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**syngenta** foundation  
for sustainable  
agriculture

Putting Cell Phones to  
Good Use:  
Mobile Solutions in  
Extension

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PAPA, WHY DON'T  
YOU SEND AN SMS AND  
ASK HOW TO GET THE BULL  
INTO THE WATER ?

# Mobile apps in smallholder agriculture

1. The challenge:
  - ✓ Reducing the yield gap
  - ✓ Farming becomes more time critical and information intense
  - ✓ Increasing smallholder productivity and incomes
  - ✓ Farming as a business
  
2. The expectations regarding mobile technology are flying high:
  - ✓ Making agricultural markets more efficient and transparent
  - ✓ Linking poor farmers to urban, regional and global markets
  - ✓ Improving services and governance for the rural poor
  - ✓ Promoting – and including smallholders in – agricultural innovation
  - ✓ Helping farmers manage risks
  - ✓ Improving land and natural resource management
  - ✓ Helping poor farmers participate in higher-value agriculture
  - ✓ Supporting the emergence of a more diverse rural economy

# Mobile phones and rural poverty

## Enthusiasts:

“accessibility is the main challenge in harnessing the full potential.” (e.g. Silarszky et al., 2008)

## Skeptics:

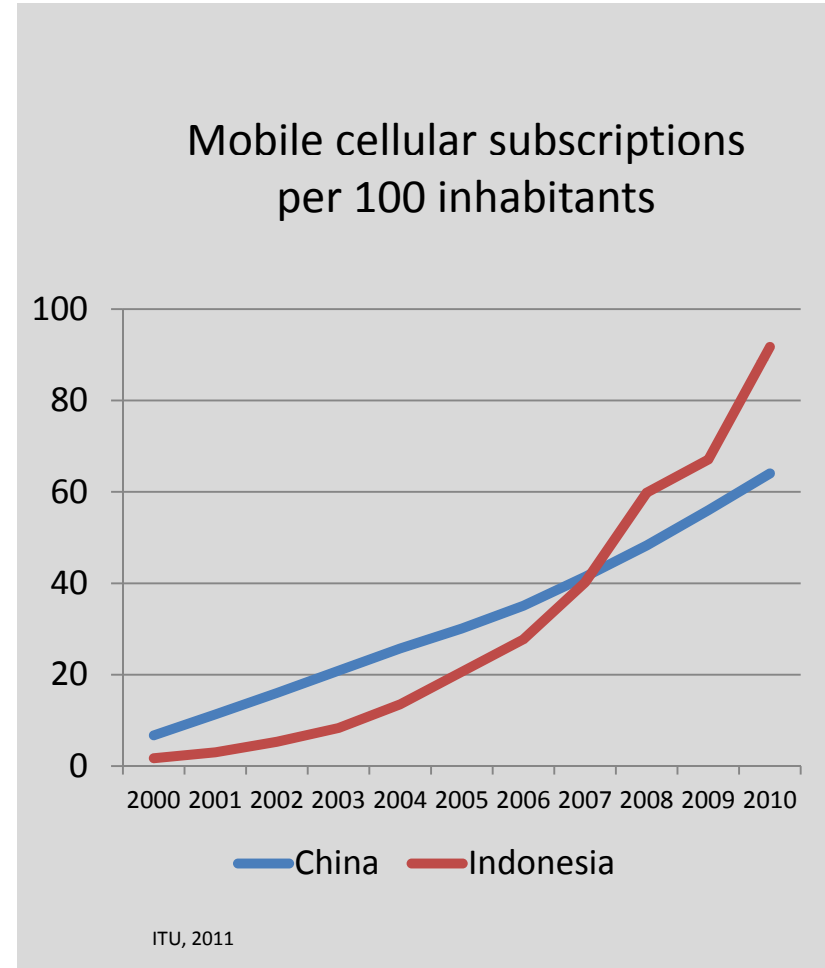
“technologies are not autonomous forces or independent variables causing change in every domain of human life” (e.g. Leye, 2009)

importance of socioeconomic, cultural, political, and institutional factors

## Pragmatists:

“ICT is not an end in itself – but an important enabler” (e.g. Fourati, 2009)

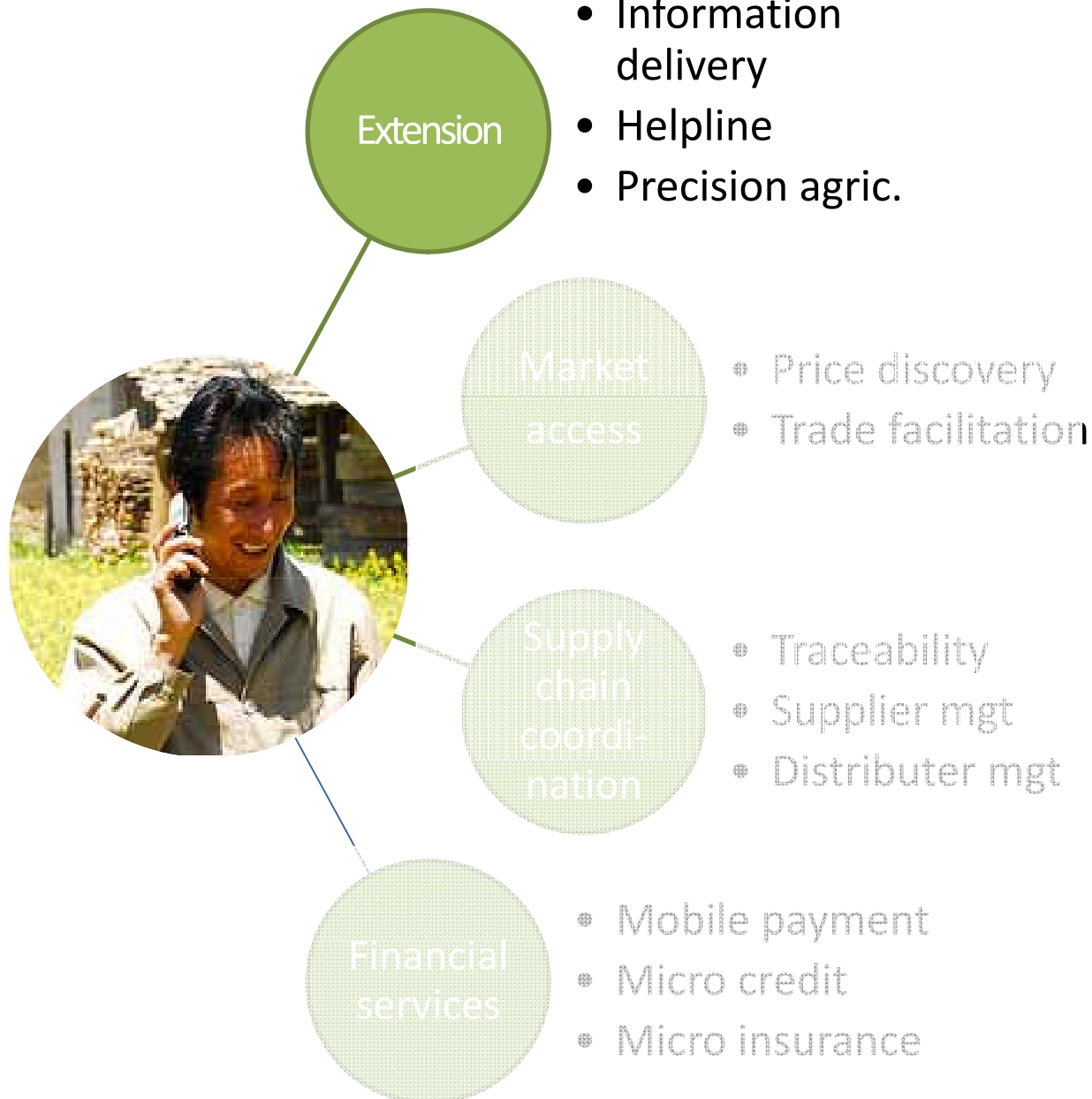
Appropriate policies and careful coordination and integration in other development strategies for ICT to cause an overall positive impact



# Opportunities: Mobile enabled solutions for agriculture



# Opportunities: Mobile enabled solutions for agriculture



## Helpline as extension service

**Jigyasha 7676, Bangladesh: >100'000/month**  
**Kisan Call Center India**  
**mKilimo, Kenya**



# Push-approach to mobile extension



Database  
Specialist  
Input companies  
Universities  
Research

→  
5x/d  
(free)



↑  
Quality  
control

↑  
More  
Information  
(paid)  
↓



- IKSL Experts
- Helpline (24/7)

**Main target:** 55mio IFFCO members

**5mio SIM, ~1+mio active users**

**12 communities**

**Needs assessment**  
(Surveys, Helpline Feedback, Expert assessment)

**Similar:**

\*1677 Farmer Information Highway (Thailand)

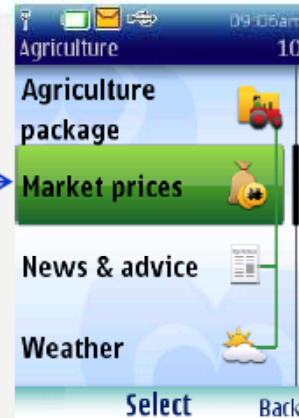
Nokia Life Tools (India, China, Indonesia, Nigeria)

Farmers Text Center (Philippines)



# Push-approach to mobile extension

## Life Tools Agriculture



### Livelihood & Economic progress

- Increase profit through cost savings, obtain higher crop prices and improve harvest

*\*Service sub-categories vary slightly by country to cater to local demand*

### Consumer proposition

- Mapped to location & crop.
- Parameters include : Hi, Low, Average and quantity traded
- Up to 3 crops in nearby 1-3 markets /per subscription
  
- Hyper localized advice based on crops selected mapped to agri cycle & agro climatic zone
- Best practices & Techniques
- Location based Agri news
- Info on govt schemes, promos, subsidies, fairs etc.,
  
- Weather forecast for the day + General outlook
- Parameters include : Temperature, Rainfall, Humidity & Wind



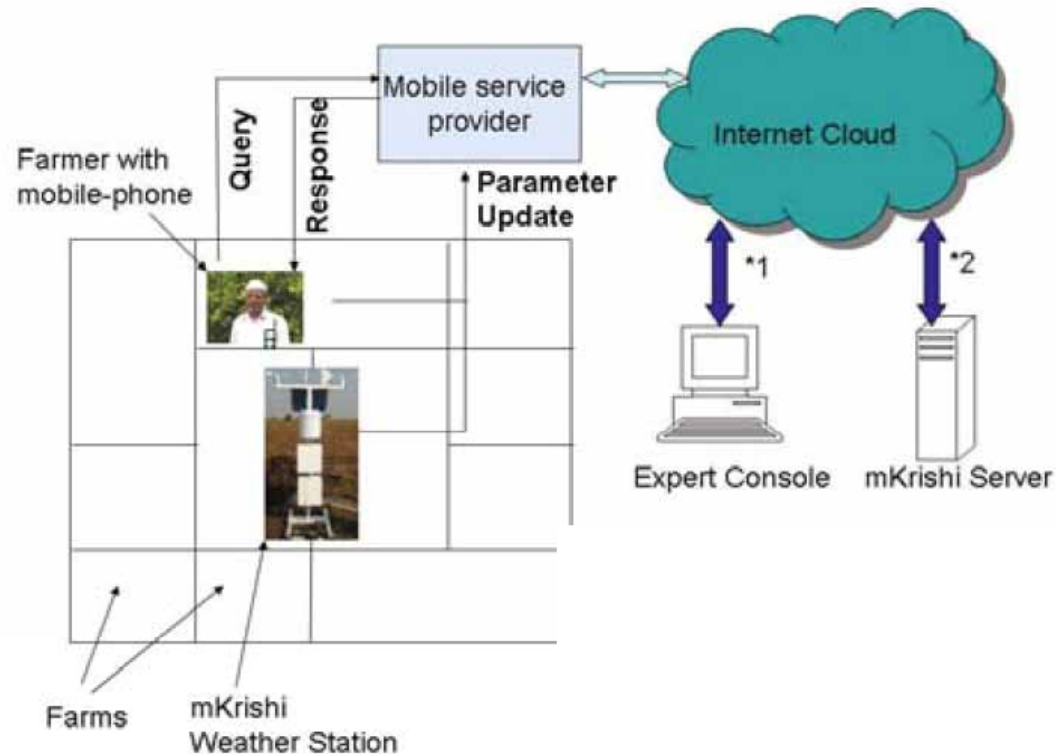
# “precision farming” approach

## mKrishi (pilot stage)

Tata Consultancy Services, 2007

Customized advisory services based on data gathered from weather station (soil humidity, weather characteristics) at village level

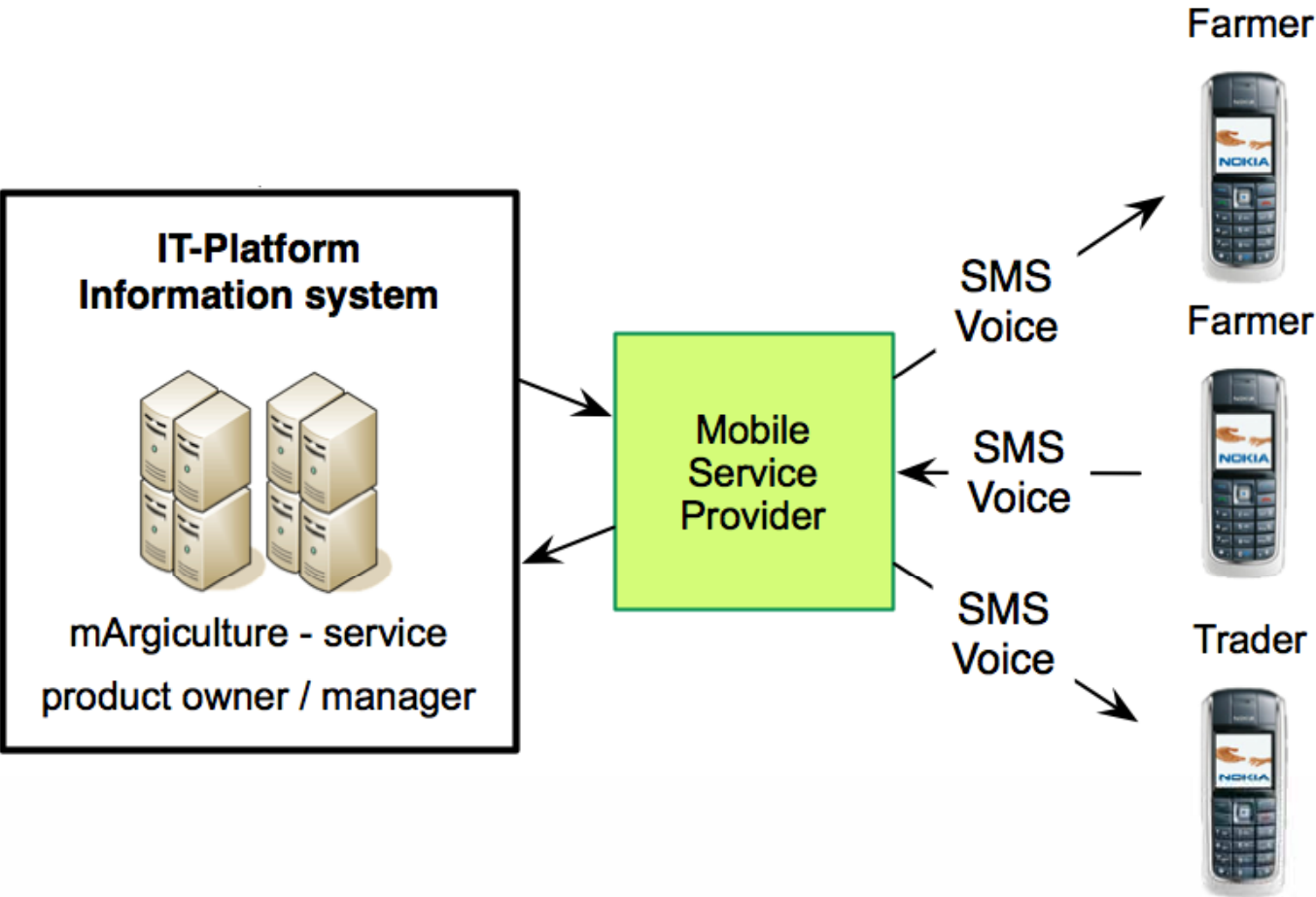
Voice-functions.



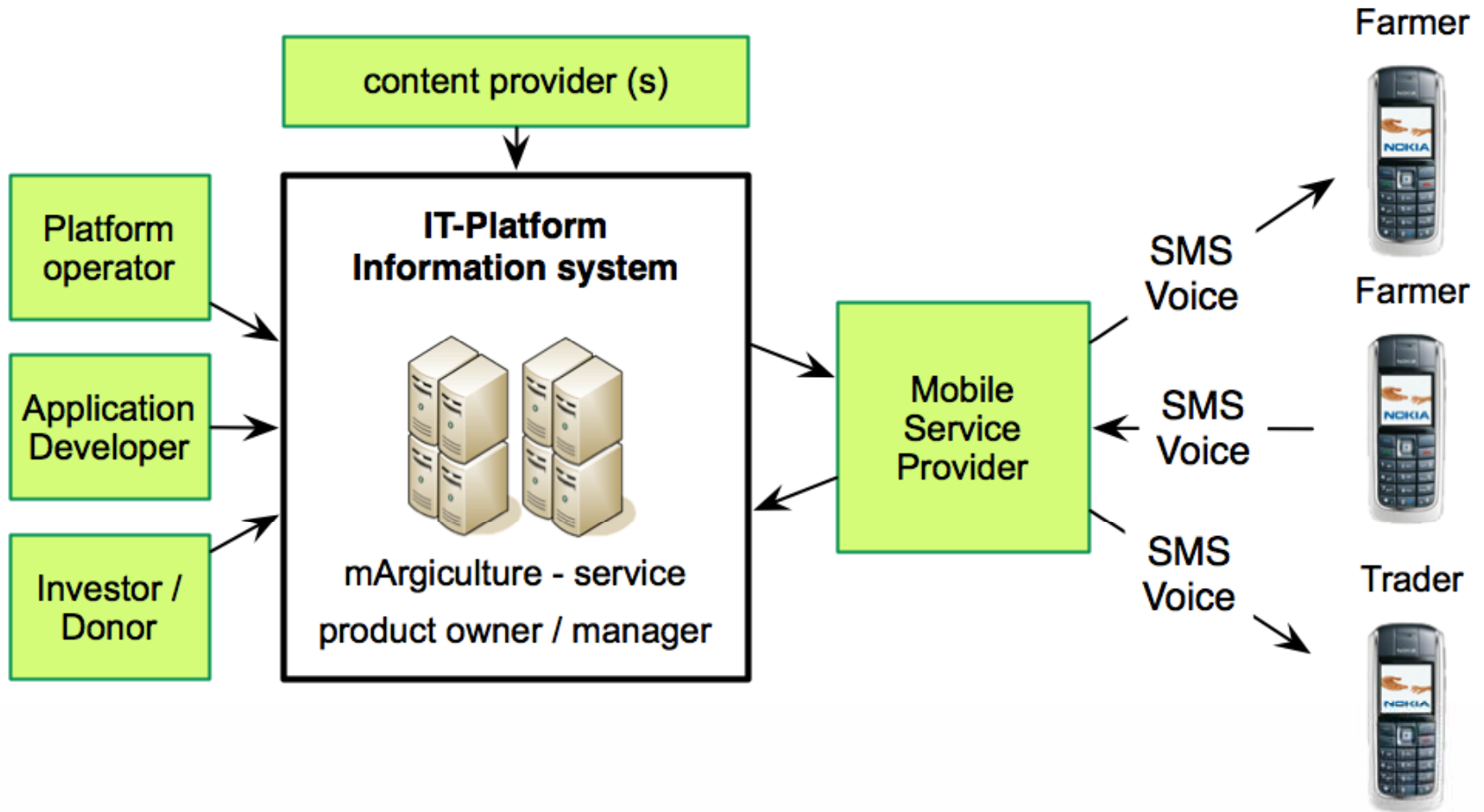
### Similar:

- CommonSenseNet (research)
- eSagu (pilot)
- Agrocom (grape farmers)
- Community Knowledge Worker (Uganda)

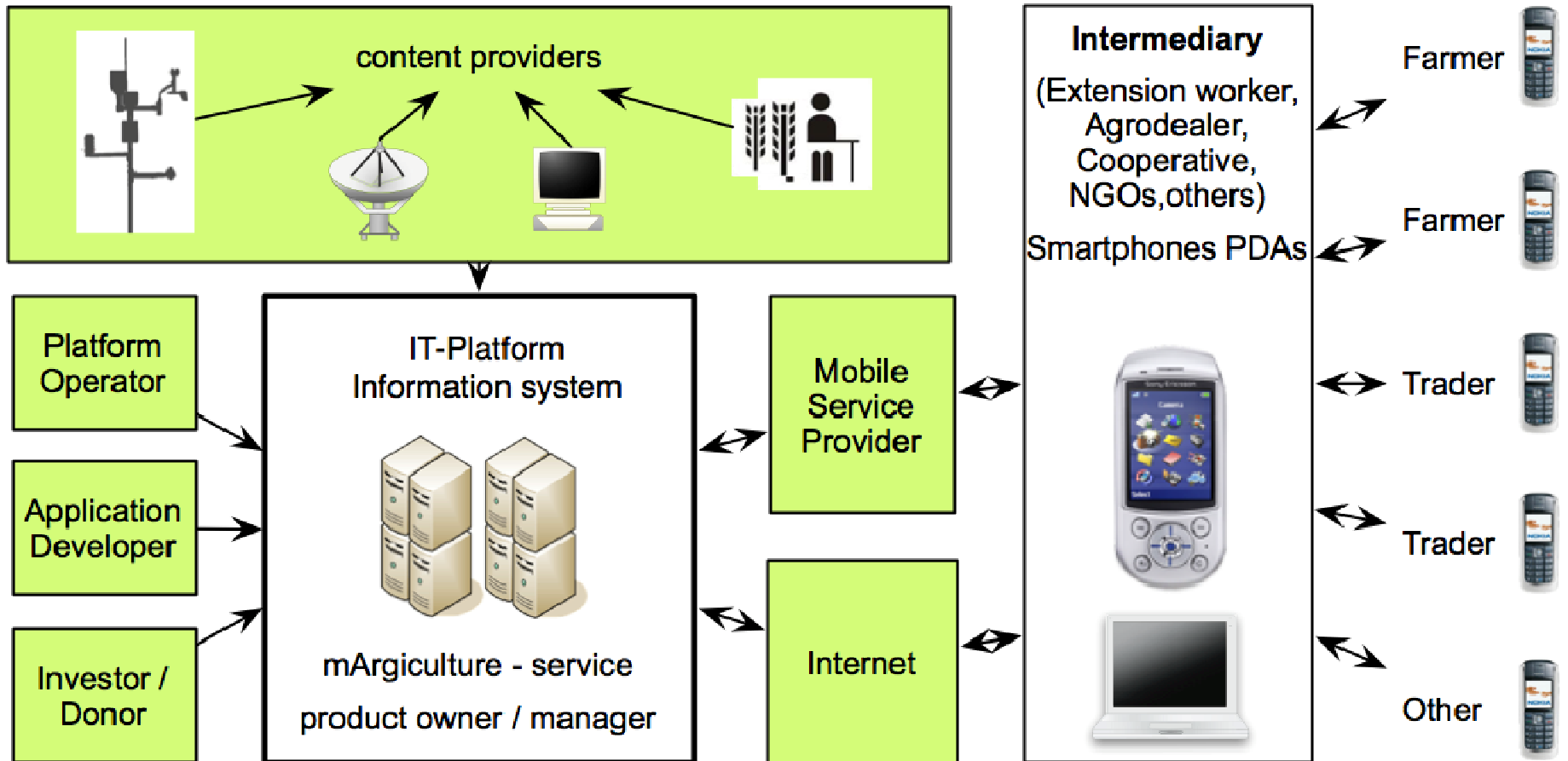
# Push-solutions are relatively simple...



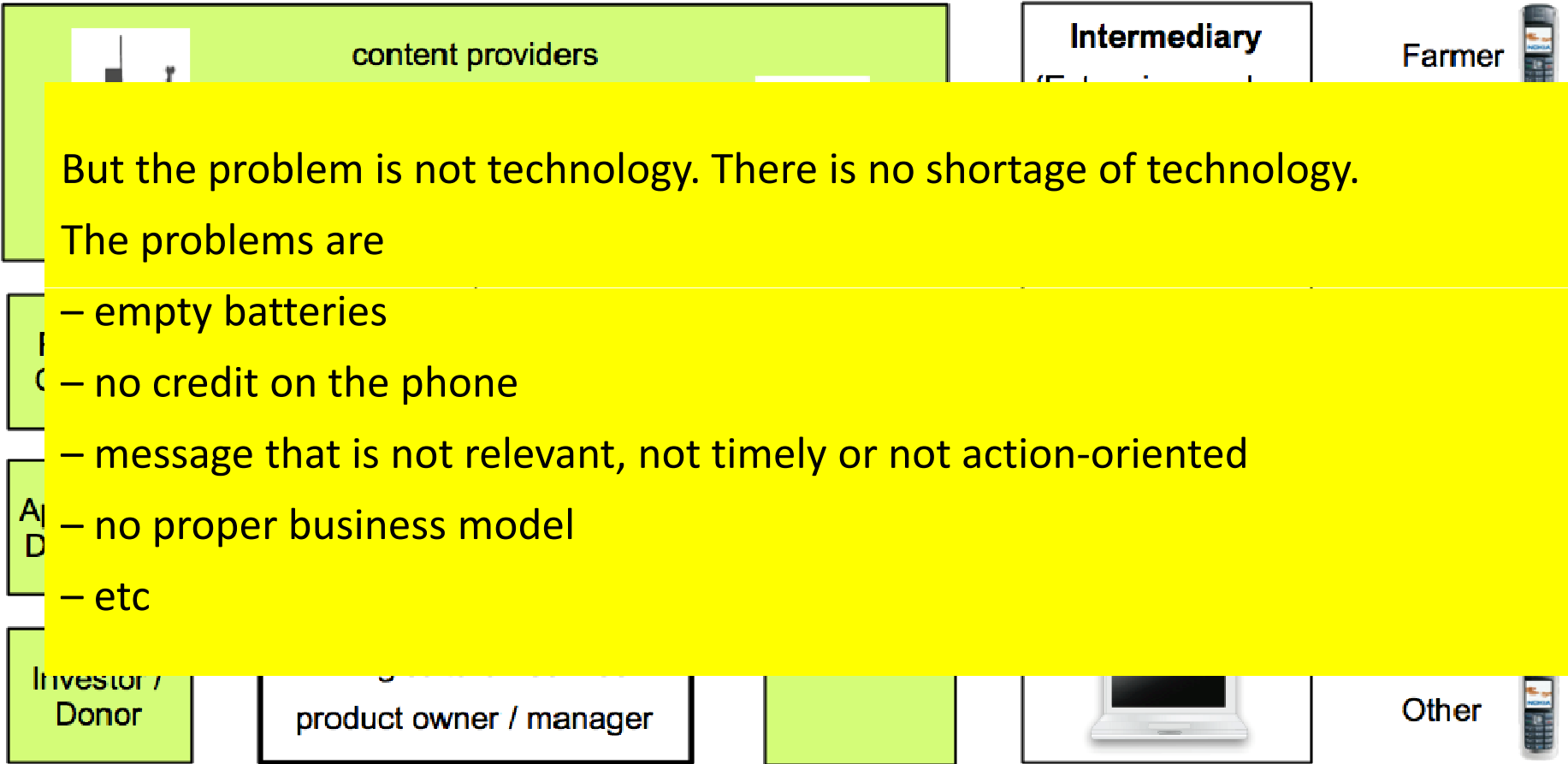
# Push-solutions are relatively simple...



# ...compared to interactive solutions with location-based data



# ...compared to interactive solutions with location-based data



# Digital Green: peer-to-peer learning



# Digital Green: peer-to-peer learning



[View more videos](#) 

## Latest Progress Stats

Videos produced **2093**

[Check out the production statistics](#)

Videos screened **82225**

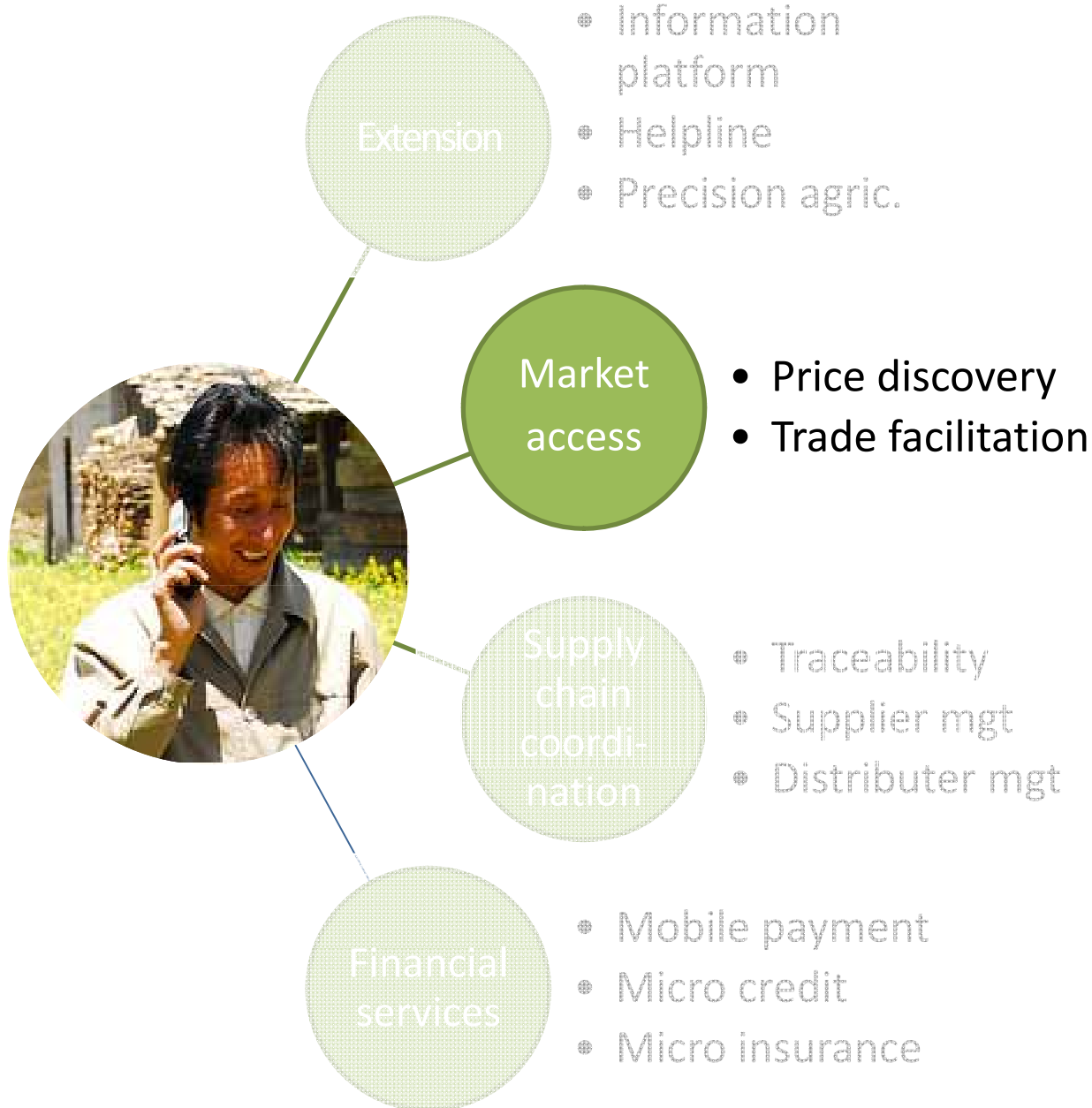
[Check out the screening statistics](#)

Farmers involved **88551**

[Check out the overall statistics](#)



# Opportunities: Mobile enabled solutions for agriculture



# Vast number of market information tools

## Research shows:

- Effect on price information is more pronounced in rural areas
- Indian Council for International Economic Research ICRIER:  
interviewed RML customers had benefitted in the range of 5-25% of annual income.

## ReutersMarketLight RML, India

- News and data on more than 150 crops, 1'000 markets and 2'000 weather locations across 12 states of India
- 300 full-time professionals. Cooperation with State Agricultural Universities for developing crop related technical content
- 3/6/12 months subscription, about 1 million clients
- → moves towards extension



18 Reuters Market Light

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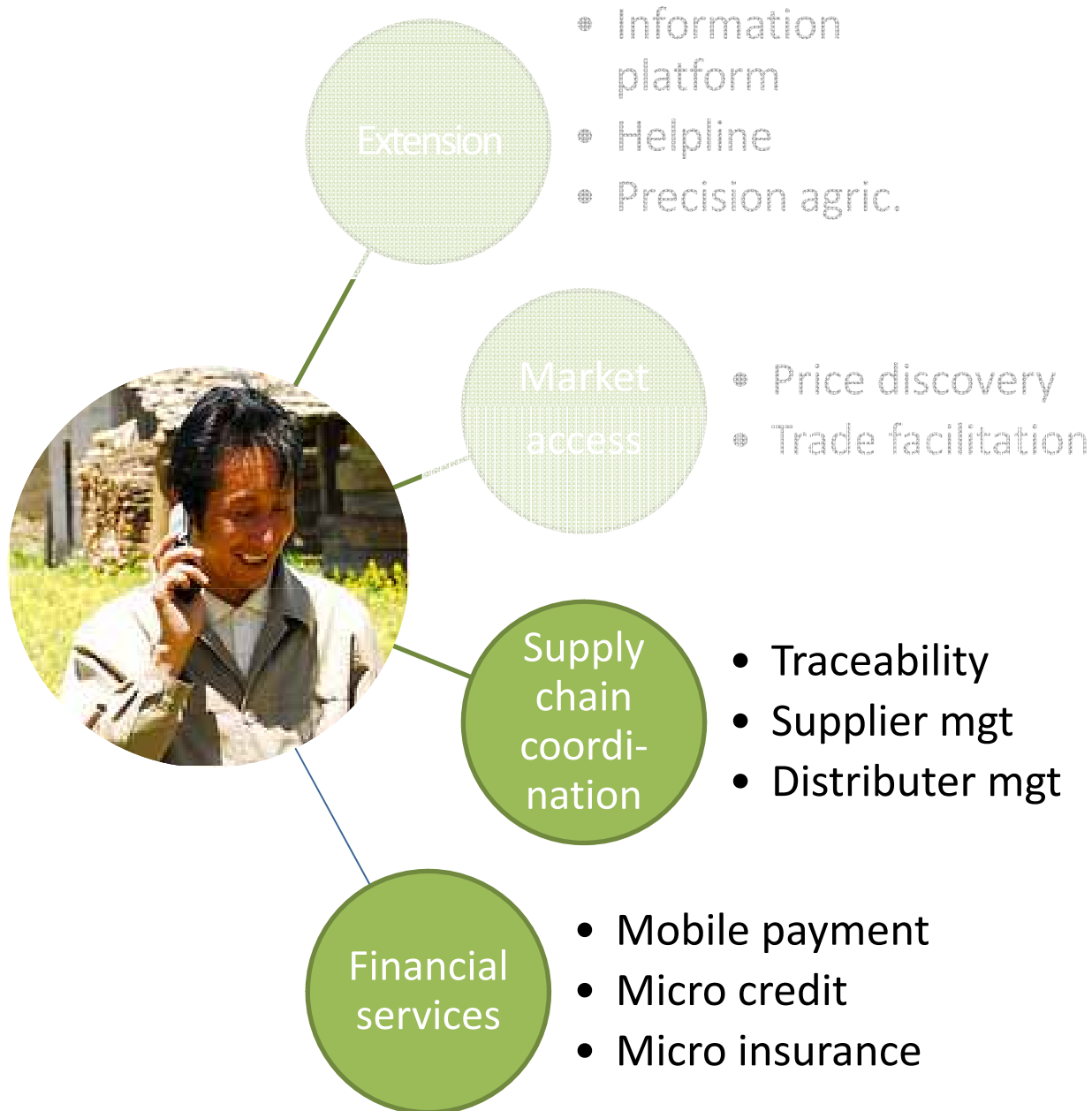
## Esoko (Afrika)

- Benin, Burkina Faso, Cameroon, Ghana, Ivory Coast, Madagascar, Mali, Togo
- Franchising system for roll-out to new countries
- → moves towards trading platform



Reuters Market Light

# Opportunities: Mobile enabled solutions for agriculture



# Examples supply chain coordination

## Smart logistics:

collect data on the location, speed and route of food distribution trucks, improve fleet management



## Mobile management of distribution networks:

keep records of sales of agricultural inputs like seeds, fertilizer and chemicals, agriculture insurance

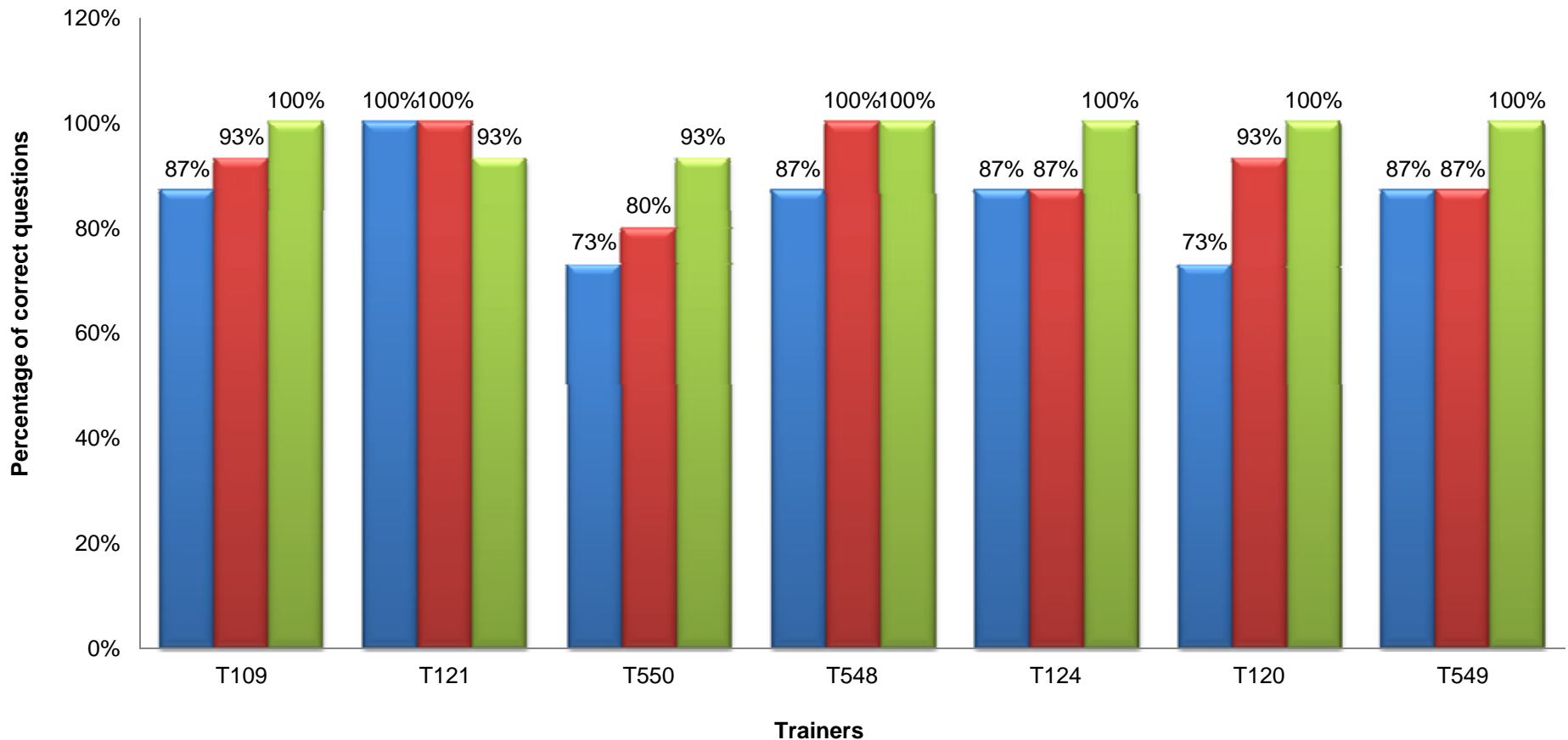


# Mobile technology allows Kilimo Salama to monitor trainings...

T101



# ...and our trainers to perform better



## T101 Joseph Karoki

### Overall

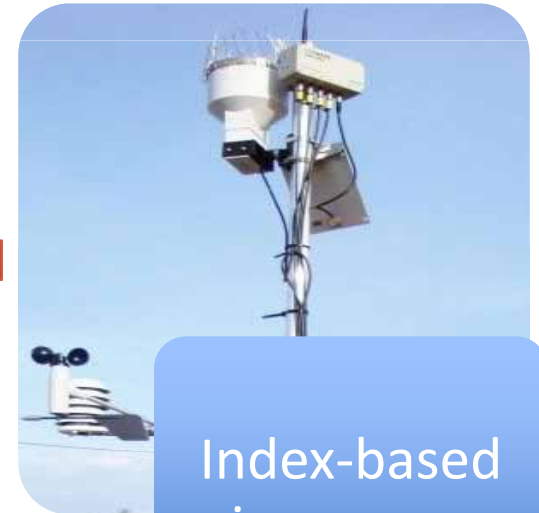
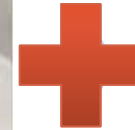
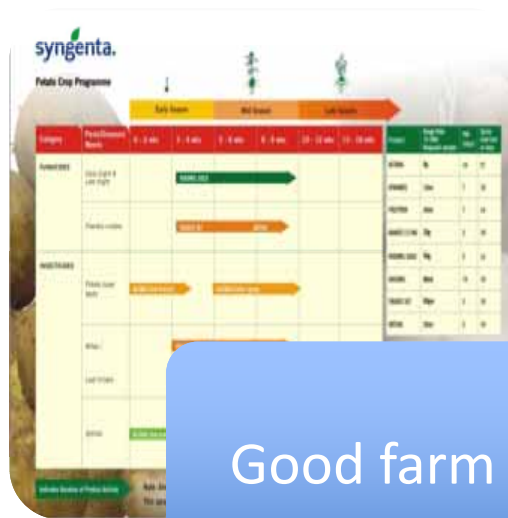
### Observations

Most farmers did not understand on how payout is calculated

### Recommendation

Trainer to be advised on the best approach to explain to farmers on the topic of payout in a simple way for the farmers to understand

# ...and to offer improved products to farmers



Input credit bundle

Good farm management

Index-based insurance





# Examples supply chain coordination

## Smart logistics:

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## Mobile management of supplier networks:

agricultural field agents record data on farm conditions and expected yield



## Traceability and tracking system:

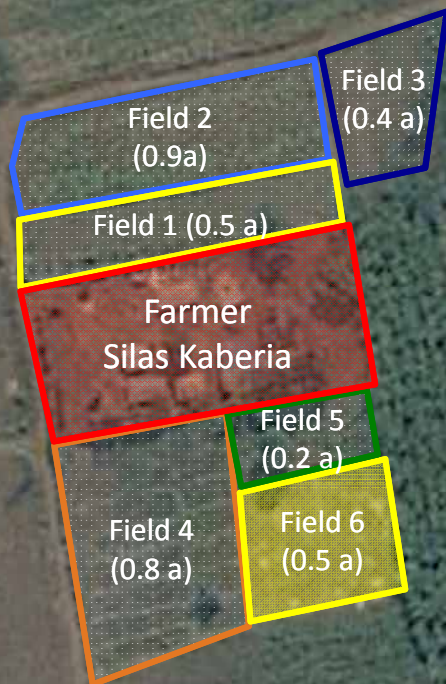
field → firm → fork



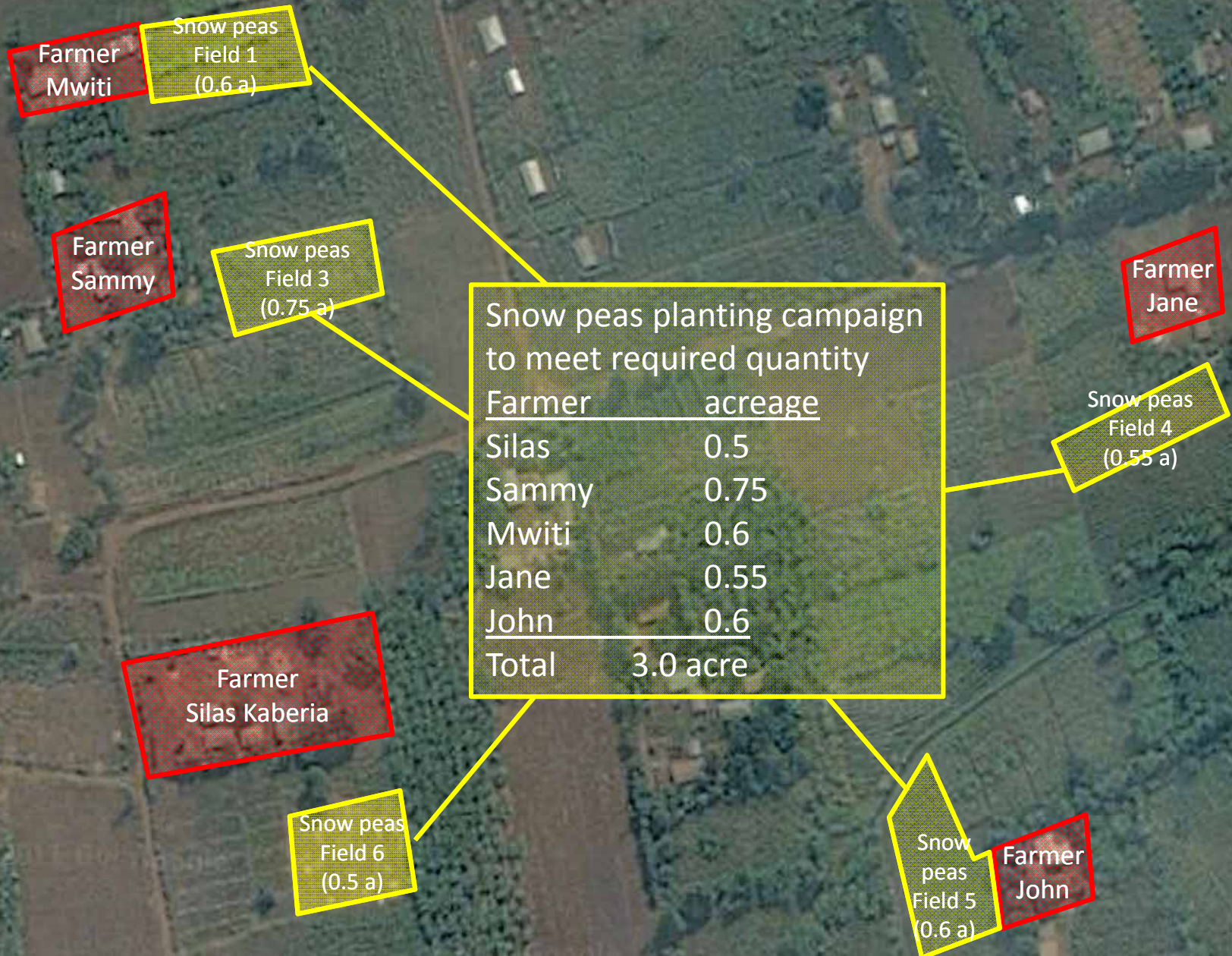
<b>Farmforce</b>	<b>A mobile platform to support the integration of smallholder farmers into formal agro-value chains</b>
Strategic value proposition	Reduce transaction cost for contract farming, compliance with food standards, traceability from the field and improve agronomy at scale → Link more farmers to markets
Current state	Under development and field testing in India and Kenya
Outlook	Platform goes live Q3 2012



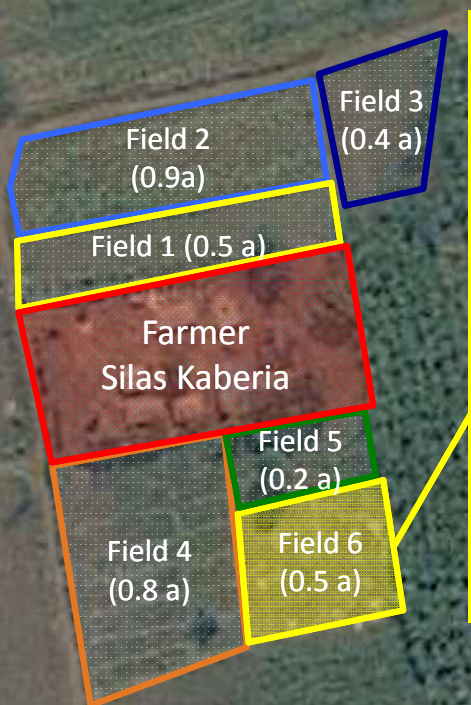
# Virtual Farm concept



# Planting campaign concept



# Virtual Farm concept



## Cropping cycle "Snow Peas" on field 6

- Planting 15. Oct 2011
- Fertilizer 30. Oct 2011 TSP, 40 kg/acre
- Spraying 15. Nov 2011 Ridomil against blight, 1.2 kg/a
- Spraying 05. Dec 2011 Ridomil against blight, 1.5 kg/a
- 1<sup>st</sup> harvest 20. Dec 2011 20 kg
- 2<sup>nd</sup> harvest 23. Dec 2011 30 kg

## Cropping cycle "French beans" on field 6

- Planting 15. Jan 2012
- Fertilizer 25. Jan 2012
- Spraying .....
- ..... .....

# Managing large farmer supplier networks

## Improve agronomy at scale



**Input  
facilitation**



**Production  
support**

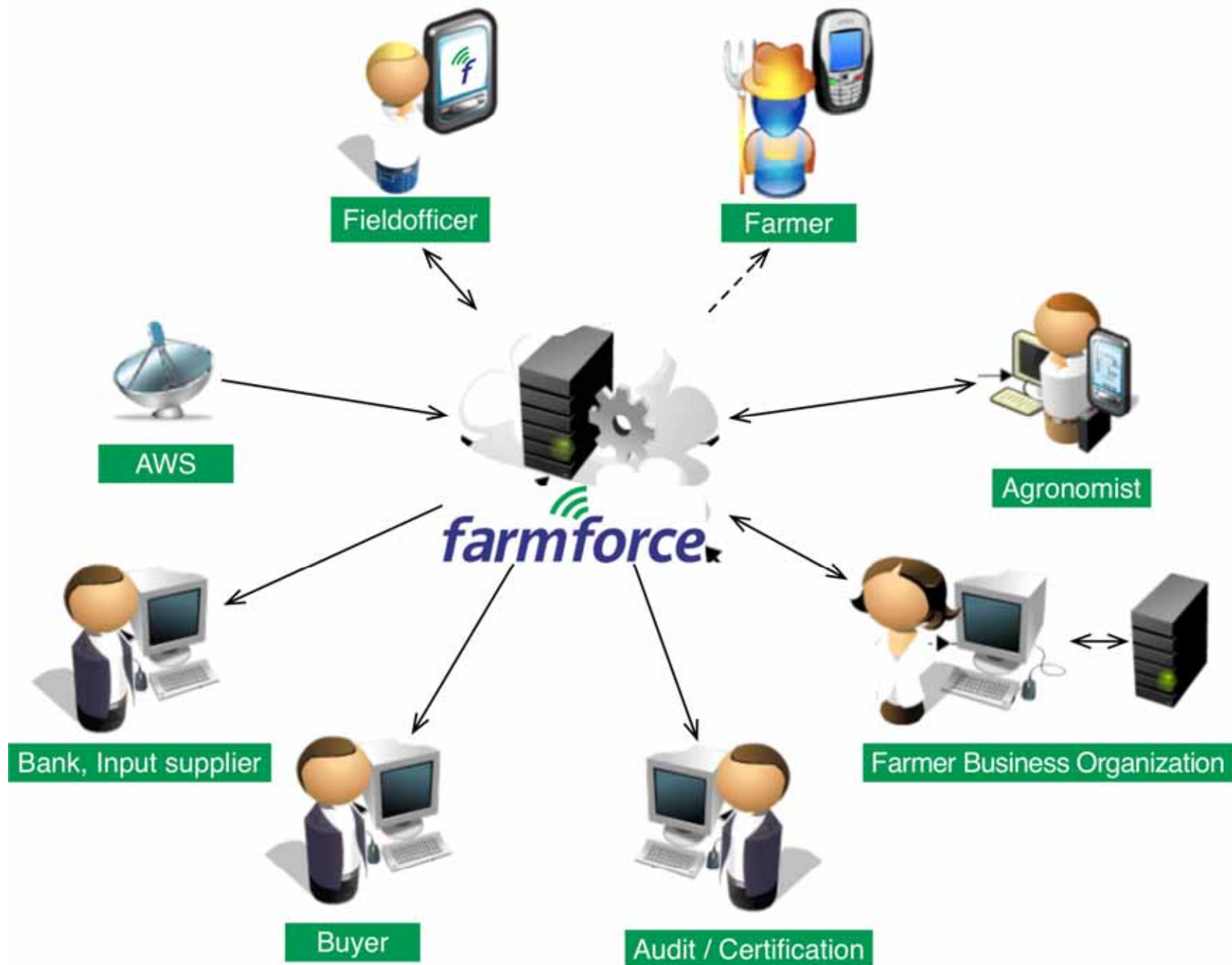


**Output  
management**

- Farm risk assessment**
- Input loan management**
- Manage range of inputs allowed**

- Crop calendar activities**
- Documentation of field activities to prove compliance**
- Plant clinic**
- AWA-disease alerts**

- Planting campaigns**
- Crop growth monitoring**
- Yield tracking and PHI monitoring**
- Monitoring farmer's productivity**





# Innovation and Maturity: where are we today?

From generic messages to customized advice

Integration of technologies and information sources towards content rich location based data

Intermediaries dealing with farmers continue to play an important role

Telephone and Radio remain relevant

Supply chain management tools will play an important role

Business models are emerging



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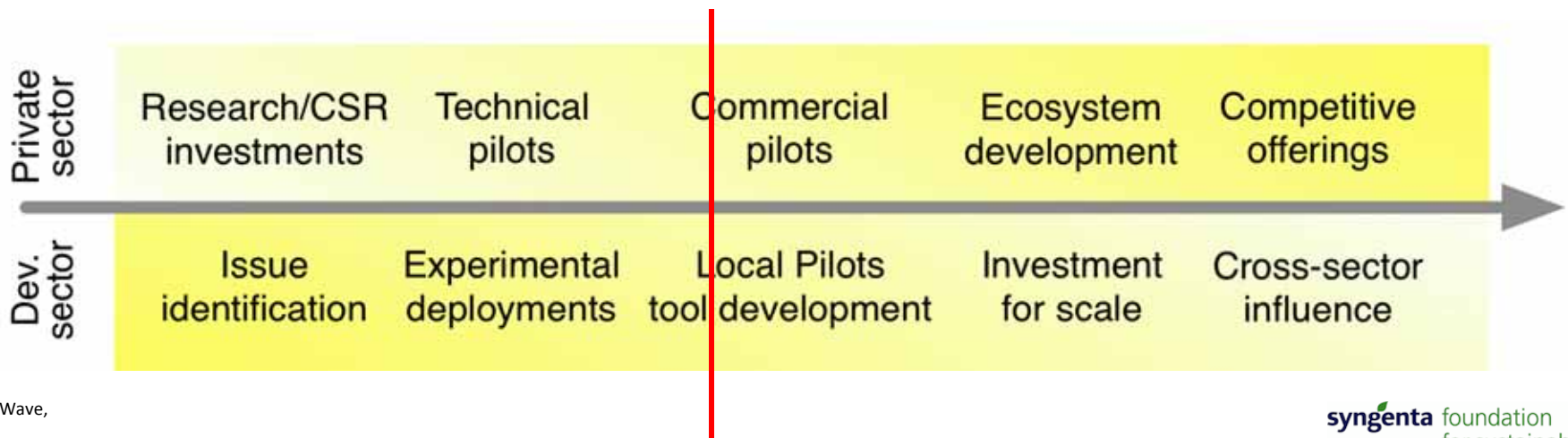
From SMS broadcasting to interactive communication

Intermediaries dealing with farmers continue to play an important role

Telephone and Radio remain relevant

Supply chain management tools will play an important role

Business models are emerging



...THE YOUNG PLANT NEEDS  
TO BE PROTECTED AND  
TAKEN CARE OF...

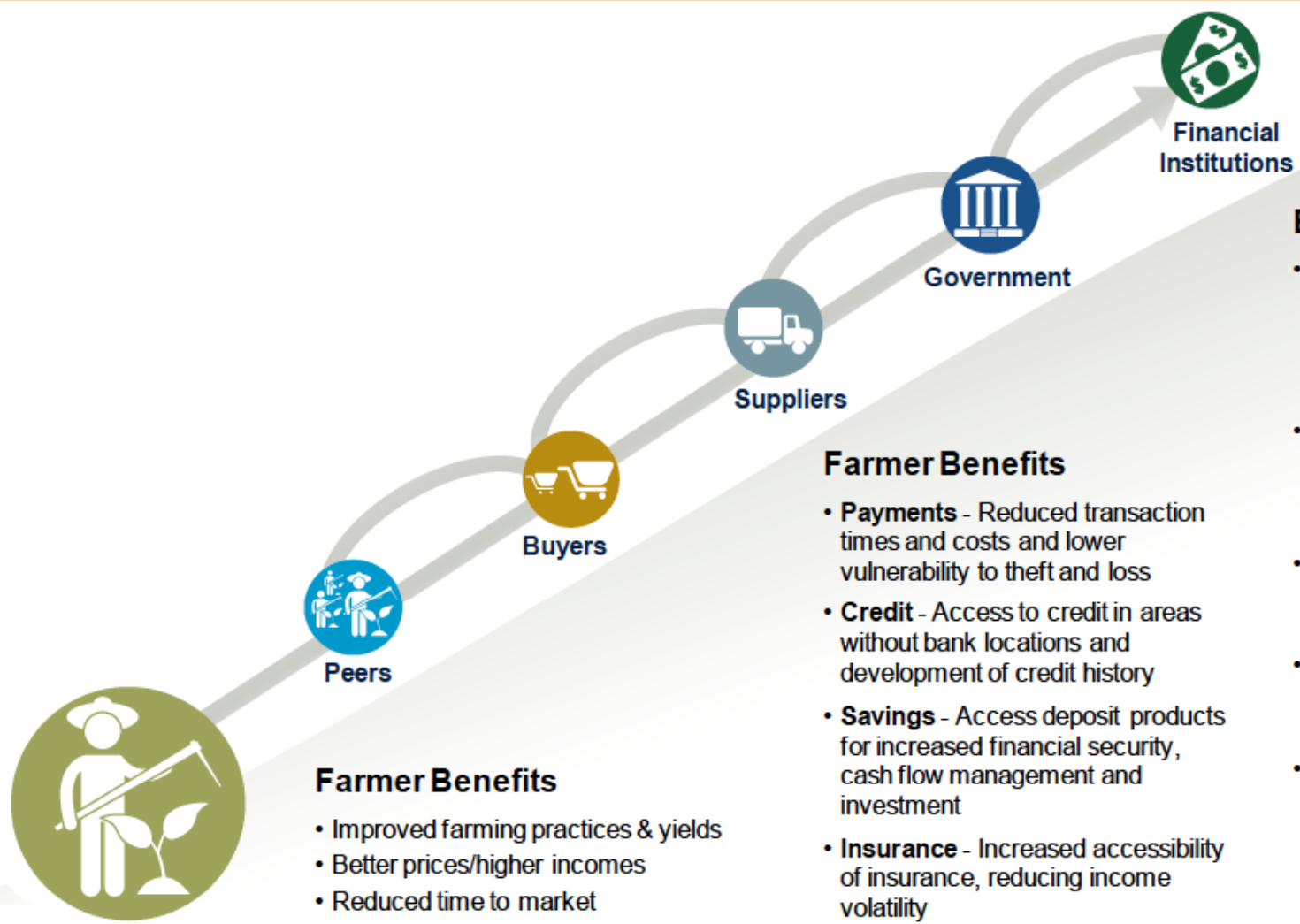


FARMER ALI DURING HIS FAVOURITE WORK :  
THE DAILY ENTRY IN HIS BLOG



# Trends in mAgriculture

- Content: From generic messages to customized advice
  - Increase relevance for farmers
  - advice creation on based on location specific information
- Technology: From simple to complex applications
  - Follows from the first trend
- Communication: From broadcasting messages to interactive communication
  - Intermediaries continue to play an important role (CKW, mKrishi)
  - Multiple services are added/ combined
  - Telephone and Radio remain relevant
- Business models: still many IT-driven (research) projects and applications in pilot stage. But: also few really commercial applications (RML, IKSL, NLT)
  - Telecoms as drivers where mass audience can be reached or operators can use their existing core business know-how



**Farmer Benefits**

- Improved farming practices & yields
- Better prices/higher incomes
- Reduced time to market

**Farmer Benefits**

- **Payments** - Reduced transaction times and costs and lower vulnerability to theft and loss
- **Credit** - Access to credit in areas without bank locations and development of credit history
- **Savings** - Access deposit products for increased financial security, cash flow management and investment
- **Insurance** - Increased accessibility of insurance, reducing income volatility

**Ecosystem Benefits**

- Higher incomes improve access of farmers and their families to health care, education, and other vital services
- Increased access for suppliers to thousands of customers and improved information on customer needs
- Formalization of the agricultural economy; improved tax collection
- Resulting data and analytics improve services in other sectors
- Increased pool of savings for investment and financial services expansion

Farmer



Mobile Information Sharing



Mobile Financial Services

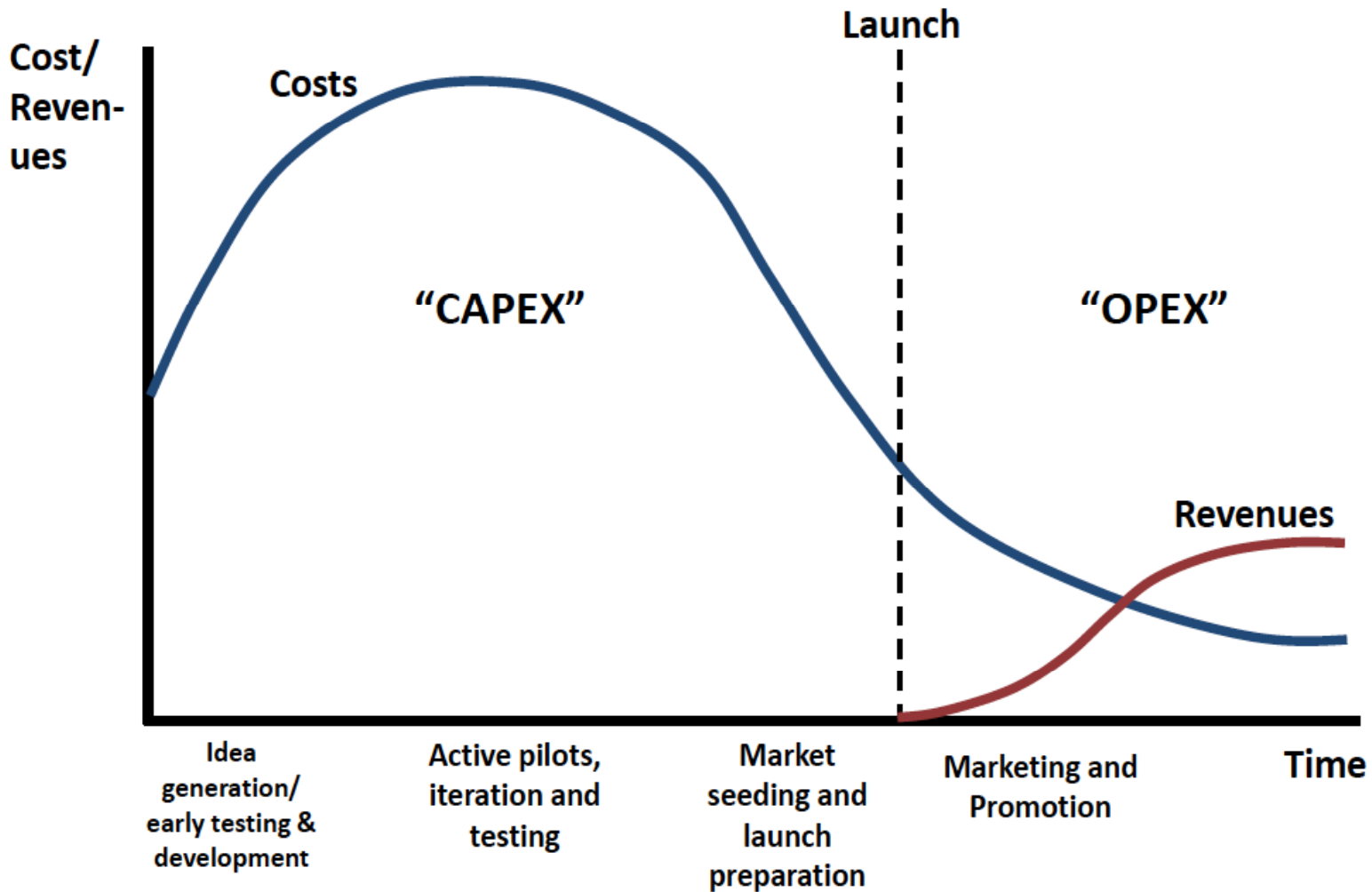


Ecosystem Benefits

# Agenda

1. Mobile technologies in agriculture: expectations are flying high
2. Mobile apps in the agriculture landscape
3. What makes for successful business models in offering mobile-based service propositions?
  1. FarmForce – The Syngenta Foundation mobile platform

# The funding problem





# Challenges and success factors

## Concept

- Service / information identification
- Business model

## Technology

- No lack of tech, but: empty batteries
- Realistic technology

## Users

- Literacy (general and technical)
- Education level impacts productive use of mobiles

## Sustainability

- Upfront investment and continuous improvement
- Generation of revenue stream
- Long-term content availability

# Linking farmers to markets



**Farmers,  
Farmer organizations**

**Benefits:**

- create income and grow potential at the bottom of the pyramid
- promote professional farming practices
- communicate to end-consumers



**Banks,  
insurers,  
input suppliers**



**Processors,  
retailers, exporters**



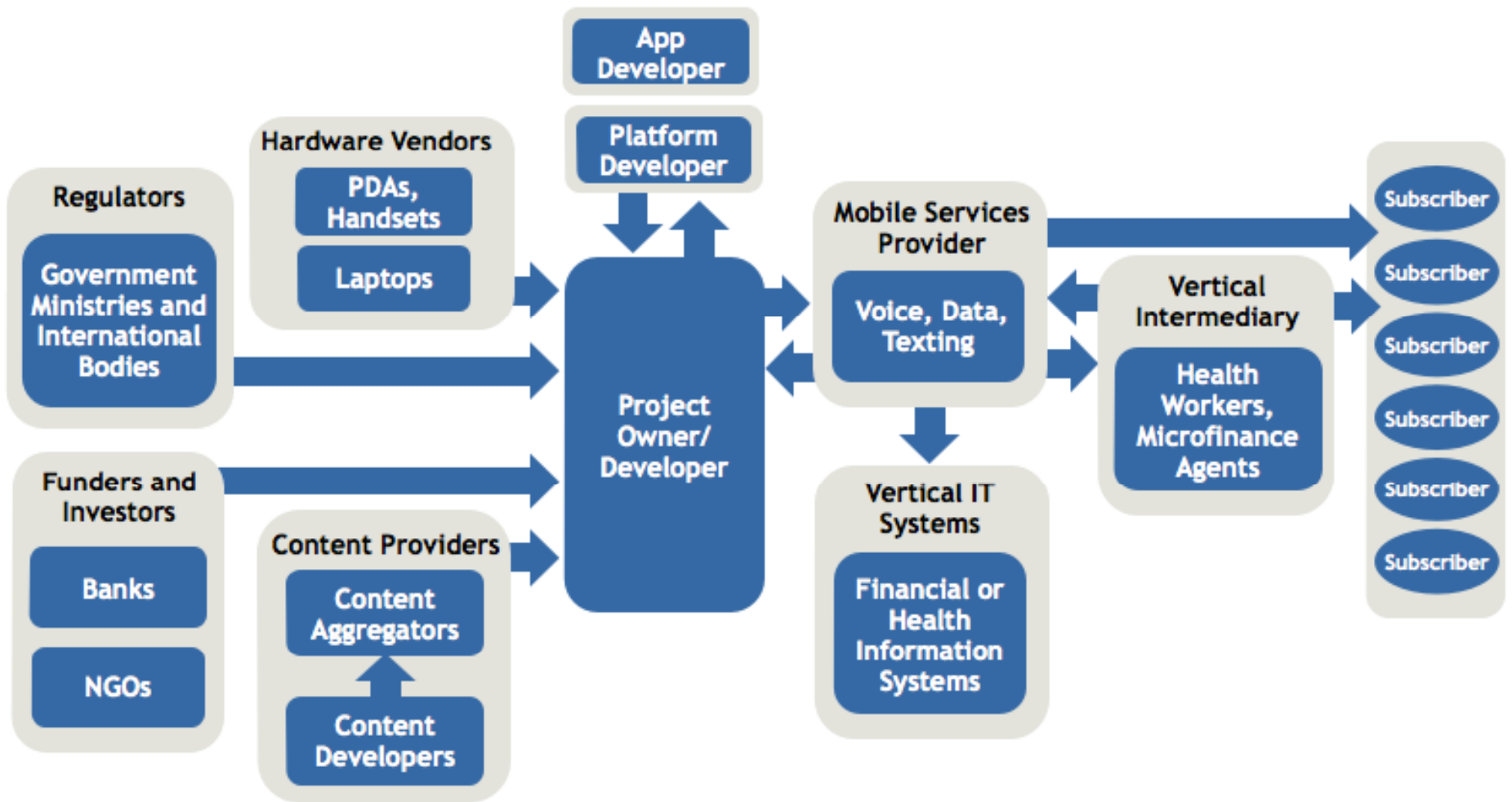
**Extension providers,  
service providers**

# Jawhar, India



# Laikipia, Kenya





# Complexity versus replicability

