Business: Data Value, Ownership, Security, Integration

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OGC Agriculture Summit ● 2017-03-21

Current Situation
Agriculture Today

- Highly complex system
- Competing constraints
- Competing incentives among stakeholders
- Risky business
- Often challenging to tie outcomes to causes
- Difficult to test some hypotheses
  - For some crops, farmers conduct annual “experiments”
- Substantial investment in ag tech

Data is the bridge to “better” agriculture

- But better how?
- For whom?
Data Challenges

Data can be:
• Inaccurate
• Incomplete
• Available too late to be useful
• Separated from critical metadata
• Tedious to acquire and transfer
• Expensive to “clean”

How You Will Help

• Understand the big picture
  • Its complexity
  • Its messiness
  • Its virtues and its vices
  • Its promise
• Build fundamental capabilities
• Educate
• Motivate
Some Claims Made in the Ag Industry

- **Everyone**
  - It is important to feed the world
  - It is important that farmers are profitable
  - It is important to care for the environment
  - Farmers own the field ops data they generate

- **Farmers**
  - My data is valuable
  - Everybody wants my data

- **Service Providers**
  - Farmers who provide my company their data can count on lower costs and increased yields based on the actionable insights we provide
Farmer Views of For-Profit 3rd-Party Data Use

Basic Formula
• Farmer provides data to 3rd party
• 3rd party analyzes data and delivers actionable insight to farmer

This never occurs by itself, but plays out in one of the variations on the right. (In technical terms, think of it as the abstract base class.)

Variations
1. Farmer pays:
   Farmer pays the 3rd party for their service*
2. 3rd party better informed:
   3rd party analyzes data to produce actionable insight to themselves, often at the expense of the farmer (remember, this a farmer view)
3. 3rd party sells data:
   3rd party packages data in various ways and sells the packages
4. Any combination of the above

Payment may be indirect, e.g., as a benefit of purchasing some other product or service.

So some variations are a real problem, right?

• Not necessarily
• If the farmer and the 3rd party are clear about what rights the farmer is granting the 3rd party with respect to their data, then things should be fine, except...
• Farmers do not blindly trust
  • Remember ag tech investment? Investors expect returns on investment. Farmers intuitively understand the moral hazard inherent in such situations.
• So, issues around farmer data involve
  • Social dynamics
  • Legal frameworks (perhaps involving multiple jurisdictions)
  • Technological challenges
Note on University Research

• It seems that, in the United States at least, farmers generally trust university-based research programs

• This means that farmers view university-based research very differently from data-analysis services provided by for-profit 3rd parties

• While university-based research is critical to advancements in agriculture, commercial-based research and solutions are critical as well

• The same is true for some government-funded research

Path Forward
How You Will Help – Again

• Understand the big picture
  • Its complexity
  • Its messiness
  • Its virtues and its vices
  • Its promise

• Build fundamental capabilities
• Educate
• Motivate

Consider the virtues of the stated desired outcomes and then check for alignment of the incentives of the parties involved in achieving them.

This is where you currently have, and will continue to have, a positive impact.

Collaborate

• Forums like this are a great example
• OGC and AgGateway
• AEF and AgGateway
• ASABE and AgGateway
• ISO and AgGateway
• Competitors with one another
Collaborate on the basics, compete on everything else

Develop Reference Data Resources

- Grower information
- Product information
- Equipment information
- Pest information
- RFID and bar code standards & guidelines
- API development for all of the above
Semantics

- Avoid coining new terms for old concepts
- Contribute to AgGateway’s glossary

Data Security

- Categories
  - Data in transit
  - Data on site
- This challenge is mostly solved with today’s technologies
Contracts Involving Data Management

• Standardize key elements of contracts that address data management
• See work led by the American Farm Bureau Federation at https://goo.gl/0VB1RP

Technologies Involved in Data Management

• Grant fine-grained authorization
• Grant/restrict authority to delegate
• Specify time scope
• Verification mechanisms
Integration

- If you’ve addressed all the rest, this is the relatively easy part!
- Tedious, yes, but doable
- Start with AgGateway’s ADAPT

Thank you!

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