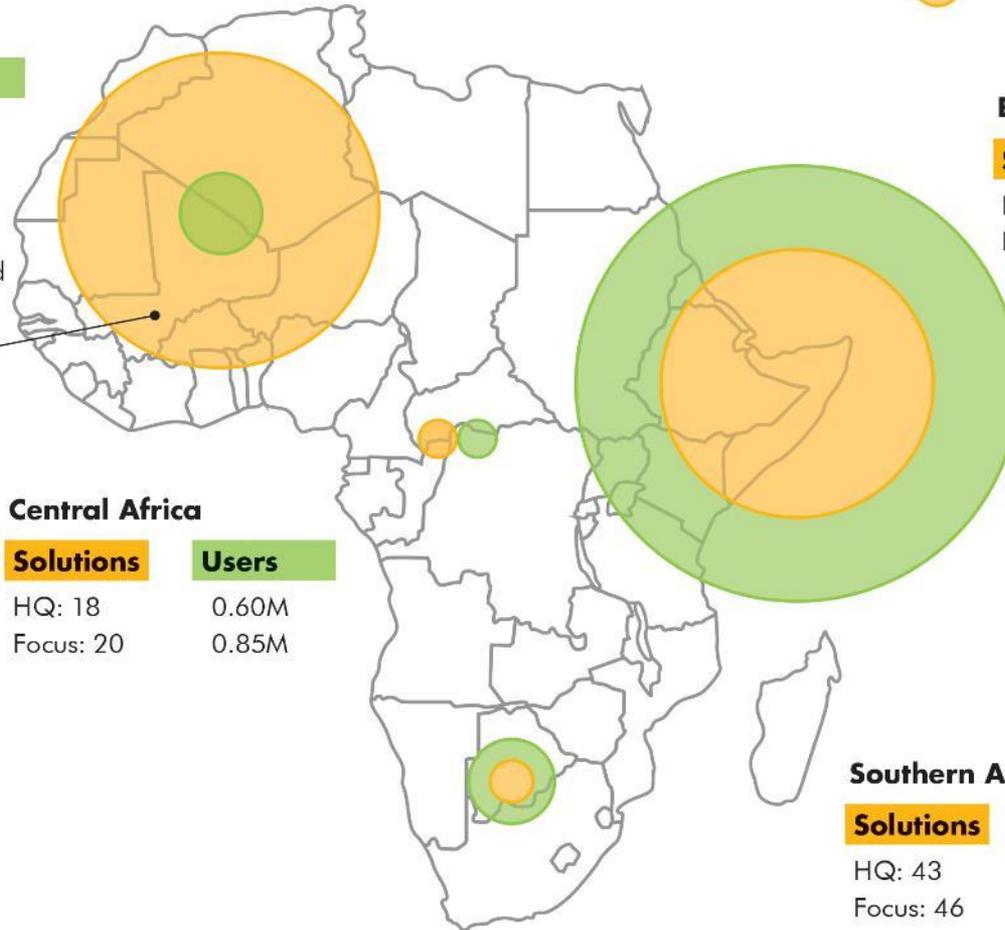
# Registrations by Regions



## Western Africa

Solutions	Users
HQ: 145	3.1M
Focus: 162	4.3M

27 solutions headquartered in the G5 Sahel, account for 573k users. Another 33 solutions have users in the region.



## Eastern Africa

Solutions	Users
HQ: 124	21.0M
Focus: 146	21.8M

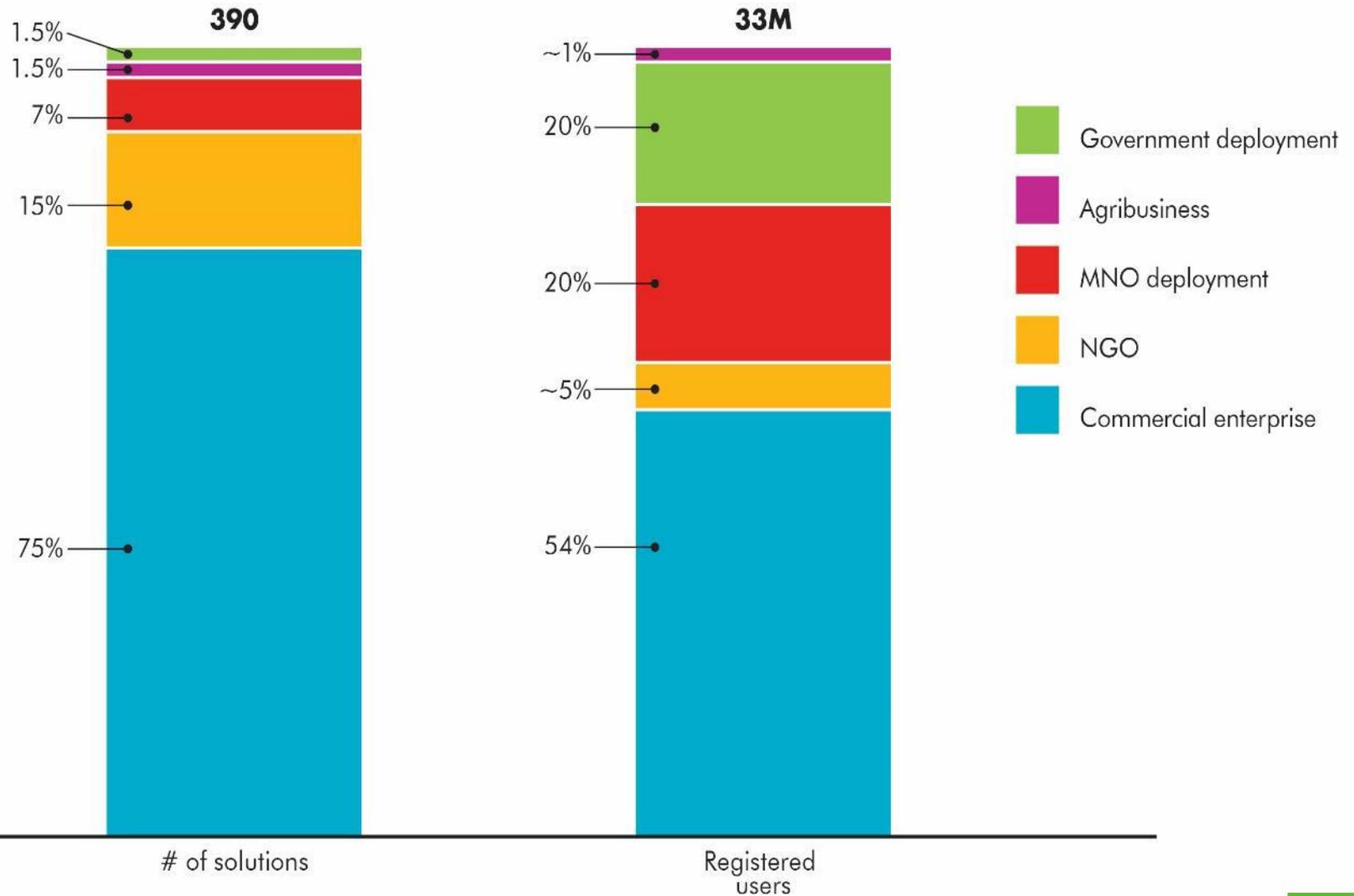
## Central Africa

Solutions	Users
HQ: 18	0.60M
Focus: 20	0.85M

## Southern Africa

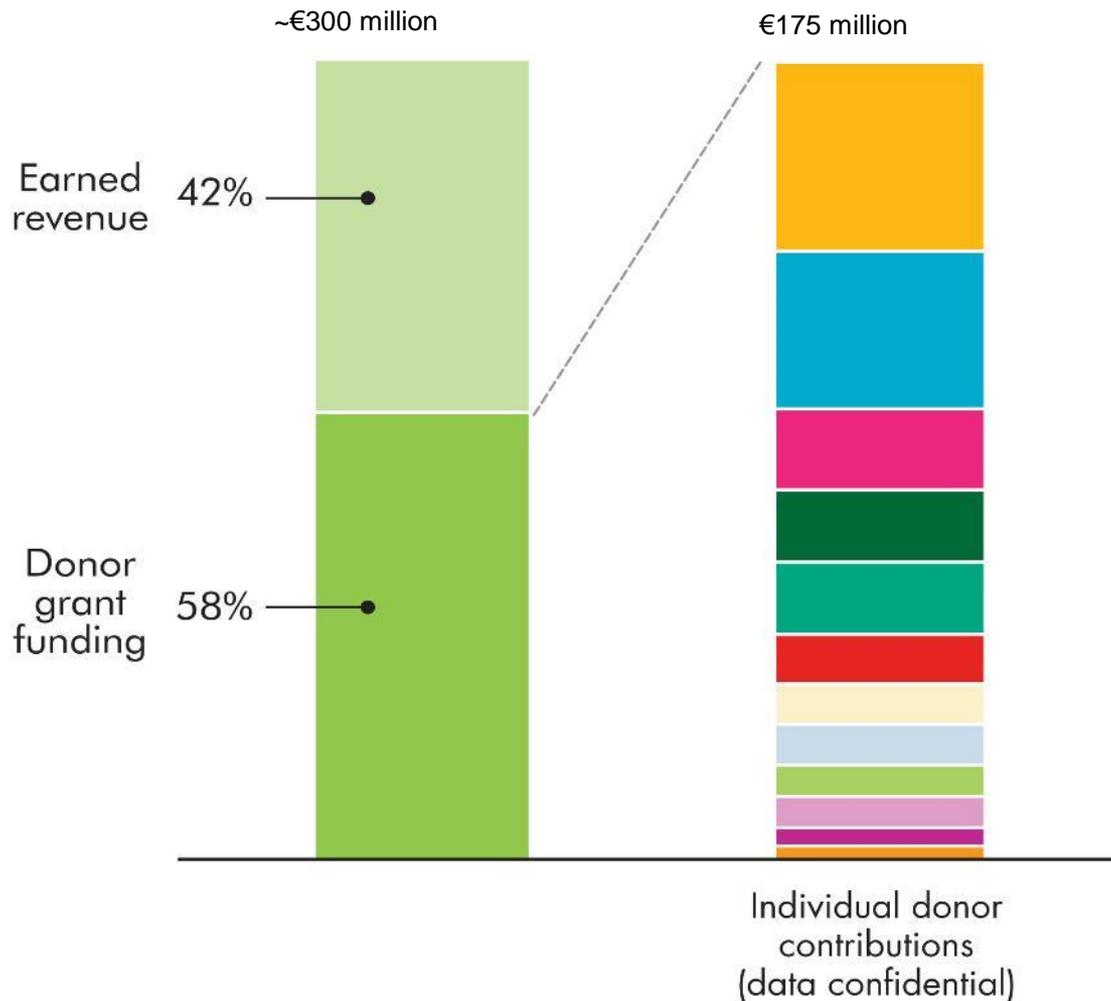
Solutions	Users
HQ: 43	3.9M
Focus: 46	5.8M

# Registrations by Solution Type



# Grant Funding

Estimated annual Sub-Saharan Africa D4Ag funding, 2018  
 € millions, Sub-Saharan Africa, 2018



## Top global D4Ag funders





**Estimated Impact**

# The Power Of Bundling

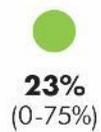
## Smallholder farmers

### Income

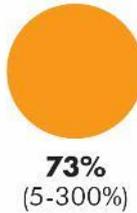
### Productivity



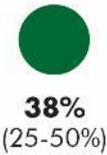
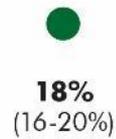
Digital advisory services



Digital market linkages



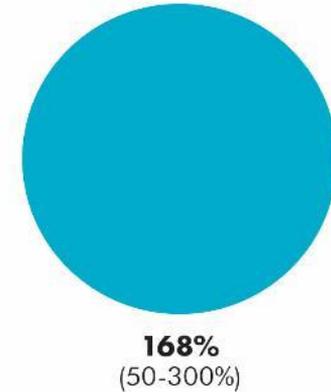
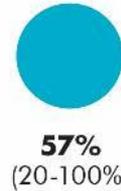
Digital financial services



## Bundled D4Ag models

### Income

### Productivity



# Job Creation And Digitalisation



## **D4Ag enterprise staff and management**

**Tens of thousands** of new high-income jobs for D4Ag solution IT developers, engineers, sales and support staff, and management; already **5-10k employed** across ~400 D4Ag solutions



## **Digitally-enabled D4Ag field agents**

D4Ag solutions can make it economically rational to recruit, upskill and support digitally-enabled field agents at ratios of 1:100 to 1:500 farmers; increased agent density across markets should create **hundreds of thousands to low millions** of new jobs.



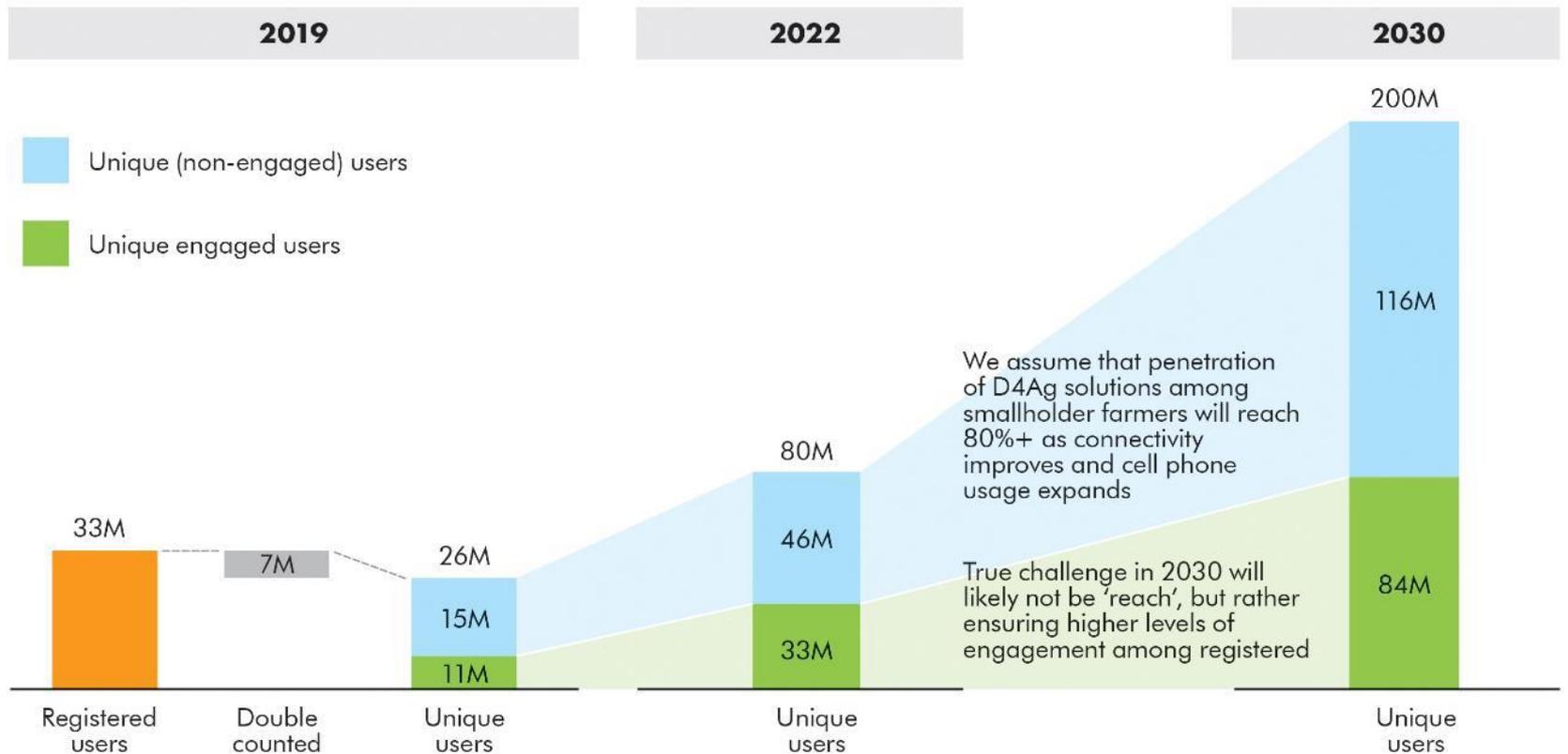
## **High quality digitalised farmer and agri value chain jobs**

D4Ag solutions can increase the share of smallholders incorporated in commercial value chains and generate new off-farm jobs in agri inputs, mechanisation, agri-processing, and trading; this would mean new agriculture sector jobs OR much higher quality employment for **tens of millions of farmers and rural youth**.



**Some Trends**

# Projected Unique And Active Users



1 20% haircut to de-duplicate the reach figure

2 42% engaged user rate from survey data

3 44% historical growth rate from survey data

4 Projected number of smallholder farmers based on UN and Dalberg analysis



# Emergence Of Super Platforms

## Government

Smart Nkunganire System



Ethiopian ATA  
Agricultural Transformation Agency  
ገብዓት ገበያ ስራዎችና ኮሚሽን

## Payments

Mastercard  
Farmers Network  
mastercard



## MNO



## Bank



## Start-up market linkage specialists



## Agribusiness



## Donor-led / PPP



## An example of super platform to emulate for African?

Enable rural residents greater access to a broader variety of goods and services

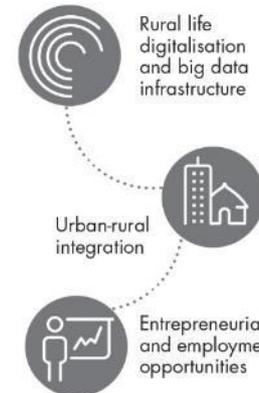


Help farmers earn more by selling agricultural products directly to urban consumers

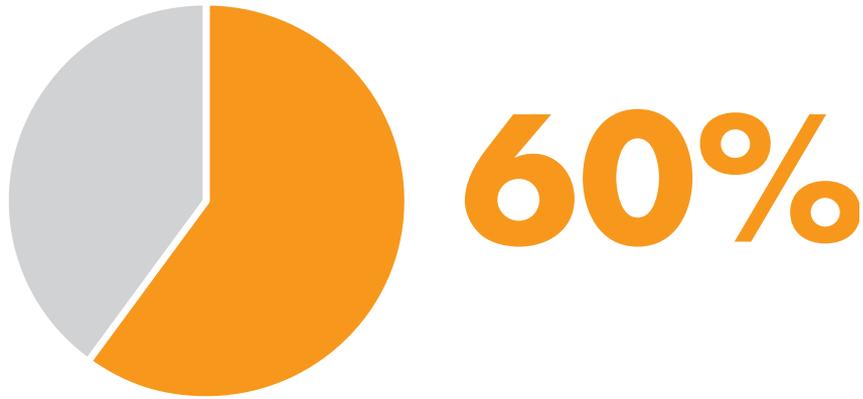


In 2019, Rural Taobao service centres are in 1000 counties and 30,000 villages, with 60,000 last mile Taobao assistants. EUR 400-500 annual investment by Alibaba.

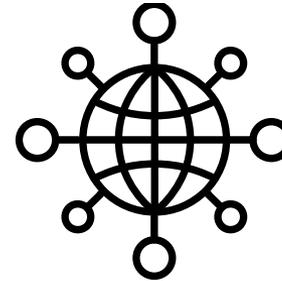
3 year plan announced in 2018 to establish service centers in 150,000 rural villages in 1000 counties, supported by 300,000 Taobao assistants. This would cover 33% and 25% of the villages in the country.



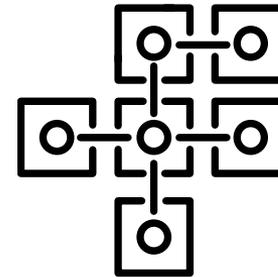
# Advanced Technologies



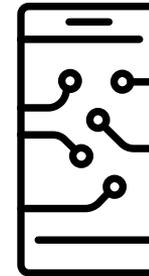
of respondents expect to integrate new technologies over the next three years, the most popular of which are IoT, blockchains and machine learning.



IoT



blockchains



machine learning



# Recommendations

# Summary

- 1 Develop human capital at all levels of D4Ag ecosystem
- 2 Drive greater business model sustainability
- 3 Create greater impact by bringing D4Ag to less-served populations
- 4 Invest in the missing middle infrastructure
- 5 Invest in good data stewardship and design for risks
- 6 Invest in the D4Ag knowledge agenda
- 7 Create an alliance of key stakeholders

# Invest In The Missing Middle



**Government and donors to lead development of data infrastructure**



**Get middleware right**



**Coordinate among governments, donors, investors, farmers to reduce duplication**



**The result is higher-quality, efficient infrastructure**

# Invest In The D4Ag Knowledge Agenda

▶ **Develop set of best practices and stronger community of practice**

▶ **Knowledge investments to meet needs of farmers**

▶ **Research to gather better intelligence to drive success**

▶ **Research to gather more evidence on impact by use cases and business models**

# Acknowledgement



BILL & MELINDA  
GATES foundation



Ministry of Foreign Affairs



Rural & Agricultural Finance  
LEARNING LAB



syngenta foundation  
for sustainable  
agriculture



Dalberg





***Download the report from [cta.int/d4ag-report](https://cta.int/d4ag-report)***

This document has been produced with the financial assistance of the European Union. The contents of this document are the sole responsibility of CTA and can under no circumstances be regarded as reflecting the position of the European Union.

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Wefarm is a digital network that connects small-scale farmers to information, products, services and markets. By SMS.



# Already sharing information at scale in Kenya, Uganda & Tanzania

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1.9  
million  
users

Who've shared over

354.6m

messages



Average time to answer, in  
any language without  
internet

6 minutes



Monthly Active Contributors

Wefarm

17%

Twitter

11%

# Already sharing information at scale in Kenya, Uganda & Tanzania



**40,000**

Qs & As every day  
(1 per second)

in

**5**

**Languages**  
(including local Africa  
languages)

with

**78%**

answered within 1  
hour

on

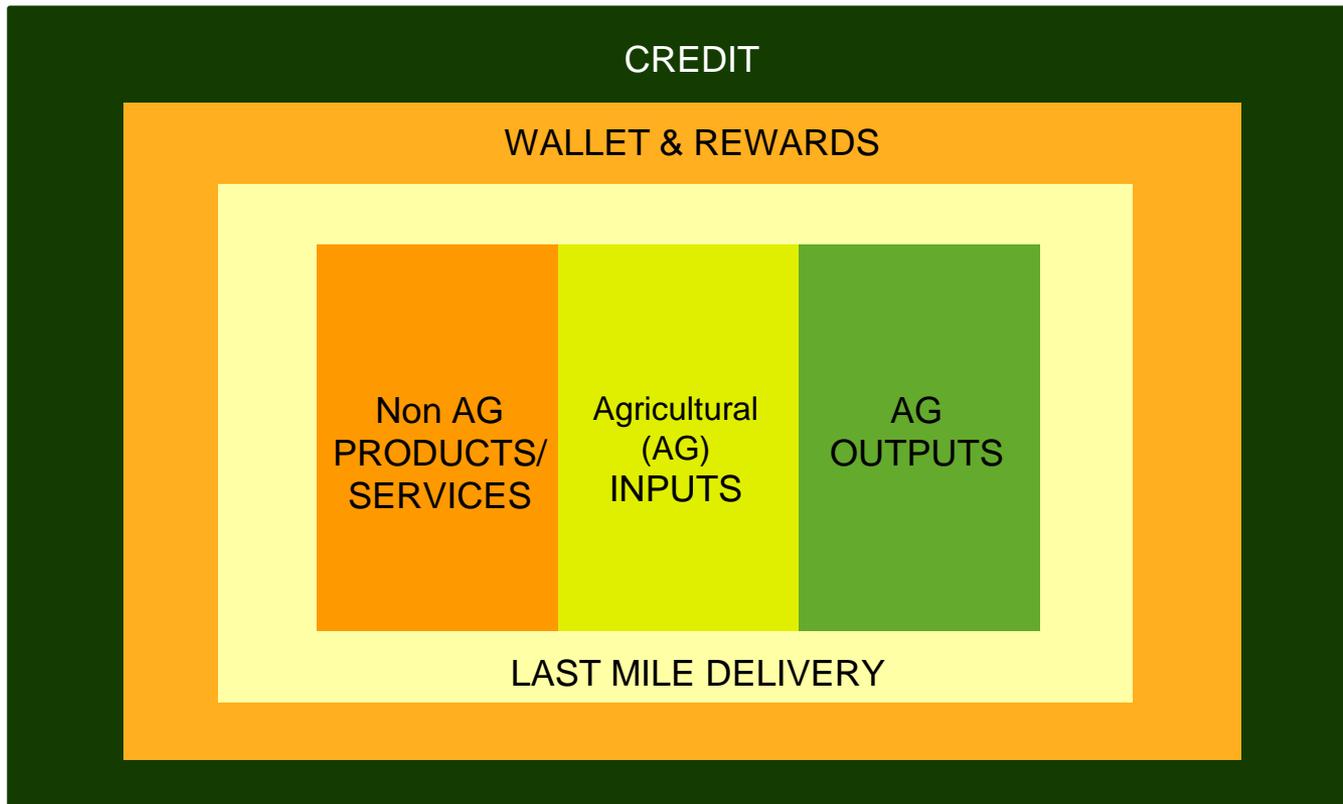
**374 topics**

Including: pests & disease,  
climate, pricing and markets

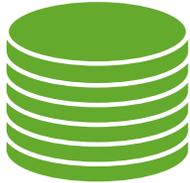


# Wefarm Marketplace

# Our vision for the Wefarm Marketplace



# Marketplace sales at scale



Average Selling Price

Uganda: \$16

Kenya: \$14

GMV Jan  
\$1.5k

GMV Nov  
\$458k



Total GMV to date

\$1.5m



Repeat customers





# We are also heading into more upwardly mobile farmer markets

Wefarm is not an East African solution.

It is a global solution and our ambition is global. Our method for demand and supply aggregation is applicable to the majority of the countries in which the farmers reside.

Wefarm in 5 years will be in key upwardly mobile, digital friendly markets such as:



ETHIOPIA  
11M+ FARMS



NIGERIA  
14M+ FARMS



BANGLADESH  
15M+ FARMS



INDONESIA  
25M+ FARMS



INDIA  
138M+ FARMS

In partnership we  
prosper together



Sarah Mackay, Partnerships,  
[sarah@wefarm.org](mailto:sarah@wefarm.org)

*Questions  
and Answers*



*hello tractor*

# Company Profile:

Q4 2019

Supporting Profitable Tractor  
Contracting and Farmer Yields

- Confidential & Proprietary -



**BOSCH**



*hello tractor*





 **BOSCH**

 *hello tractor*

## Smallholders.

Small farmers desperately need mechanization.



### Wasted Money

Manual labor 2.5x more expensive than tractor service



### Wasted Time

Manual labor 40x slower, leading to planting delays of up to 30days



### Decreased Yields

Farmers loose 1% of yields everyday they plant late

## Tractor Owners.

Tractor owners face barriers to providing profitable service for hire.

1

### Fragmented Markets

Lack of customer (farmer) coordination across the last mile

2

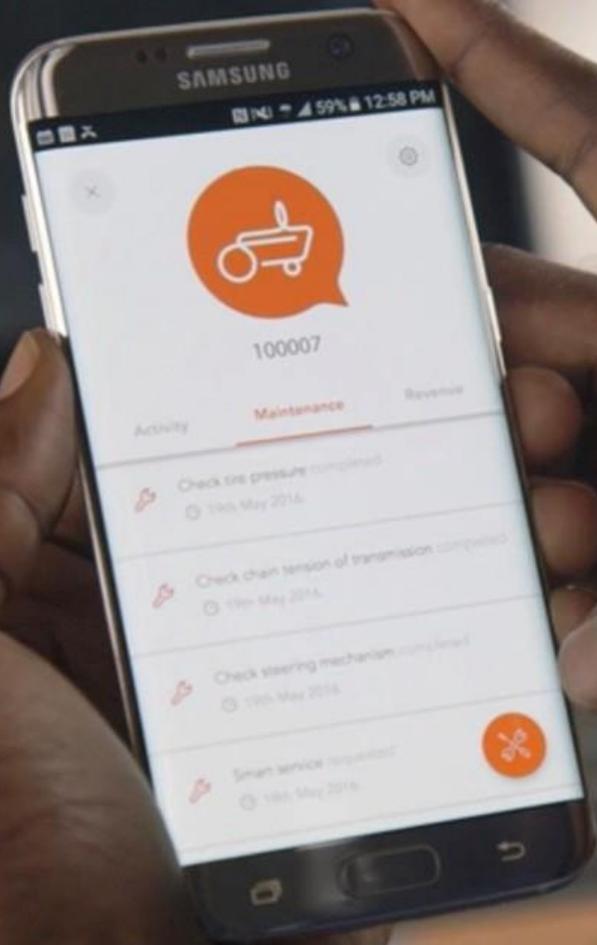
### Lack of Oversight

Fraud and misuse of assets by tractor operators

3

### Poor After-Sales Support

Scarcity of technicians and parts



hello tractor

### Supporting an Ecosystem.

IoT, data availability and transparency for all stakeholders.



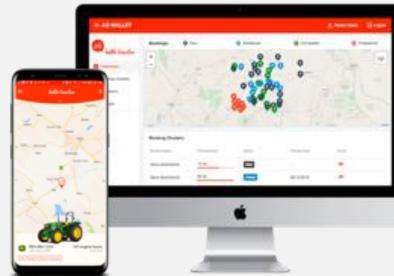
## Telematics Device



Connect, protect, and secure tractor fleets

**Device Cost: \$110**

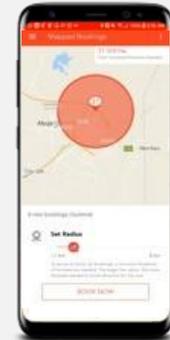
## Tractor Contractor Application



Manage tractors, service bookings, operators, maintenance and fuel

**Premium: \$200 (annual)**

## Tractor Booking Application



Farmers or agents book from connected tractors

**Free**

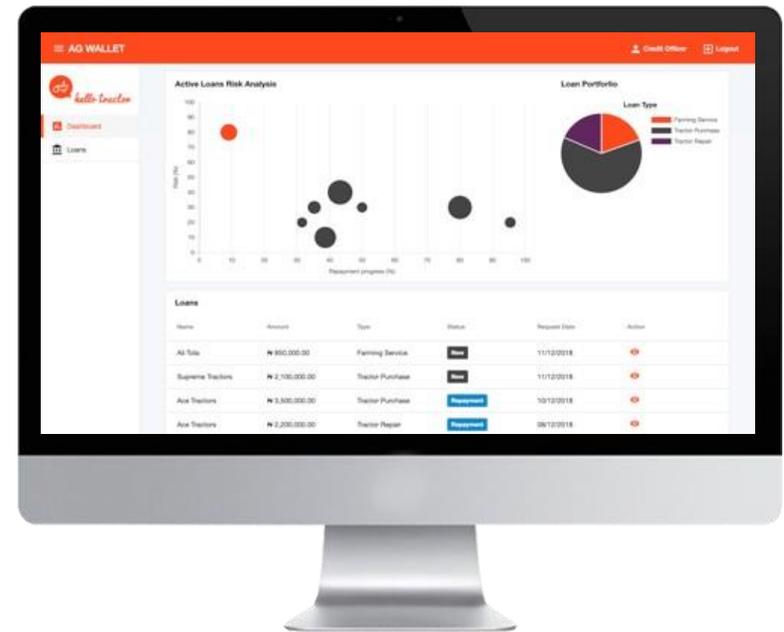
## Asset Finance in the Cloud.

We are partnering with the best companies on earth to bring tools like AI powered apps for banks to better finance more tractors.

**Pricing: currently in beta testing**



**IBM Research**



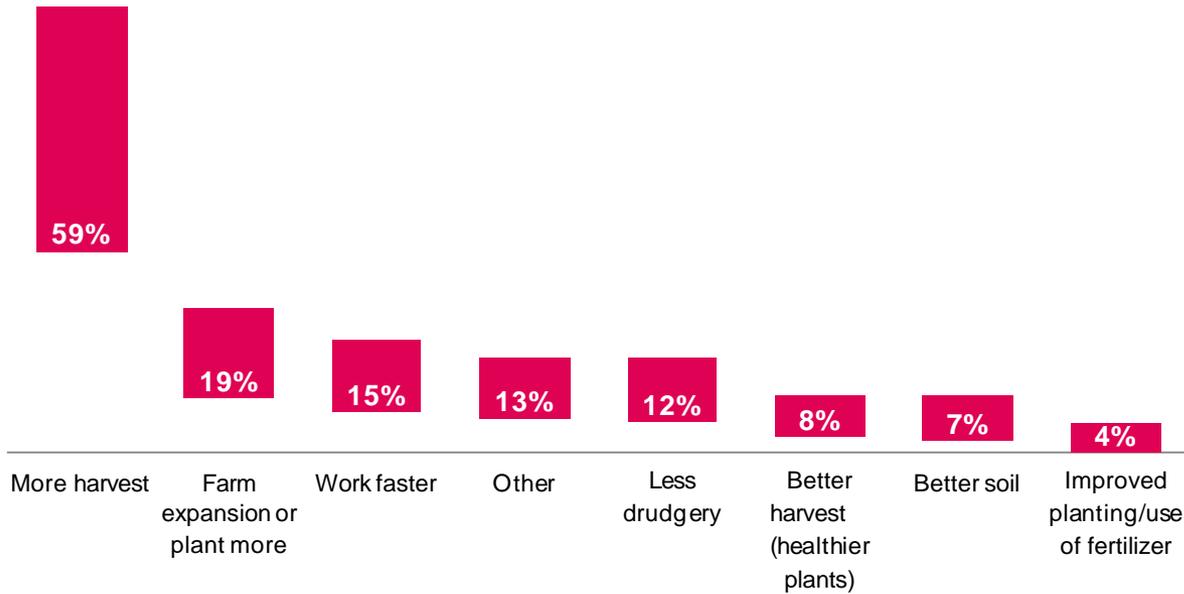


 **BOSCH**

 *hello tractor*

## Higher Productivity & Profits

Nearly all of our customers expressed improvements in a recent survey.



“  
**The insights we gain from the data Hello Tractor collects allow for better planning and improved outcomes – for us and the farmers we work with.**

– Von Kemedi, Alluvial

”





JOHN DEERE



hello tractor

## Industry Leadership.

We are the global leader in tech enabled tractor contracting services.

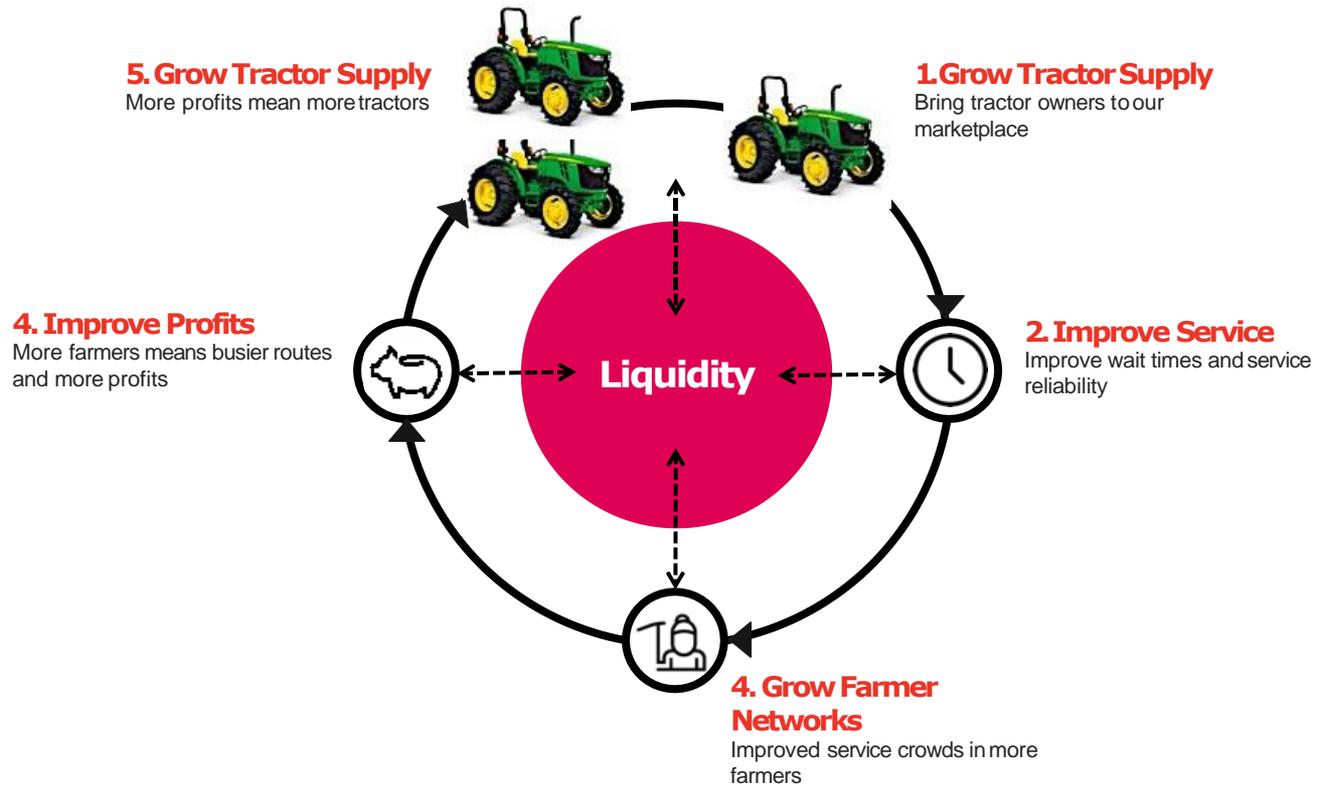
<b>5yrs</b> In Operation	<b>22</b> Employees	<b>13</b> Countries
<b>24</b> Tractor dealer customers	<b>6</b> Bank Customers	<b>2</b> OEM Customers
<b>300%+</b> Avg. Annual Growth	<b>17M</b> Obtainable Tractor Mkt*	<b>50K</b> Tractors by 2020



\*1.7M Low HP tractors sold in emerging markets with 10yr useful life

## The Growth Flywheel

We have created the largest connected tractor fleet, capturing network effects along the way





**Jehiel Oliver**  
CEO & Founder

Responsible for the overall management of the Hello Tractor team and strategic partnerships.

- Board director for 2 Sub-Saharan Africa impact funds
- Investment banking & Private Equity
- Presidential appointee on Council for Business in Africa under Obama admin (technology committee chair)
- Florida A&M University
- Cornell University



**Martha Haile**  
COO

Manages Hello Tractor's human resource strategy and operations. Responsible for impact across the organization.

- 10+ years project management experience
- Advisory board for the Africa Society
- Senior consultant at leading development consultancy
- University of Michigan
- University of Maryland School of Public Policy.



**Nahuel Defossé**  
CTO

Leads our technology team and strategy, aligning business goals with software and hardware roadmaps.

- Developing market product strategy experience
- 10+ years of experience building enterprise applications
- Taught undergraduate courses on operating systems, networks, distributed systems and security.



**Folu Okunade**  
CSO

Responsible for the definition, execution and continuous evaluation of Hello Tractor's strategic objectives and goals.

- 10+ years of management and technology consulting experience with Accenture
- Led strategic systems/process transformation programs across four continents
- U. of Cape Town (MBA)
- Washington University in St. Louis (BSBA)

# Thank You!

Jehiel Oliver  
CEO

Email: [jehiel@hellotractor.com](mailto:jehiel@hellotractor.com)

Munza Ambima  
Head of Hardware

Email: [munza@hellotractor.com](mailto:munza@hellotractor.com)



*Questions  
and Answers*



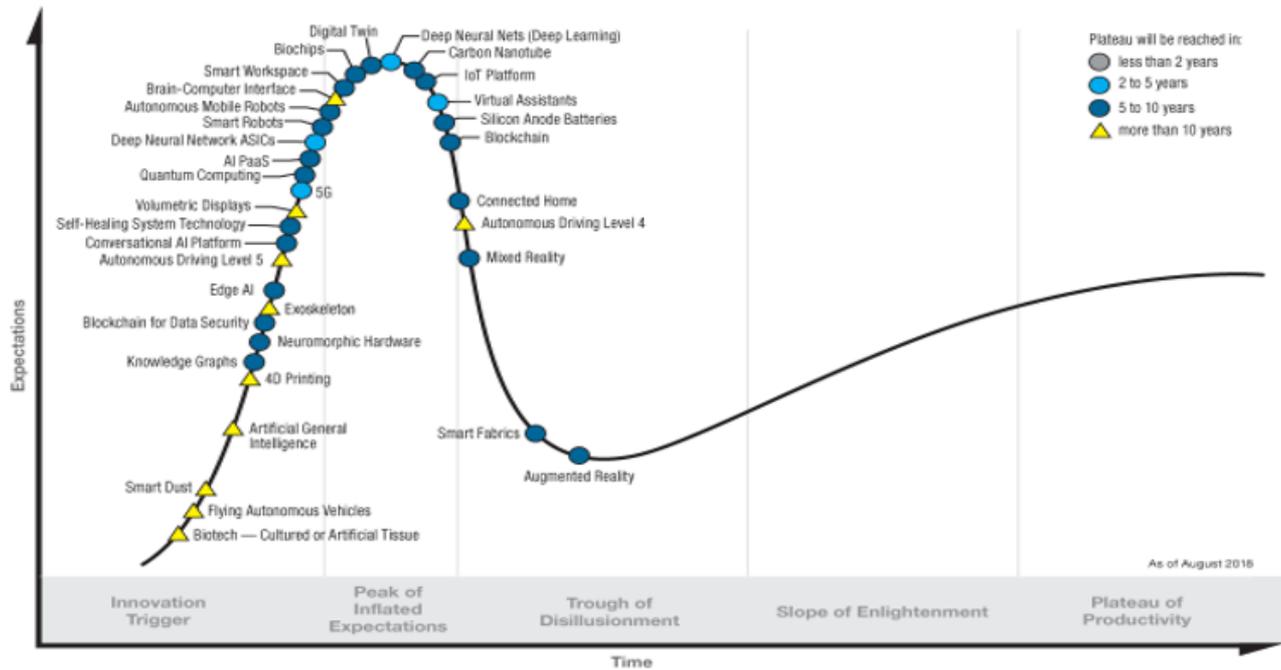
# Platform for Big Data in Agriculture

Feeding the future. Byte by byte.





## Hype Cycle for Emerging Technologies, 2018



[gartner.com/SmarterWithGartner](http://gartner.com/SmarterWithGartner)

Source: Gartner (August 2018)  
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**Gartner.**

There is a perennial evidence gap  
in digital agriculture.



Platform for  
Big Data  
in Agriculture

# Why do we need an evidence base?

Development agencies, investors, and digital innovators need impact evidence in order to **design, construct, regulate, and invest in sustainable, inclusive digital food systems.**



## Digitizing the agricultural value chain | EVIDENCE



*There are at least 40 rigorous studies proving the impact and showing the best practices for digitizing the value chain. For example:*

**CIAT** used multiple sources of big data to predict when to plant, what to plant. Farmers who listened avoided losing US\$3,000.

**CHAI** reduced crop loss by 40-65% by getting timely localized weather

In a one-year pilot of using **satellite imagery to support pastoral resource management** in Ethiopia, herd deaths fell by half.

**Yelp for Cows:** Crowd-sourced reviews led to 26% better service

18,000 farmers in Mali/Senegal use mobile layaway via **myAgro** to save for seeds and fertilizer. They're seeing yield increases of 50% to 100%. That translates into around \$150 more income a year

**Digital Green:** low cost video helped increase cost effectiveness, adoption of new technologies

**FRI** participatory radio led to 5 fold increase in adoption

**Livestock Insurance** meant households were 36% less likely to anticipate relying on distress sales of livestock and 25% less likely to reduce meals.

**One Acre Fund:** loan led to significant increases in farmer storage and subsequent farm profits.

**Naatal Mbay,** the farmer-owned cloud database, resulted in better prices for higher quality fertilizer, more sharing of better agricultural practices, and ultimately a 25 percent increase in maize yields.

**IDEO.org** prototyped **Spoilage Sensor,** a \$4 temperature and-humidity sensor, which allows farmers time to act to prevent spoilage.

**Loop** farmers pay roughly 25% less to traders due to consolidation

With **Esoko,** all farmers get 8-9% price increase (not just subscribers), increasing income by \$170.

**RUDI's** mobile ordering has allowed 3,000 women retailers to increase their income by up to 300%, and farmers receive prices 20-30% higher.

In Haiti, a mango exporter saved more than \$1,600 per year by shifting purchases from cash to mobile.

**With thanks to the USAID initiative “Digital Development for Feed the Future” (D2FTF)**



# How to manage the hype?

- Is there a **specific potential benefit** over existing technologies?
- Will the **overall environment** (e.g. regulation, data service, potential user base) in a specific context enable one to claim those potential benefits ?
- Has that potential benefit been **quantified** in any way?



New tool launched:

# DIGITAL FOOD SYSTEMS EVIDENCE CLEARING HOUSE



[bigdata.cgiar.org](http://bigdata.cgiar.org)



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## What is ECH about?

Through the Clearing House we **gather evidence** from digital interventions and **build a knowledge base** that informs the digital transformation of the agricultural sector.

We aim to **give insight into which interventions are most valuable** at specific entry points in the food system.



Platform for  
Big Data  
in Agriculture

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# How to submit intervention evidence



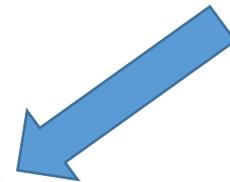
The Digital Food Systems Evidence Clearinghouse aims to showcase all kinds of digital tools – not just big data – that will help practitioners easily identify mature technologies and entry-points for them in agri-food systems, and to monitor how emergent technologies are evolving on the innovation frontier. The Platform will highlight both *Interventions* and *Evidence* on the food system.

The Clearinghouse builds on an effort first developed under the USAID initiative "[Digital Development for Feed the Future](#)."

Digital interventions in food systems appear every day in the press, and the sector is rapidly digitizing. However, the base of rigorous evidence of impact is still relatively thin. We seek to remedy this; by consolidating evidence and monitoring trends in digital interventions, we aim to build more quantifiable intelligence that can be used by development agencies, potential investors, and the innovators themselves. **Evidence is the critical piece needed to help these innovations find a path to scale.**

SUBMIT AN INTERVENTION

FREQUENTLY ASKED QUESTIONS



<https://tinyurl.com/EvidenceClearingHouse>

# What do we want to know?

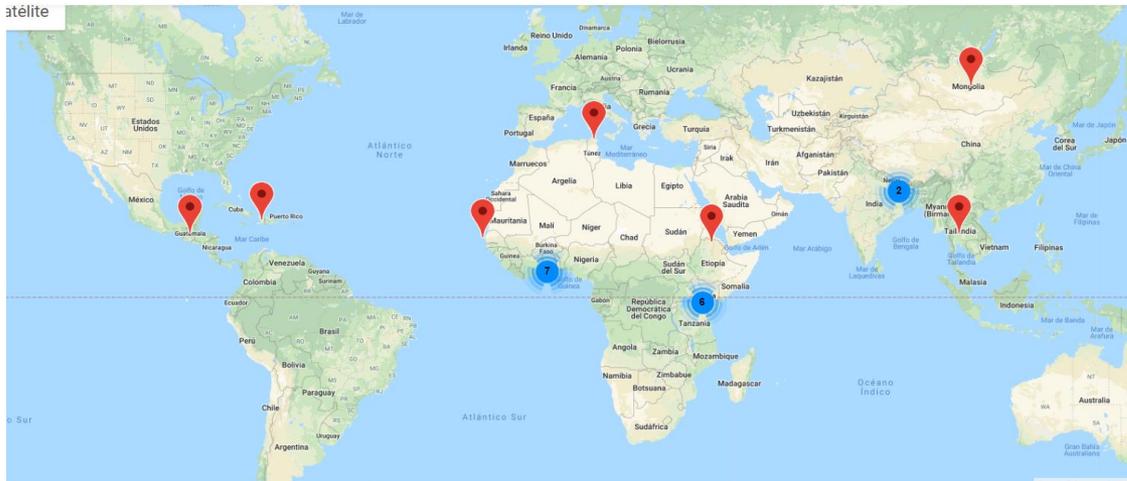
- Who are the primary users of the intervention?
- What is the estimated number of active users?
- Location of intervention
- Type of digital intervention
- Food system components
- Food system activities
- Evidence of impact (social, technical, environmental and economic level)



# How does it work?

The Clearing House functions like a search engine.

Users can filter their search to show results for specific food systems activities, components, geographical regions, or types of interventions.



What are you looking for?

Use the filters:

Select a food system component ▾

Select a food system activity ▾

Select a type of digital intervention ▾

Select a region ▾

Select a country ▾

Reset

# What is evidence, and how will it be reviewed?

- Clearing House **standards for evidence**
- Review process
  - CGIAR BIG DATA Platform **Communities of Practice**
    - Data-Driven Agronomy
    - Crop Modeling
    - Geospatial Data
    - Livestock Data for Decisions
    - Ontologies
    - Socio-Economic Data



## How will this evidence be used?

- Generate **synthesis reports**
- Evaluate data for **meta-analyses** of the 'state of the evidence for digital food systems'
- **Inform** stakeholders
- **Connect** organizations and interventions
- **Promote** potentially transformative interventions.



## Example of digital intervention evidence

### PRIDE™

Platform powered by the TCS mKRISHI® and designed to enhance the climatic and market resiliency of its farmer members and increase their financial resiliency.

#### Evidence of impact:

- 15% reduction in pesticides
- 10% reduction in fertilizer usage
- 48% average increase in yield
- 45% average increase in profitability
- 75% average increase in compliance to best practices
- Increase in rural employment



Let's build evidence!



Platform for  
Big Data  
in Agriculture



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[bigdata.cgiar.org](http://bigdata.cgiar.org)



*Questions  
and Answers*

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