# How Insurance Will Use Technology and Big Data

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Risk Management Decision for Tomorrow
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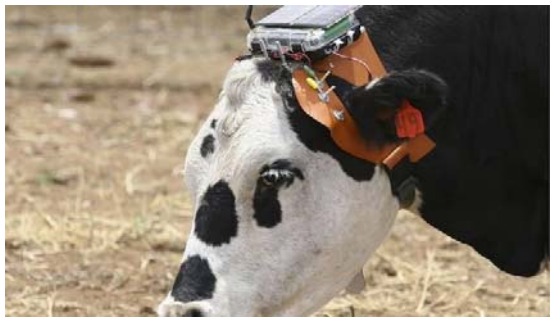
## Current precision ag utilization

- 16% of service providers use UAVs
- Most common (72%) soil grid size = 2.5 ac
  - Smaller grid sizes used only 13% of time
- 20% use telematics in 2015
  - Up from 15% in 2013 and 7% in 2011

Erickson & Widmar, 2015

## What are Telematics?

- The branch of information technology that deals with the long-distance transmission of computerized information.



## What Comes to Mind When You Think of Telematics and Insurance?

# State Farm Introduces Home Alert in 2013

# American Family's "Nest Safety Rewards"

AMERICAN FAMILY INSURANCE

nest

# Telematics in Agriculture

# Ag Companies Involved in Telematics

| Company | System | Method | Vehicle Tracking | Vehicle Alerts | Operation Data Transfer | Data File Transfer |
|---|---|---|---|---|---|---|
| AGCO | AgCommand | Cellular | Yes | Yes | Yes | No |
| CLAAS | CLAAS Telematics | | Yes | | Yes | Yes |
| Raven | Slingshot | Cellular | Yes | No | No | Yes |
| John Deere | JDLink | Cellular, Satellite | Yes | Yes | Yes | No |
| Trimble | Connected Farm | Cellular, Radio | Yes | Yes | Yes | Yes |
| CaseIH | AFS Connect | Cellular | Yes | Yes | Yes | Yes |

Mention or omission does not imply endorsement

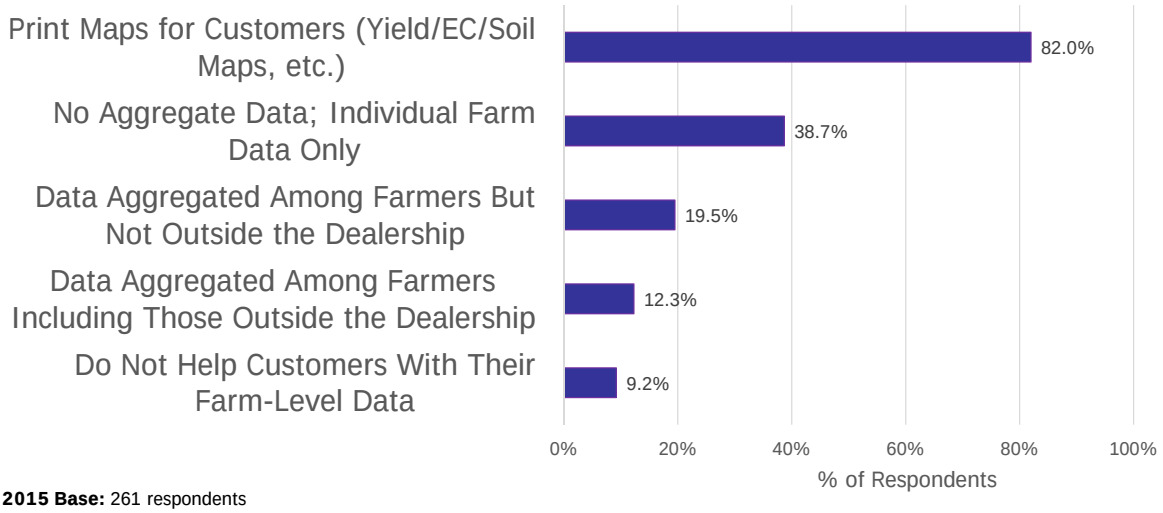
# What is Big Data?


# Big Data vs Open Data

- **Big data** is a broad term for **data** sets so large or complex that traditional **data** processing applications are inadequate. Challenges include analysis, capture, **data** curation, search, sharing, storage, transfer, visualization, and information privacy.
- the idea that some data should be freely available to everyone to use and republish as they wish, without restrictions from copyright, patents or other mechanisms of control

# Ag Data Analysis Service Offerings

Managing Farm-Level Data to Assist Customers in Decision Making




**2015 Base:** 261 respondents

Source: Erickson & Widmar, 2015

# From one-field-at-a-time to Big Data

- Data maybe considered
  - "non-rival"
  - "Excludable" and/or "non-excludable"
- Copies of digital data identical to original
- Value lies in its use, not in the possession
  - Data tombs are common (and worthless)
  - 'one who controls the data enjoys the value'

# Community Data Analysis

- "Network effects" and Metcalfe's Law
- Society's Value of Farmer Participating in Community is Greater than Value to the Farmer
  - secondary use value > primary use

# Value of Big Data via Network

Value of secondary use > Value of primary use

| Data | Primary Use | Secondary Use |
|---|---|---|
| Yield monitor data | Documenting yields<br>On-farm trials | GxExM analyses |
| Soil sample data | Fertilizer decisions | Regional compliance |
| Scouting | Spray decisions | Regional analytics |

# Valuation of Precision Ag Data

- Consider the farm-level value of ‘lost data’
  - Pirate holding data for ransom
  - Willingness-to-pay for data security
- Court system likely decide value
  - rather than free market
- Value much greater to aggregator

# Big Data in Ag is “Mature” when:

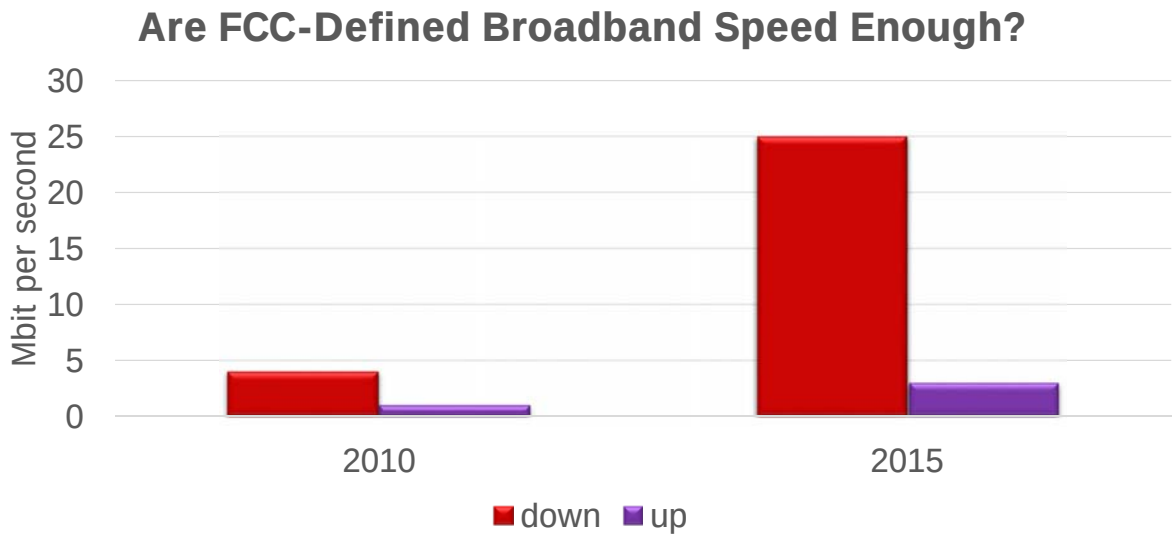
- Flow of data controlled by only a few entities
- Secondary uses recognized as valuable
  - If yield monitor malfunctions, harvest stops for repair
  - Combine operators trained to collect data
- Farmland values and rents affected by
  - presence of data
  - broadband connectivity

- “Data, data, everywhere, Nor any a bit to use.”

# Barriers to Big Data in Ag

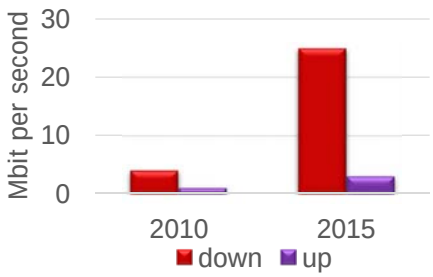
- Wireless connectivity infrastructure
- Data privacy, security, and ‘trust’

# Barriers: Wireless connectivity

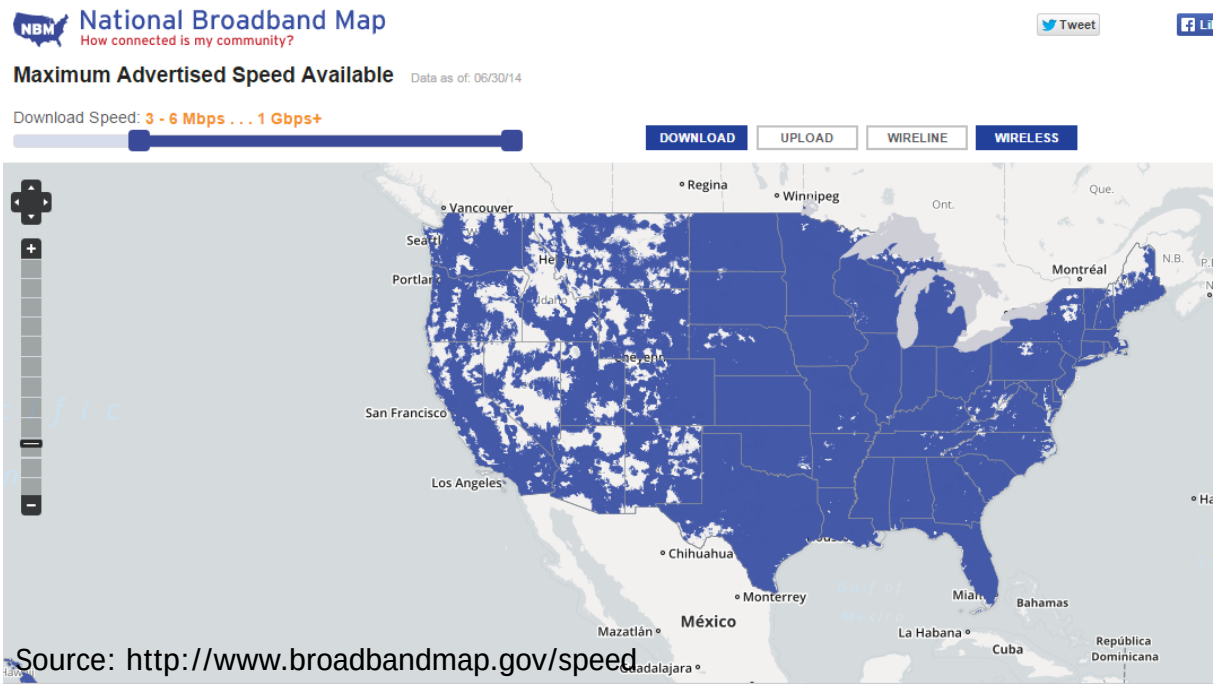



# Is Broadband Speeds Enough?

- UAV imagery example (Buschermohle, U of Tennessee)
  - 40 acre field with 17 pictures ~ 111 MB (almost 3 MB/acre)
  - 92 acres with 152 pictures ~450MB (almost 5 MB/acre)
- Other sensor and prescription data (Shearer, tOSU)
  - Spraying 0.3 MB/acre
  - Planting 5.5 MB/acre
  - Yield data 4.2 MB/acre
  - Soil /Fertility Data 0.6 MB/acre
  - Prescription files 0.01 MB/acre

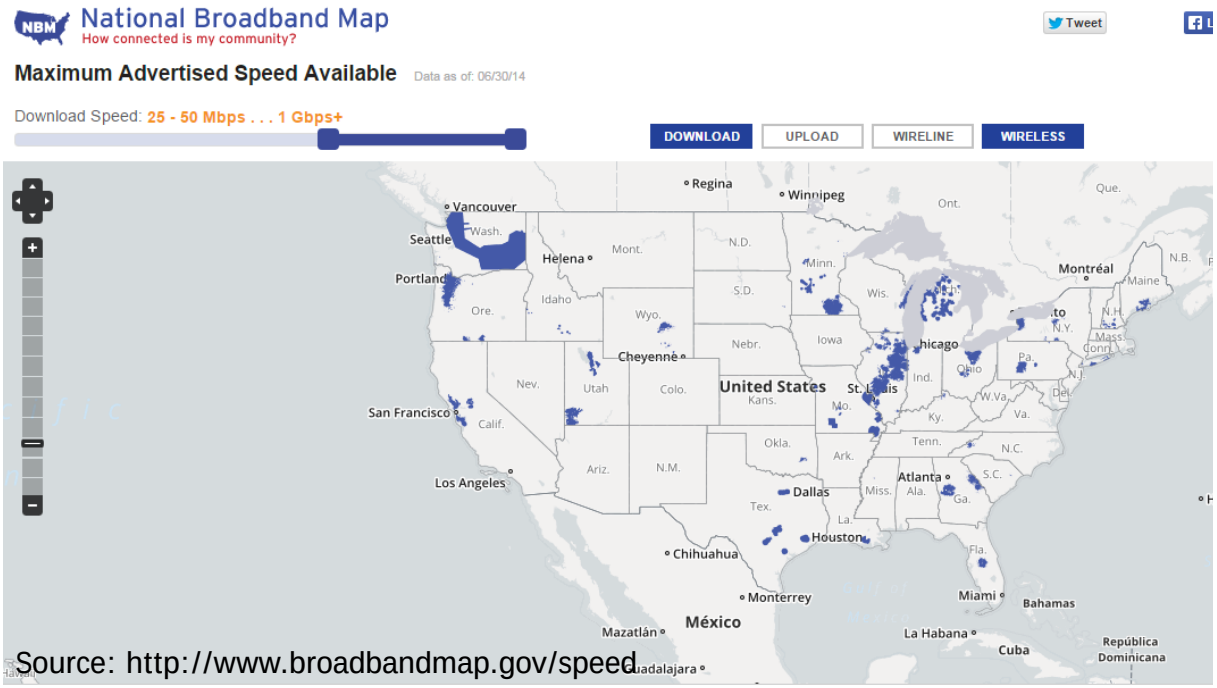


# FCC Broadband Definition: 2010 to 2014




Source: http://www.broadbandmap.gov/speed

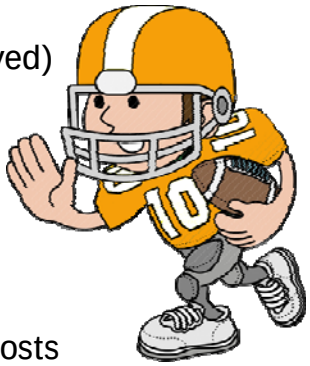
# FCC Broadband Definition: 2015



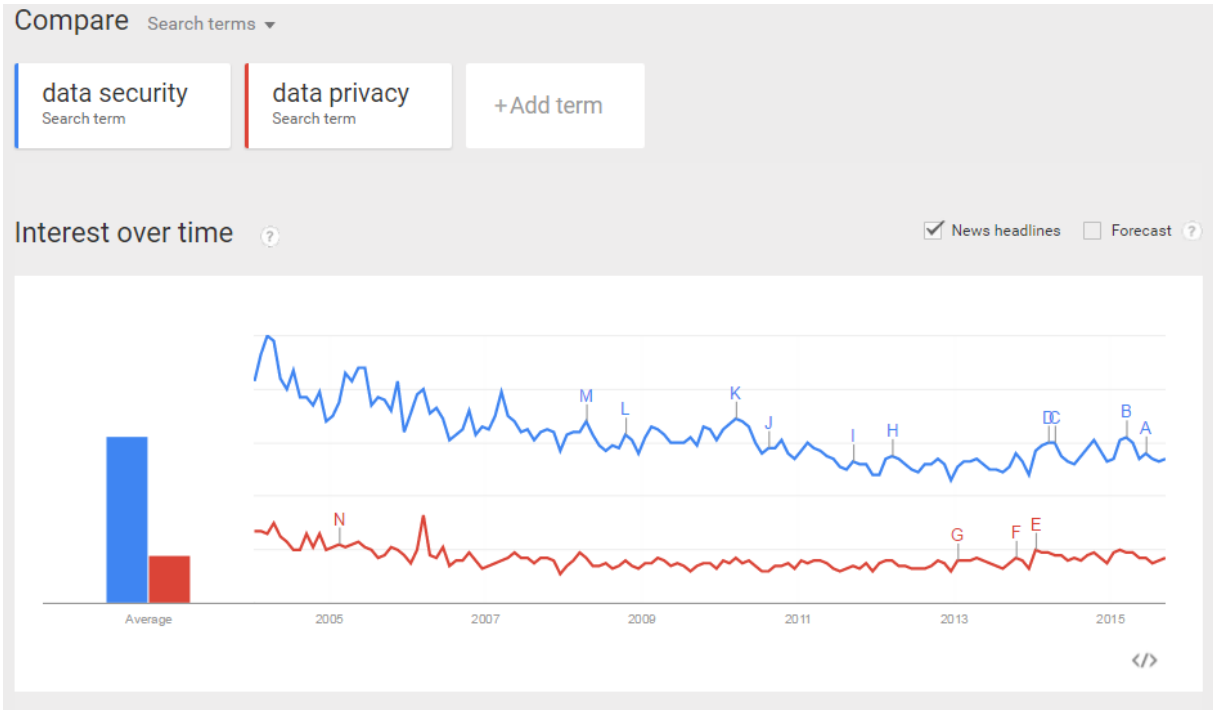

Source: http://www.broadbandmap.gov/speed

# Barrier: Perceived and Real Risk

- General reluctance to share data
  - Farmers relatively more reluctant
- Data is an intangible resource
  - Source of competitive advantage (real or perceived)
- Ramification of relinquishing control
  - Gives up competitive advantage
  - Gives up bargaining power
  - Fear own data used against them
- Costs vs. Benefits (perceived or real)
  - Reduced reluctant when benefits outweigh the costs
  - We all do it: mobile phone apps, Google Maps, etc...



Source: Shanoyan and Griffin



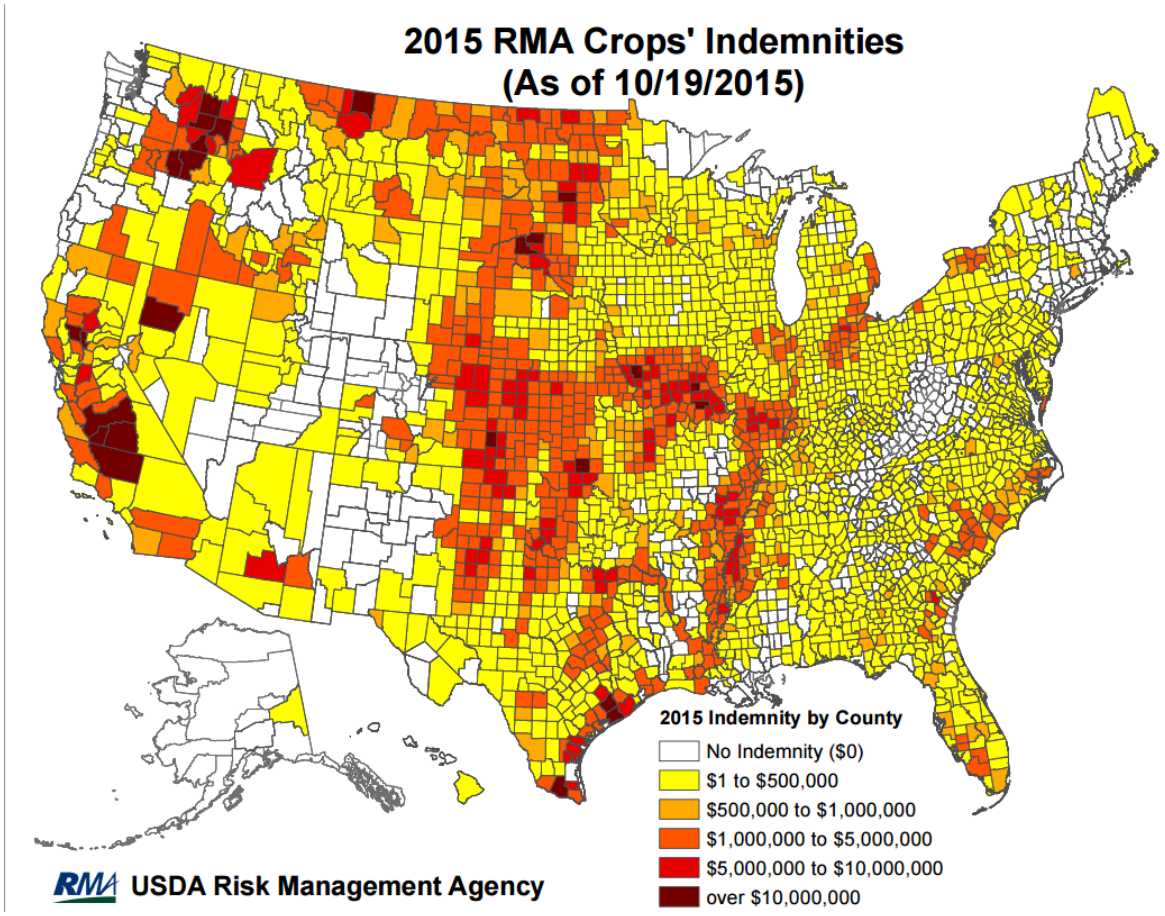

Source: https://www.google.com/trends/

# How will crop insurance make use of Big Data?

- "*90% of the data in the world today has been created in the last two years alone*" (IBM, 2012).


# Implications of Telematics on the Crop Insurance Industry

- Difficult to monitor farmers' activities in relation to crop insurance guidelines
- Possible use of telematics
  - Document planting and harvesting dates
  - Accurately track harvest data in real-time
  - Track equipment time-and-motion data


2015 RMA Crops' Indemnities
(As of 10/19/2015)
2015 Indemnity by County
No Indemnity ($0)
$1 to $500,000
$500,000 to $1,000,000
$1,000,000 to $5,000,000
$5,000,000 to $10,000,000
over $10,000,000
USDA Risk Management Agency

# Questions????

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# Thank you!!!

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