Global developments of Big Data in Agri-Food

Sjaak Wolfert (Sr. Scientist, Wageningen Research)

European Big Data Value Forum, 22 Nov. 2017, Versailles, France

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Wageningen University & Research: Two Partners

Wageningen University & Wageningen Research

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Wageningen University & Research

- Academic research & education, and applied research
- 5,800 employees (5,100 fte)
- >10,000 students (>125 countries)
- > 30 locations in NL, China, Chile, Ethiopia & Saudi Arabia
- Turnover about € 650 million
- Number 1 Agricultural University for the 4th year in a row (National Taiwan Ranking)

100years
1918 — 2018

To explore the potential of nature to improve the quality of life

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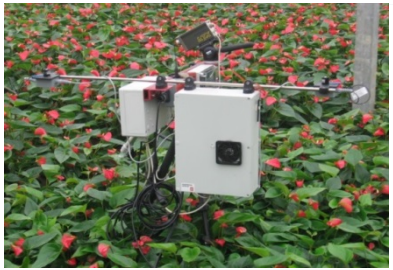
Advancements in Farming



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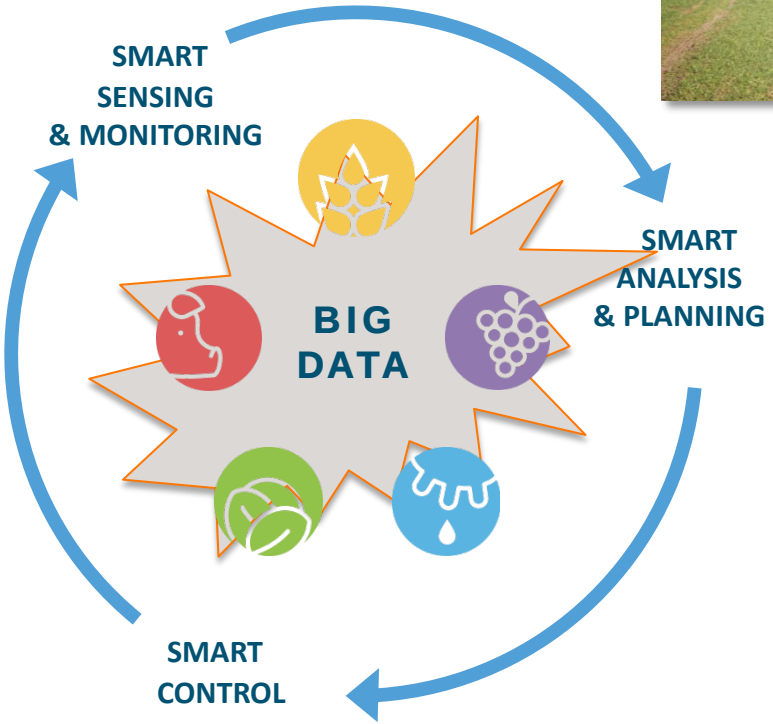
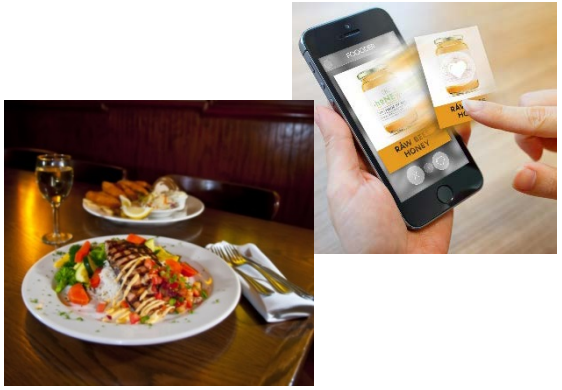


Involving entire supply chain and beyond

Smart Farming

Tracking & Tracing

Smart Logistics



Domotics

Health

Fitness/Well-being

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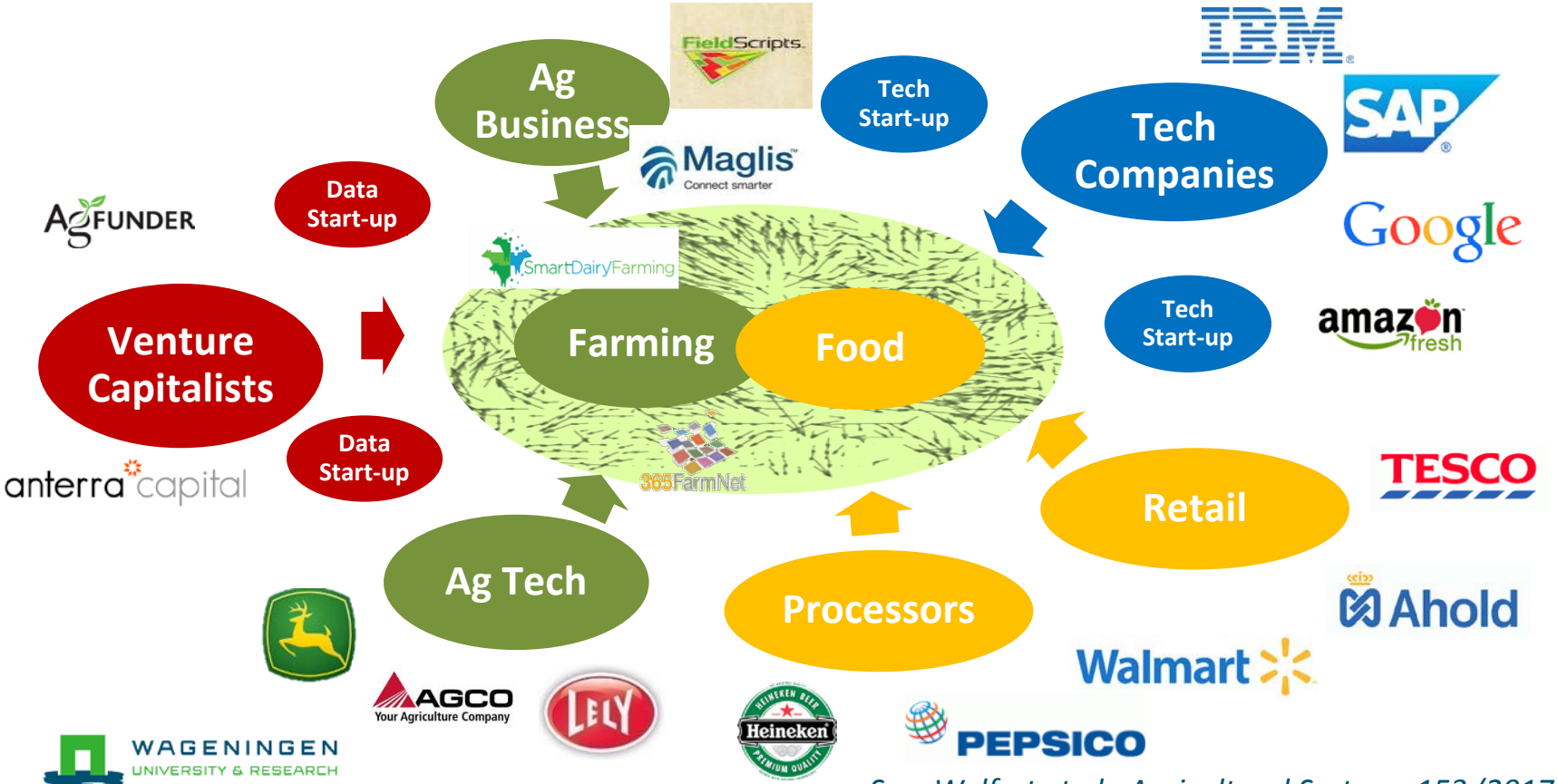
The battlefield of Big Data in Farming & Food



See: Wolfert et al., Agricultural Systems 153 (2017) 69–80

AG TECH: 100+ TECHNOLOGY COMPANIES CHANGING THE FARM

FARM MANAGEMENT SOFTWARE

Farmdok, landmapp, AEGRO, scoutpro, Granular, Agworld, agrivi, conservis, CropIn, trecker.com, PICKTRACE, FarmLogs, AgriWebb, ONFARM

NEXT GEN FARMS

BOWERY, alesca life, FREIGHT FARMS, FRESH BOX FARMS, BRIGHT FARMS, AeroFarms, GREEN SENSE FARMS, GOTHAM GREENS

PRECISION AGRICULTURE AND PREDICTIVE ANALYTICS

agronóstico, AGRIBLE, GAMAYA, Strider, GeoVisual Analytics, agrilyst, S4, Observe, CropMetrics, adapt-N, FARMERS BUSINESS NETWORK, Premier Crop Systems, bovcontrol, CropZilla, MyAgData.com, AGRALOGICS, prospera, aWhere, ec2ce, FluroSat

ANIMAL DATA

AAD Advanced Animal Diagnostics, Farmnote, stellapps, Mastiline, TL Biolabs, Connecterra, COWLAR, Moocall

MARKETPLACES

AgroStar, Agriconomie, LA RUCHE QUI DIT OUI !, Aggrigator, EM3, YAGRO

ROBOTICS AND DRONES

mavrx, FarmBot, AIRWOOD, RAPTOR MAPS, HARVEST CROO ROBOTICS, BLUE RIVER TECHNOLOGY, SkySquirrel, SKYCISION, LEADING EDGE, TerrAvion, RESSON, abundant robotics, ceresimaging

SENSORS

Centaur, SLANTRANGE, grownetics, motorleaf, pycno, SPENSA, amber AGRICULTURE, Saturas, Acuity Agriculture, FieldIn, FARMOBILE, Grassometer, Phytech, FarmersEdge, ARABLE, SMART YIELDS, flux, GardenSpace, semios, Sencrop

SMART IRRIGATION

flowius, Tevatronic 3D Irrigation Systems, livn, HORTAU SIMPLIFIED IRRIGATION, Sprinkl, HydroPoint, SMART FARM., PowWow, cropx, AquaSpy, EDYN

PLANT DATA/ANALYSIS

CiBO TECHNOLOGIES, TRACE GENOMICS, BENSON HILL BIOSYSTEMS

CBINSIGHTS

Current issues and challenges

- **Governance**
  - privacy, security, stakeholders…
- **Business models**
  - fair share, new opportunities
- **Infrastructure**
  - open versus closed
- **Ecosystems**
  - establishing critical mass

…which are often intertwined!

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Governance and business issues

Am I still owning my own tractor?

Can I transfer my data?

Do I own my data?

Who has access?

Does the government have access?

Is there a lock-in situation?

Do certain companies get much power in the market?

American Farm Bureau Federation®

Code of Conduct

AG DATA TRANSPARENT

ACCREDITED · NZ FARM DATA CODE OF PRACTICE ·

bo brancheorganisatie akkerbouw

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Value Chain Integration: FieldScripts

FieldScripts

MONSANTO

THE CLIMATE CORPORATION

Precision PLANTING

JOHN DEERE

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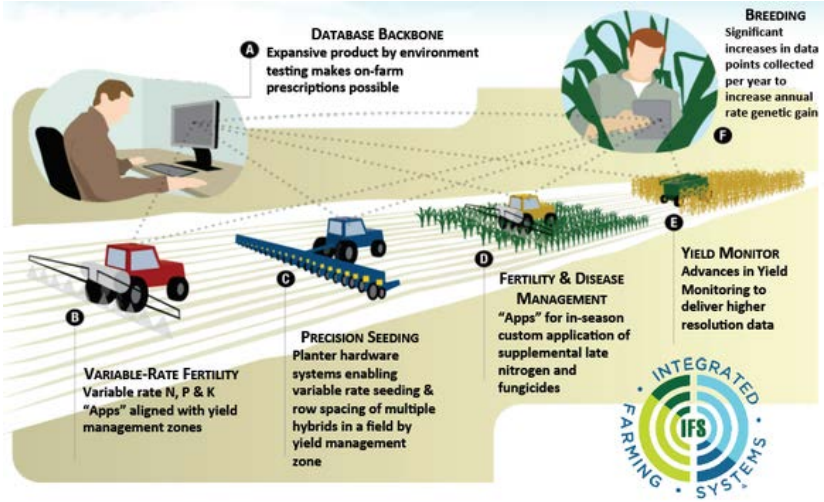
PRESCRIPTIVE FARMING

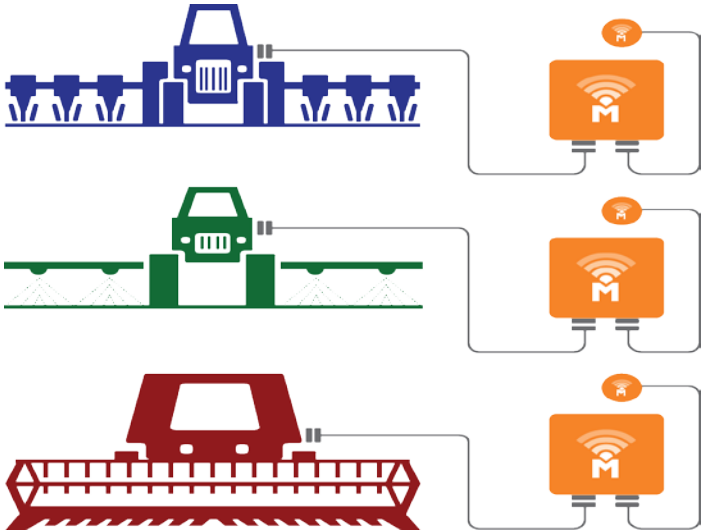
based on PRECISION AGRICTULTURE



Basic data sales

“Farmers think their trust is violated”

Their data goes to multinationals that promise high future yields based on big data, while farmers have to pay for everything



How does it work?

- A ‘box’ collects all data
- Data is stored in a cloud
- Data is being marketed/invested
- Farmer gets a share of profit

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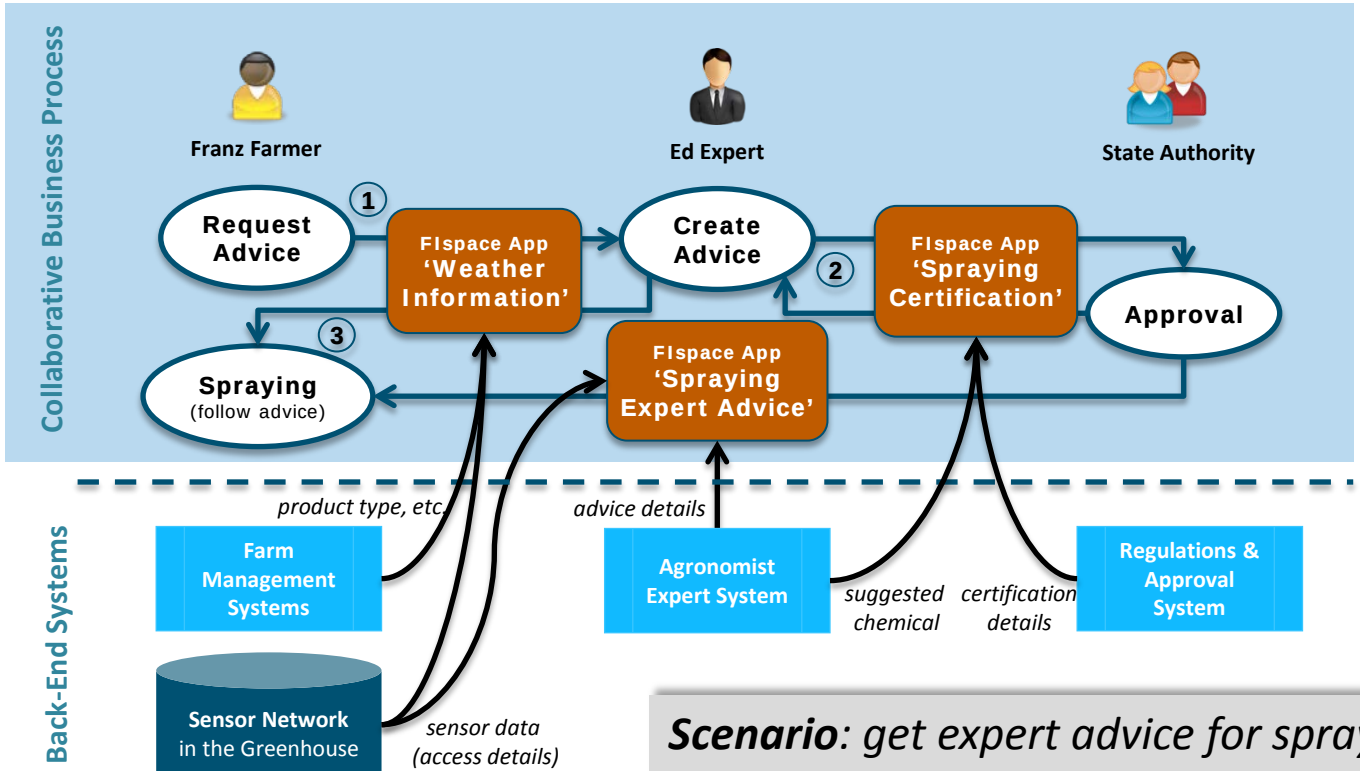
anterra capital

Creating a collaborative infrastructure



***Scenario**: get expert advice for spraying to handle disease on tomatoes*

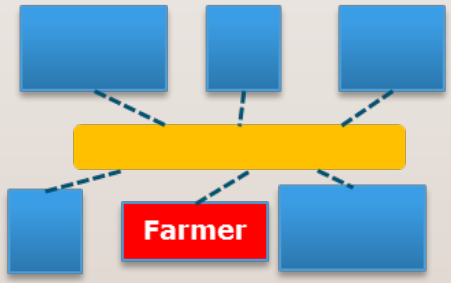
Wrap-up and conclusions

- Agri-Food chains become more technology/data-driven
- Probably causes major shifts in roles and power relations among different players in agri-food chain networks
- Governance and Business Models are key issues
- There is a need for a facilitating open infrastructure

Two extreme scenarios:

1. Strong integrated supply chain

2. Open collaboration network



Reality somewhere in between!

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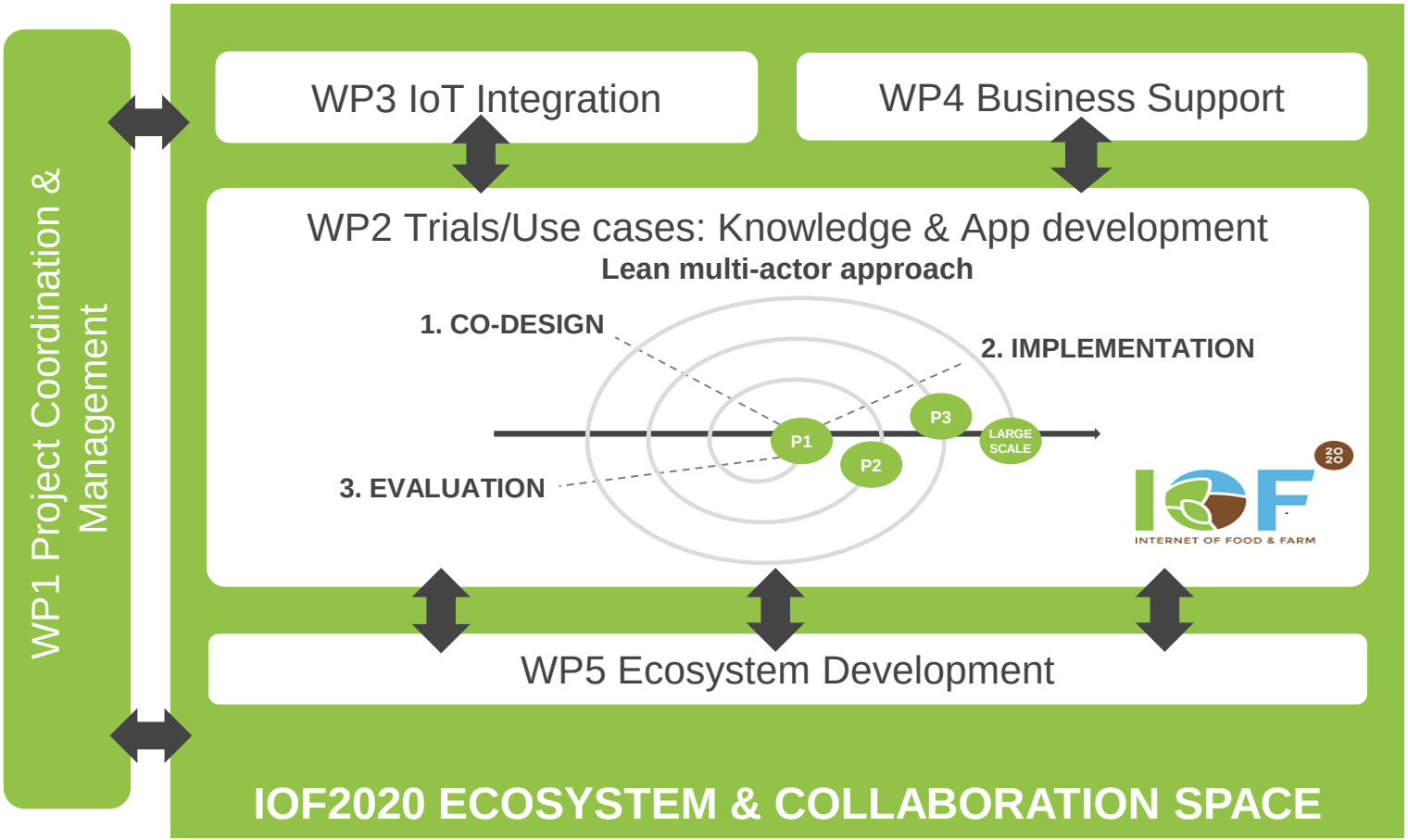
IoF2020 Generic approach & structure



Thank you for your attention!

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