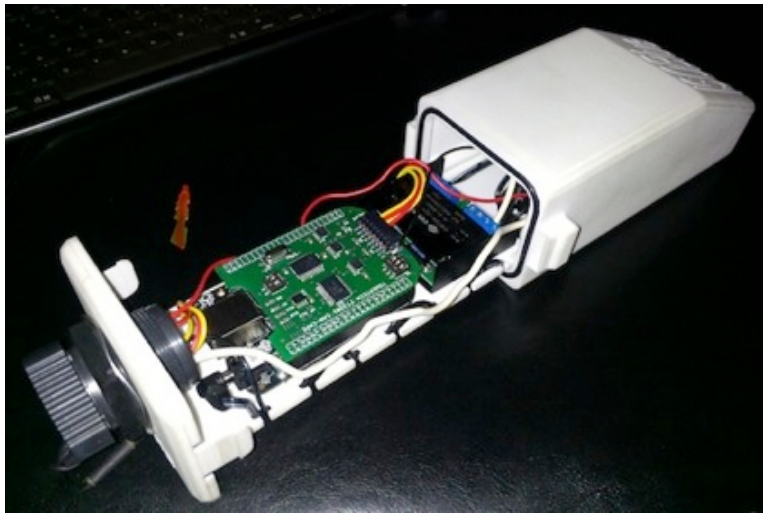
ISOBlue



ISOBlue

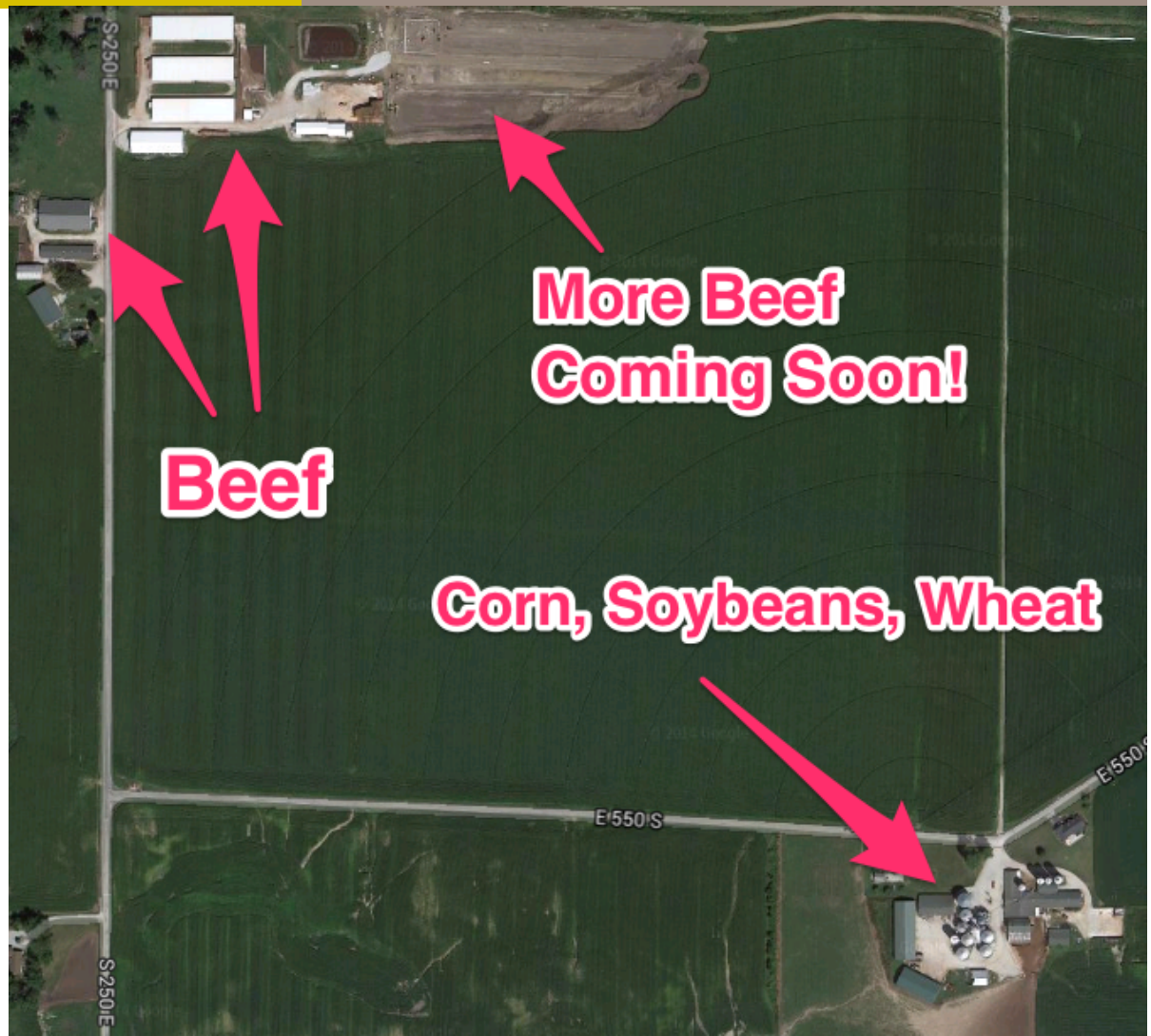
History and Status

Aaron Ault

April 29, 2014

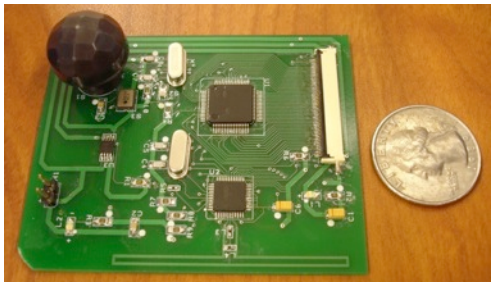
Background: Aaron Ault

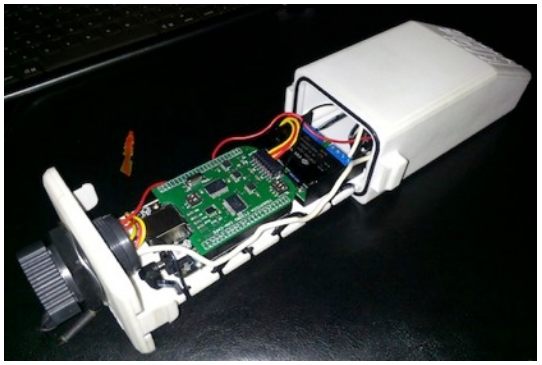
Farmer



Background: Aaron Ault

Farmer





Computer Engineer

e-Stadium: Wireless Applications in a College Football Stadium

Catherine Rosenberg, Hoi-Ho Chan, Timothy J. Rogers and Vivek P. Mhatre

The Development and eStadium Testbeds for Research ar

Xuan Zhong, Hoi-

Mobile, Cloud-Based Farm Management: A Case Study with Trello on My Farm

Aaron Ault, James Krogmeier, Dennis Buckmaster

Background: Aaron Ault

Farmer

Computer Engineer

http://engineering.purdue.edu/oatgroup

Open Ag Tech Group at Purdue

Background: Aaron Ault

- Farmer
- Computer Engineer
- Open Ag Tech Group at Purdue
- **Project Lead, Open Ag Data Alliance**

Data Today: An Example

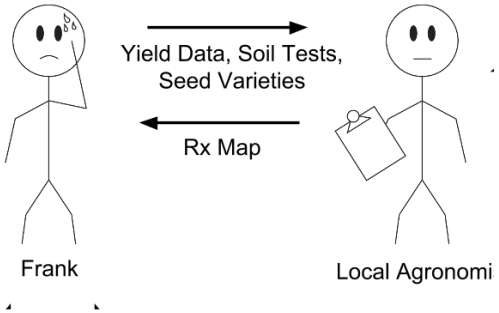
Prescription Planting Maps

Data Today: An Example

Prescription Planting Maps

Meet Frank and Andy.

Data Today: An Example



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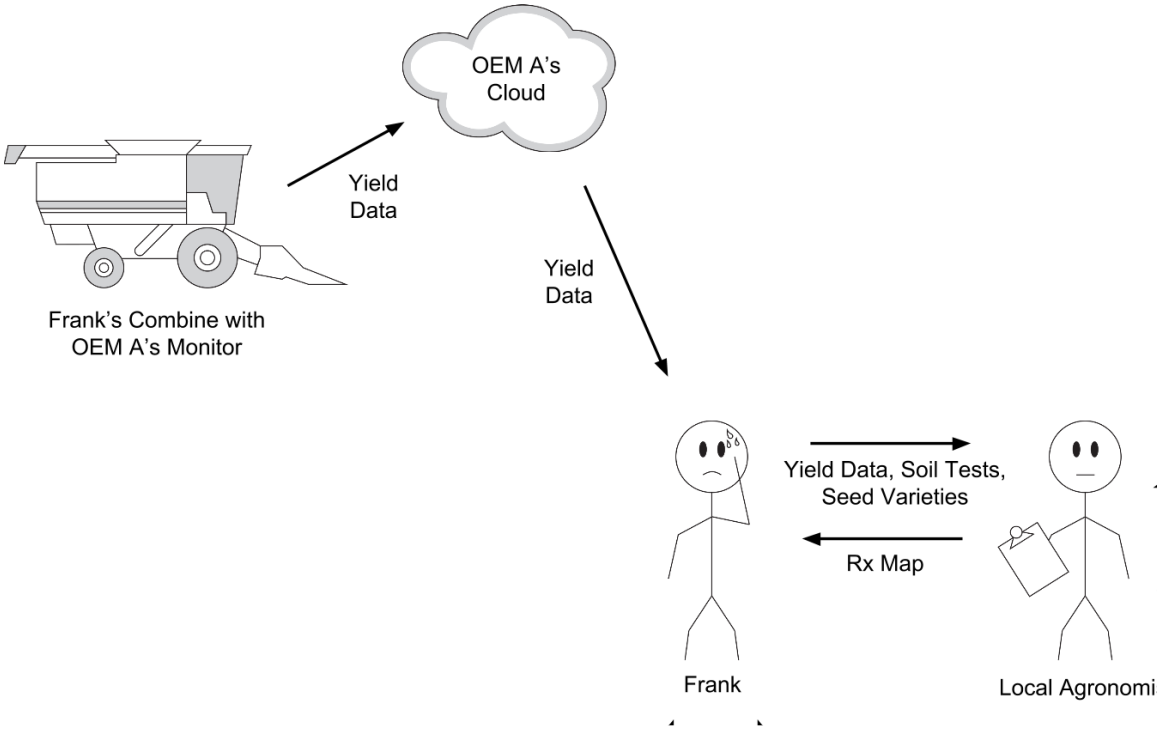
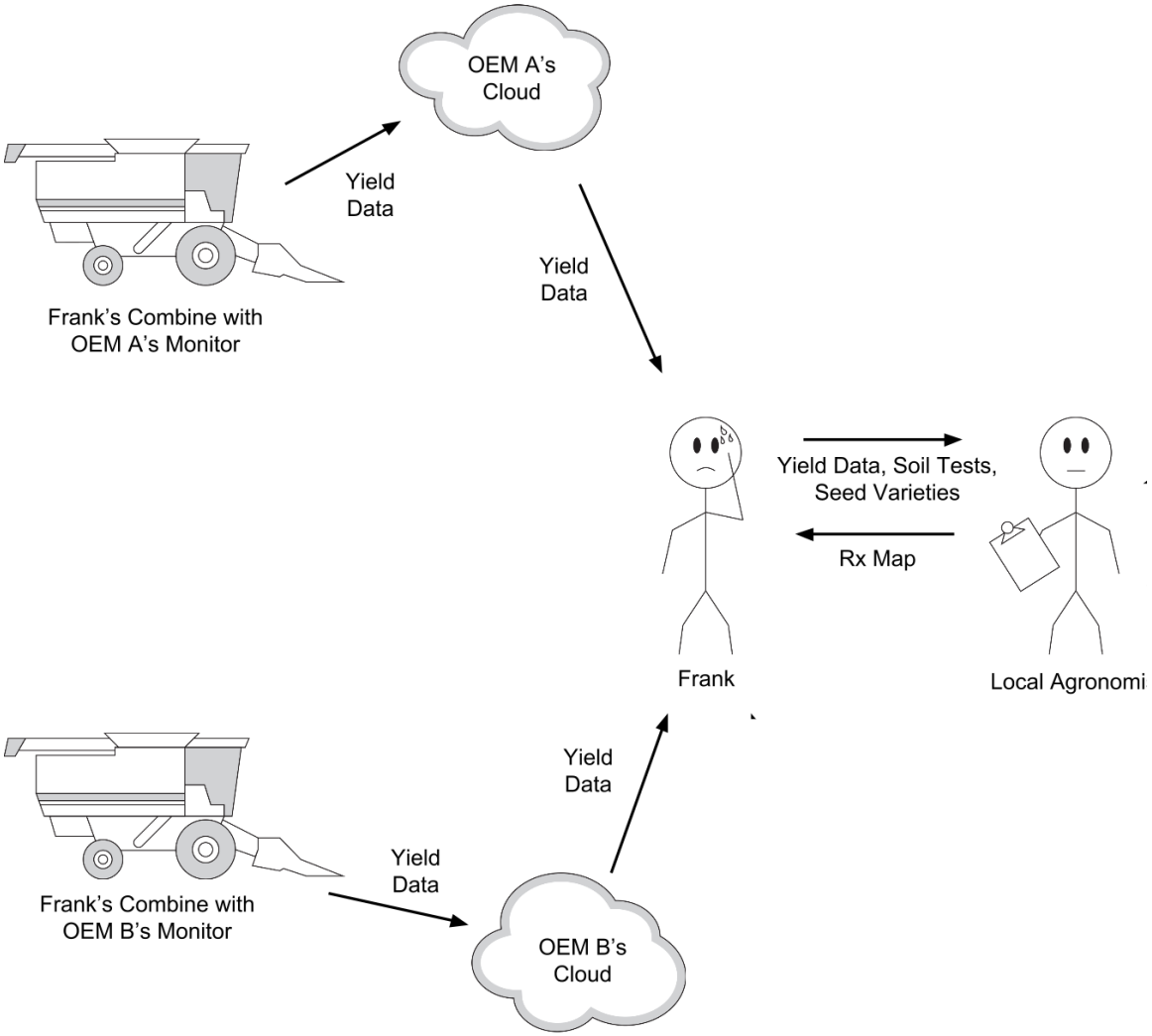


Data Today: An Example



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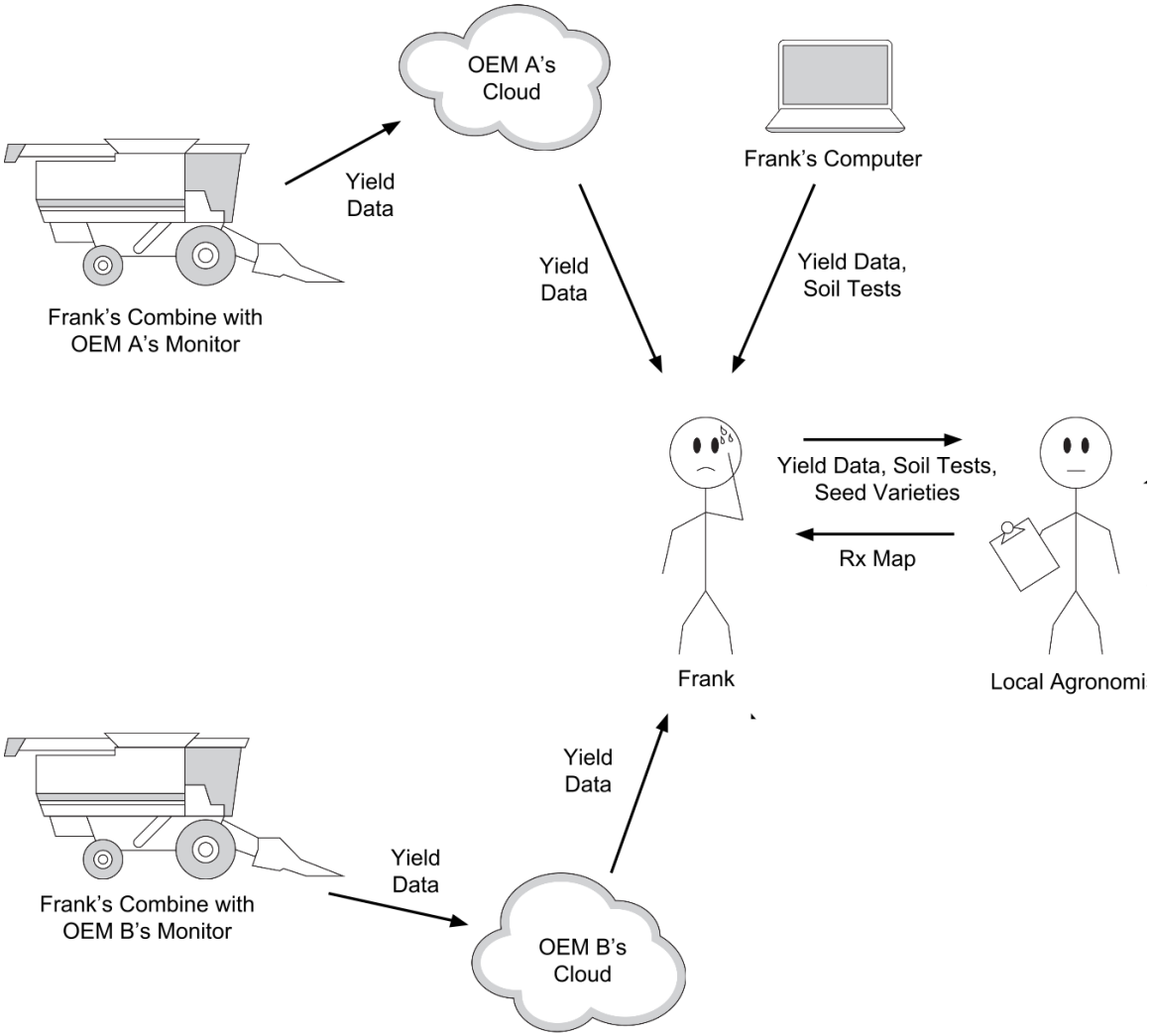
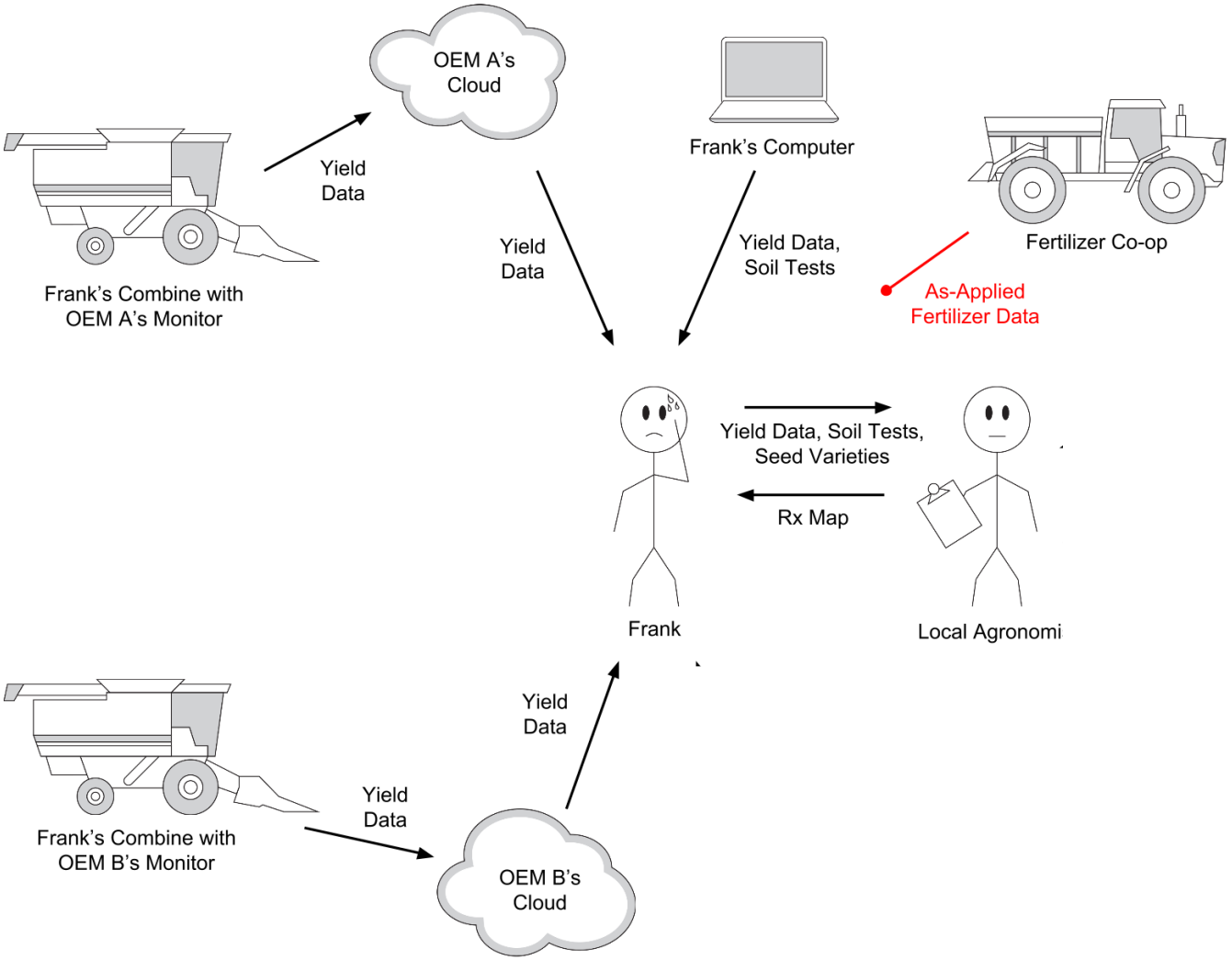


Data Today: An Example



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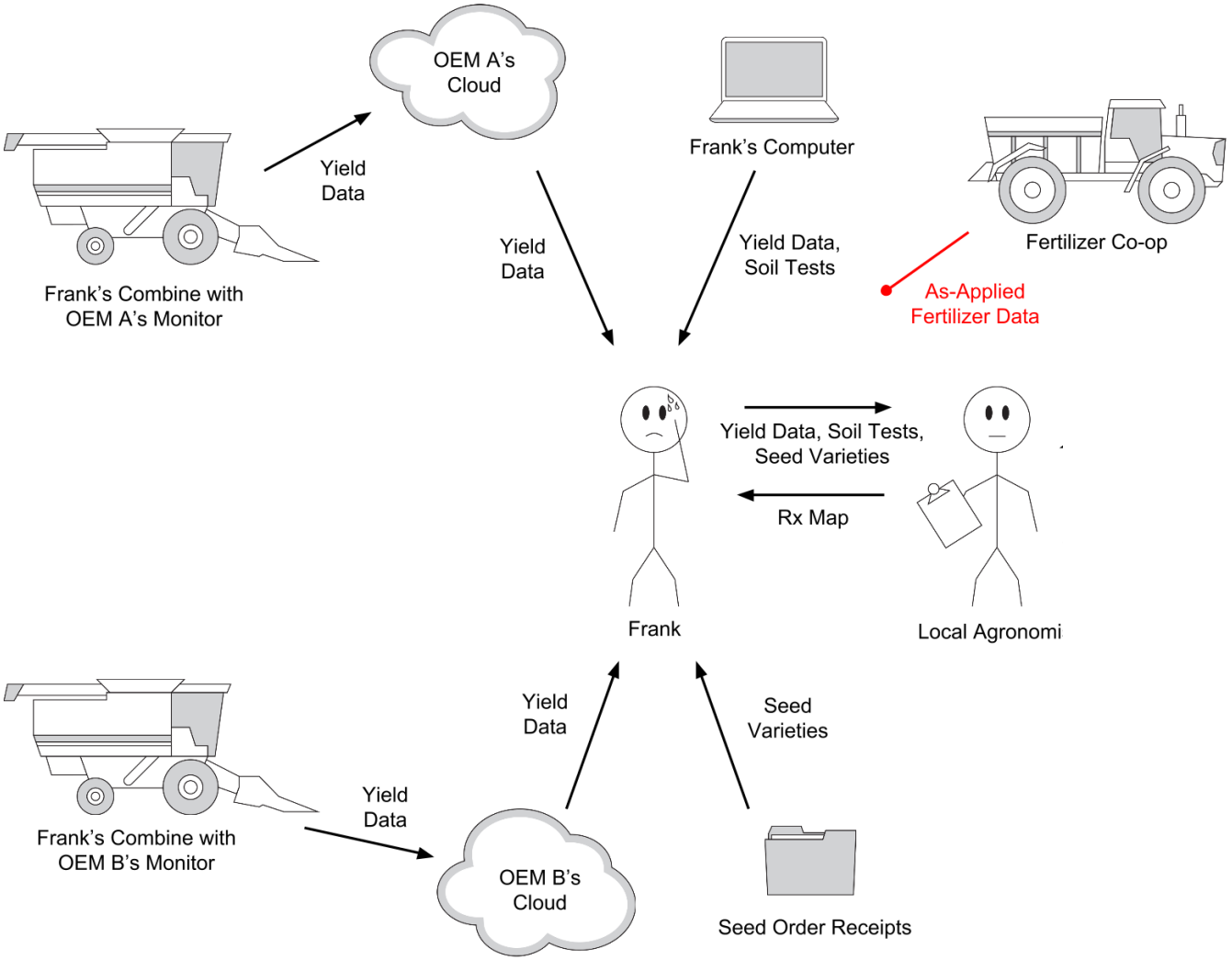

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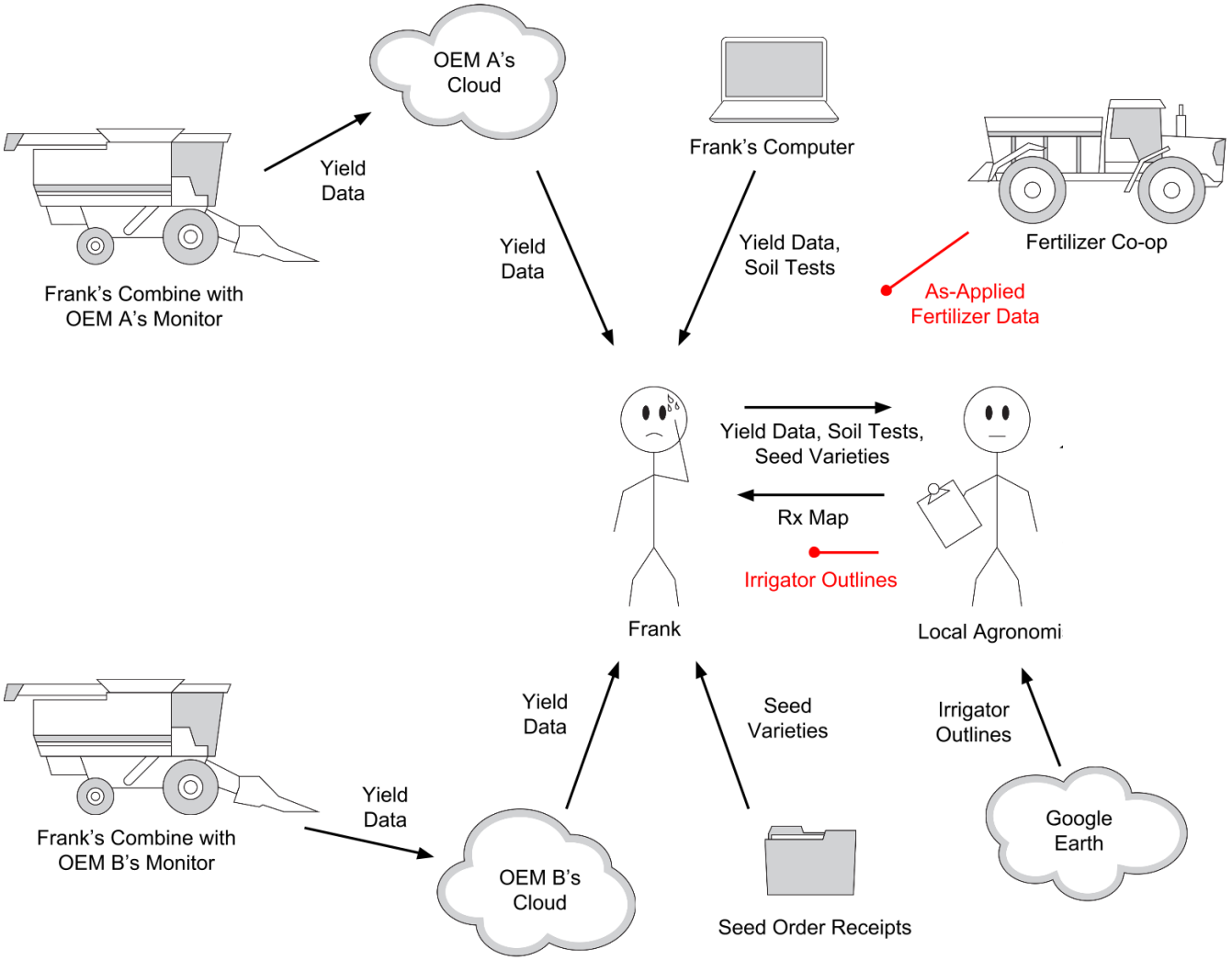
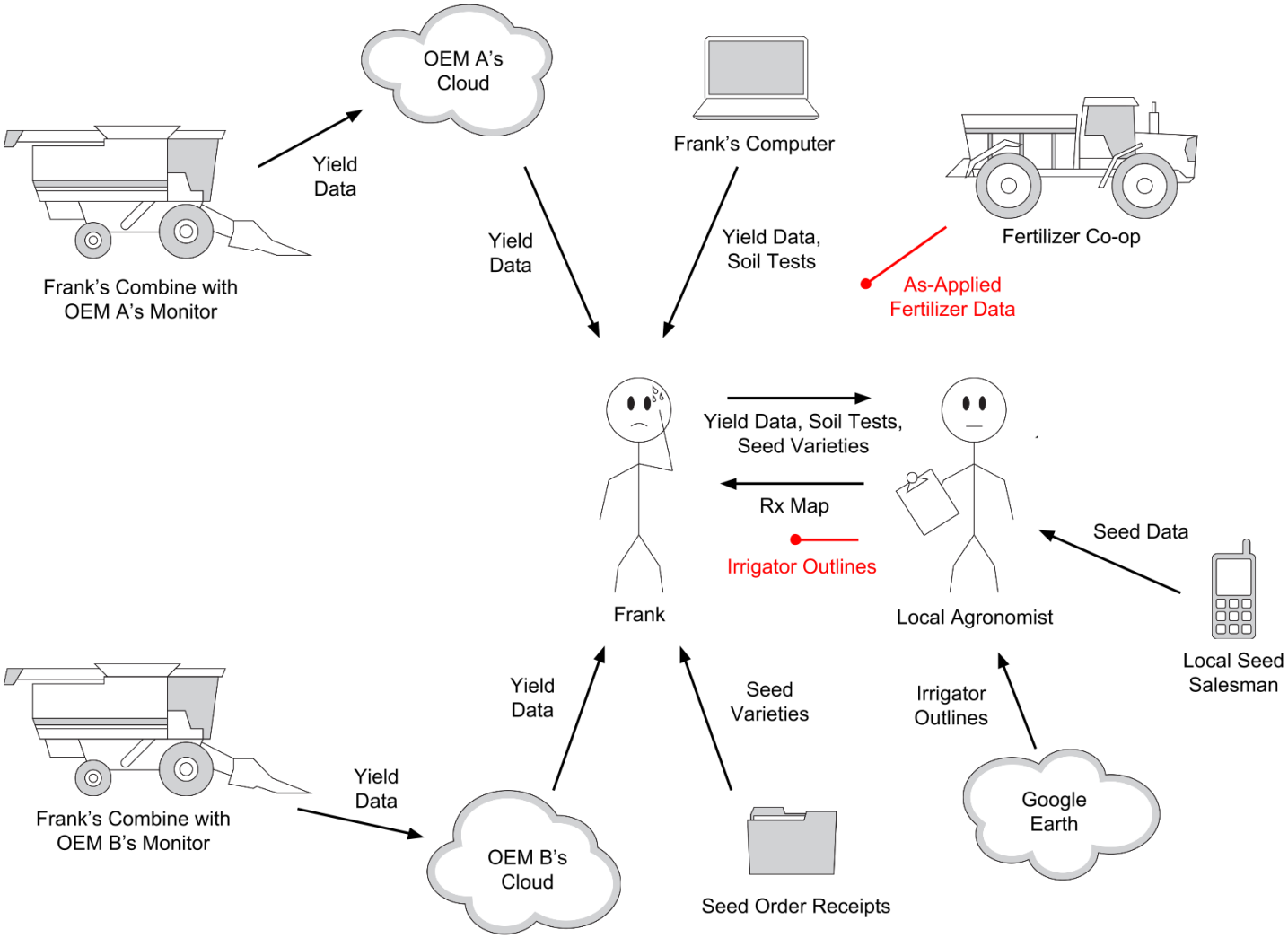


Data Today: An Example



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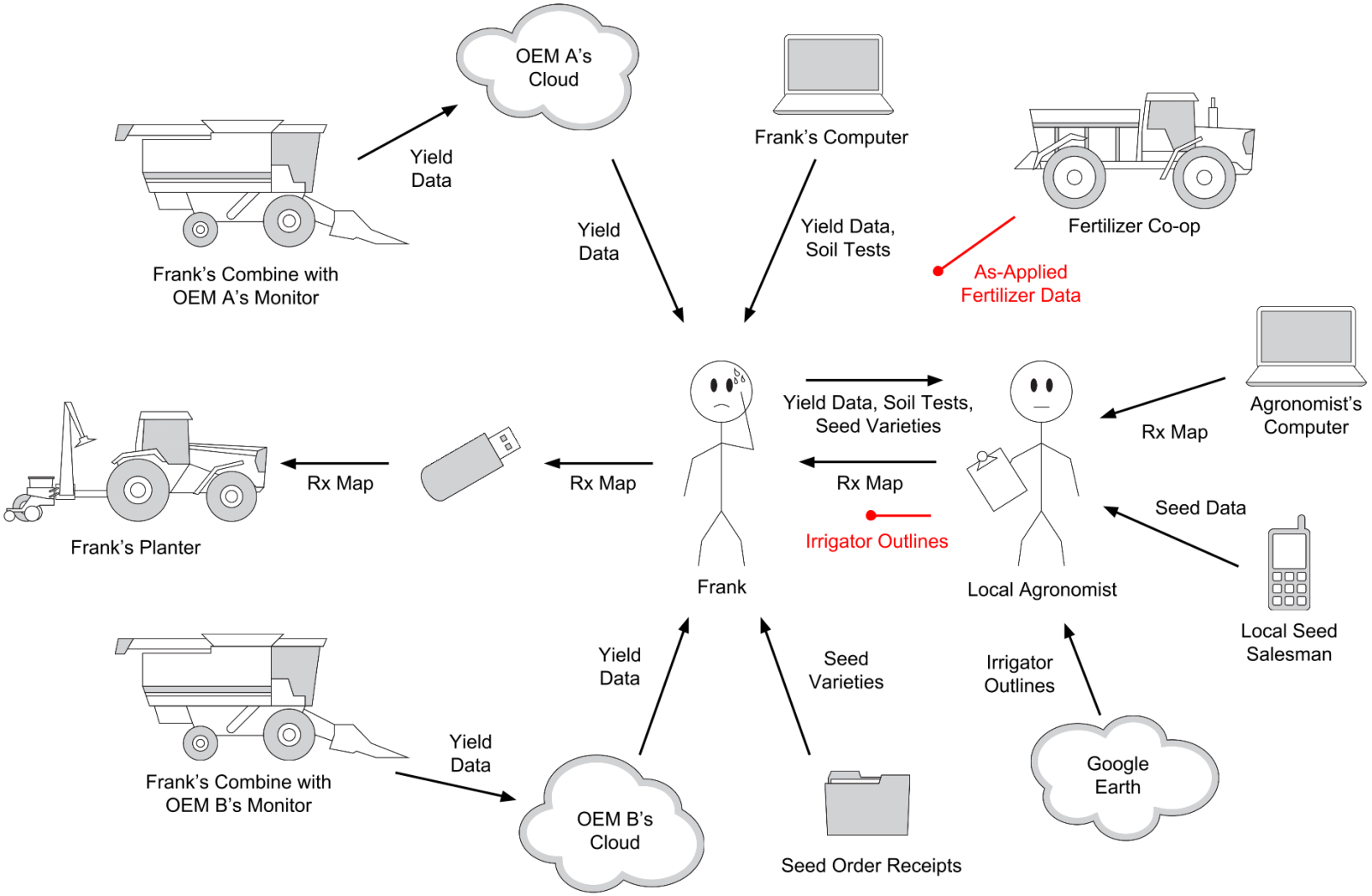

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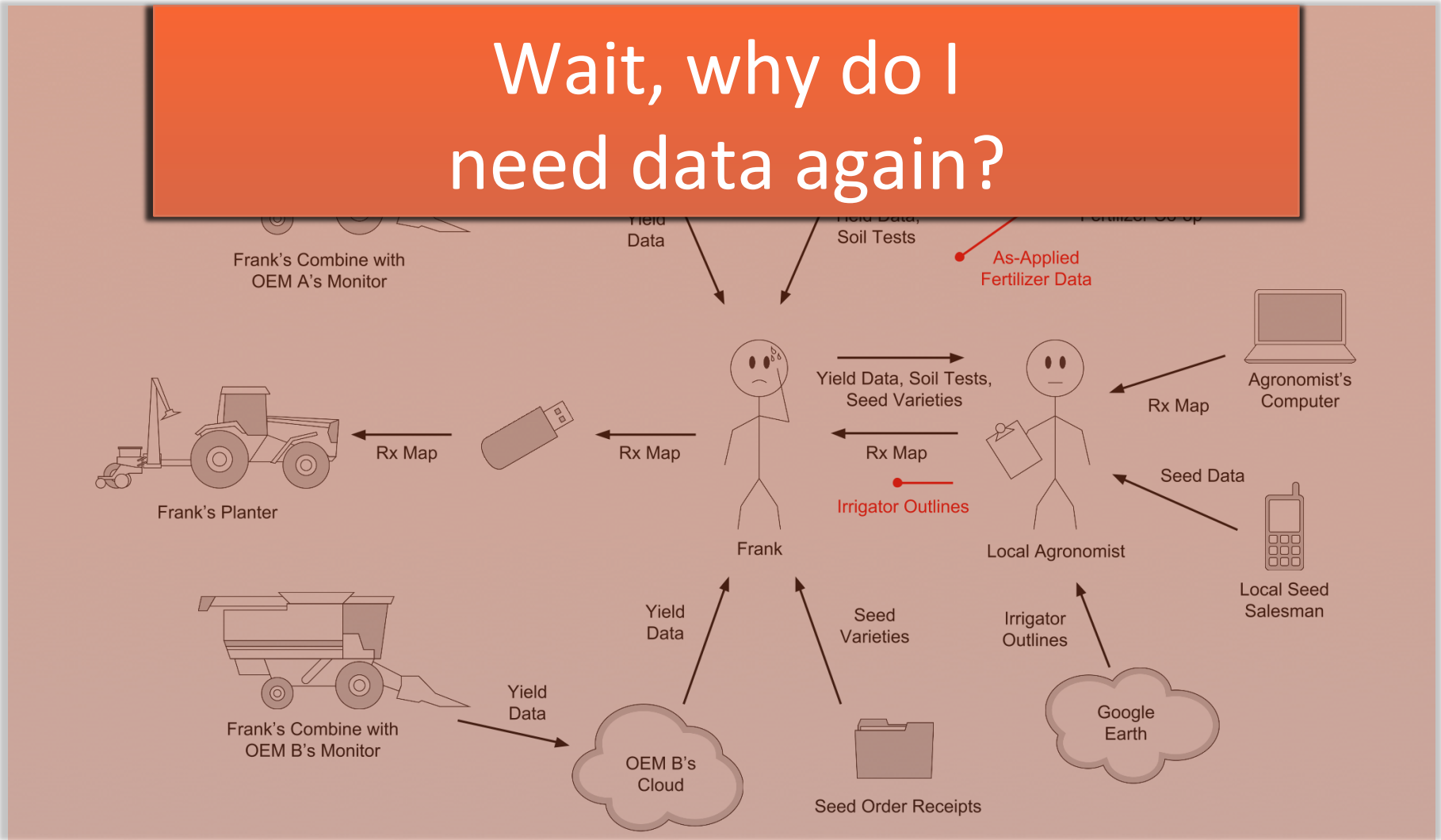

Data Today: An Example

Wait, why do I need data again?

Frank's Combine with OEM A's Monitor

Yield Data

Soil Tests

As-Applied Fertilizer Data

Agronomist's Computer

x Map

Seed Data

Frank's Planter

Local Seed Salesman

Frank's Cor
OEM B's

OEM B's Cloud

Seed Order Receipts

http://cdn.carthrottle.com/wp-content/uploads/2013/03/Success-kid-655x368.jpg

Data: The Promise

4 minutes of decisions
I can’t evaluate today……

Data: The Promise

- Cover Crops
- Deep Till vs. No-Till vs. Minimum Till
- Effect of Manure Management
- Effect of stover removal
- Fungicide response in a dry summer
- Stratego vs. Headline
- 22 oz/acre Glyphosate vs. 32 oz/acre
- Split Fungicide Applications
- Irrigation
- Seed spacing
- Down pressure
- Silage corn vs. BMR
- Insecticide
- Starter fertilizer rate
- 20% vs. 5% Refuge vs. RIB
- GPS-based fertilizer vs. constant rate
- Variable-rate population
- Variable-rate nitrogen
- Variable-rate population by soil type
- Foliar fertilizer
- Foliar fertilizer rates
- 30-inch vs. 15-inch bean rows
- New planter vs. old planter
- Disc vs. vertical tillage
- Fall vertical tillage
- Level7 solution buffer
- Crop oil additive
- Mycogen vs. Pioneer vs. Dekalb vs. Beck's
- Quantifying standability yield effects
- Phantom Loss
- Replant after flooding
- Real effect of planting date

Data: The Promise

Evaluate decisions.
Make more informed ones.

- Cover
- Deep T
- Effect
- Effect
- Fungicide response in a dry summer
- Stratego vs. Headl
- 22 oz/acre Glypho
- Split Fungicide Ap
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- Seed spacing
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- 20% vs. 5% Refug
- GPS-based fertiliz

oil type

- Foliar fertilizer rates

bean rows
planter
ge
er
r vs. Dekalb
ility yield effects
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te

How It Started

ISOBlue History:

3/11/11: We want data

http://isoblue.org/

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8/22/11: Plans for cheap CAN-to-Mobile

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4/18/13: ISOBlue Funding

>> Thank you to all sponsors!

http://isoblue.org/

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4/21/13: Plan: build a board

http://isoblue.org/

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http://isoblue.org/

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12/23/12: Doug
4/18/13: ISOBlue Funding
4/21/13: Plan: build a board
4/22/13: Learn of BBB released for $45
4/22/13: Plan: use BBB

http://isoblue.org/

V1 Design Goals

Version 1 Design Goals:

Cheap: even researchers can afford it

>> ~$100

V1 Design Goals

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Cheap: even researchers can afford it

Off-the-shelf: no soldering = bigger community

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Open Hardware: easier to customize for environment

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Open Hardware: easier to customize for environment
Open Source Software: potential to standardize

V1 Design Goals

Version 1 Design Goals:

Cheap: even researchers can afford it
Off-the-shelf: no soldering = bigger community
Open Hardware: easier to customize for environment
Open Source Software: potential to standardize
3D printed enclosure

V1 Design Goals

Version 1 Design Goals:

Cheap: even researchers can afford it
Off-the-shelf: no soldering = bigger community
Open Hardware: easier to customize for environment
Open Source Software: potential to standardize
3D printed enclosure
Multiple Protocol support

V1 Design Goals

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Open Hardware: easier to customize for environment
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3D printed enclosure
Multiple Protocol support
Filtering

V1 Design Goals

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Open Hardware: easier to customize for environment
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3D printed enclosure
Multiple Protocol support
Filtering
Minimal Wheel Reinventing

V1 Design Goals

Version 1 Design Goals:

Cheap: even researchers can afford it

Off-the-shelf: no soldering = bigger community

Working Android App showing ISO messages in real time.

Multiple Protocol support

Filtering

Minimal Wheel Reinventing

People

ISOBlue: The Team

Staff/Faculty: Aaron Ault, Jim Krogmeier, Dennis Buckmaster

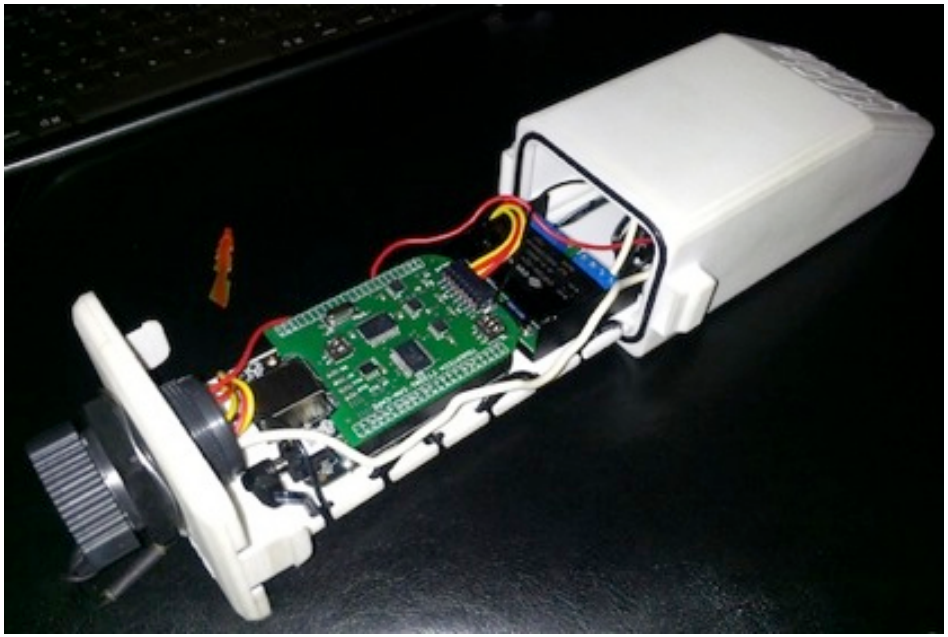
Grad Students: Alex Layton, JT Welte, Hani (Henry) Almansouri, Andrew Balmos, Sam Noel, Elizabeth Hawkins, Matt Koester

Undergraduates: Pat Sabpisal, TJ Jasinski, Yang Wang, Sam Amstutz, Asheesh Samudrala, Joseph Chiu, Yang Yan, Joseph Watkins

Drumroll.....

And the current status is…

Existence!



Drumroll.....

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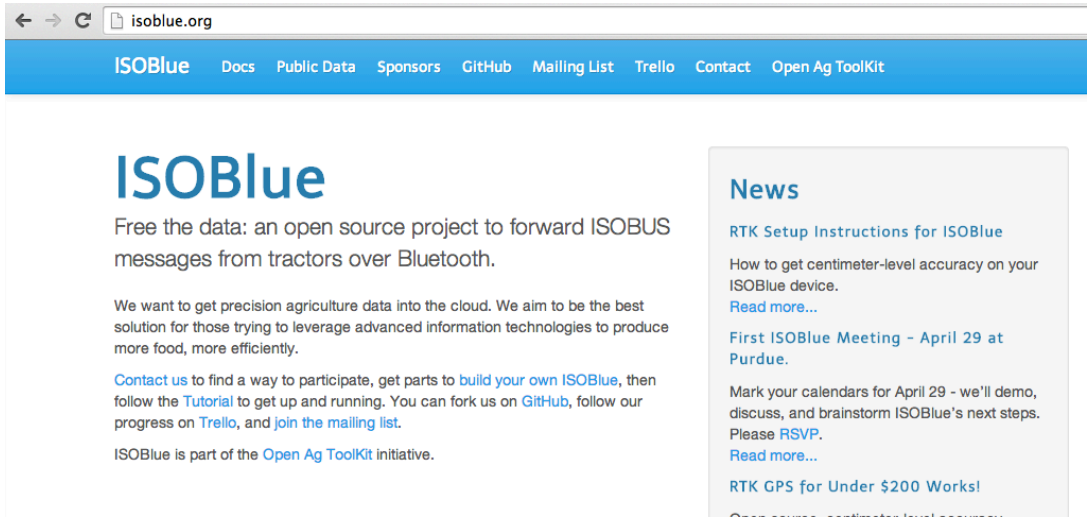
Existence!

Website



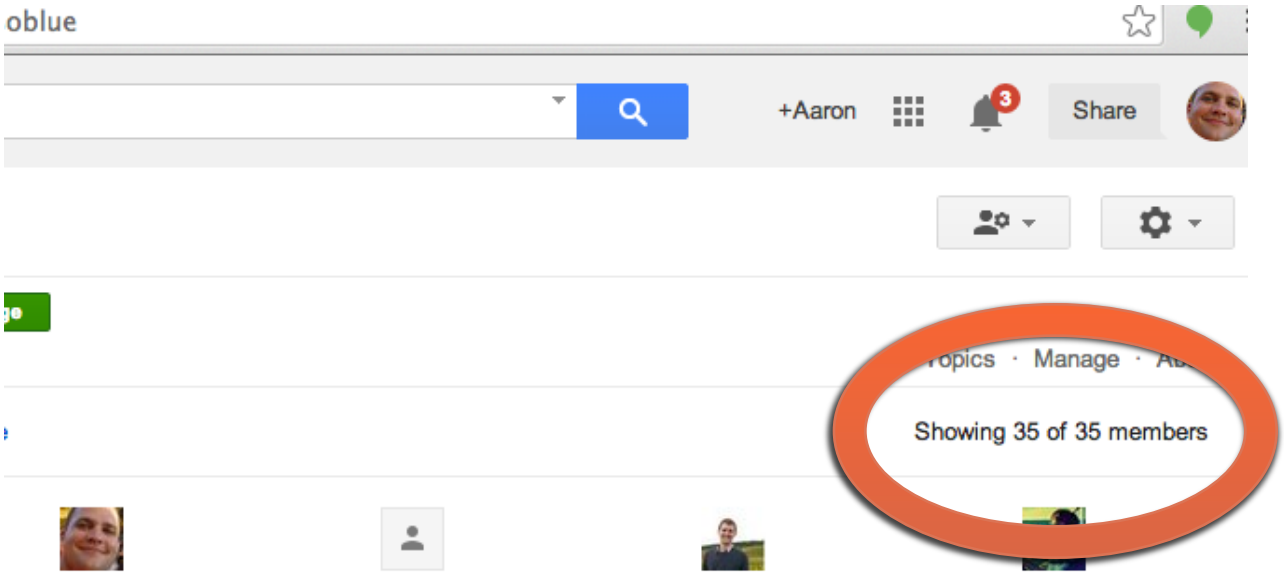
Drumroll.....

And the current status is…

Existence!

Website

Mailing List



Drumroll.....

And the current status is…

Existence!

Website

Mailing List

Code

Drumroll.....

And the current status is…

Existence!

Website

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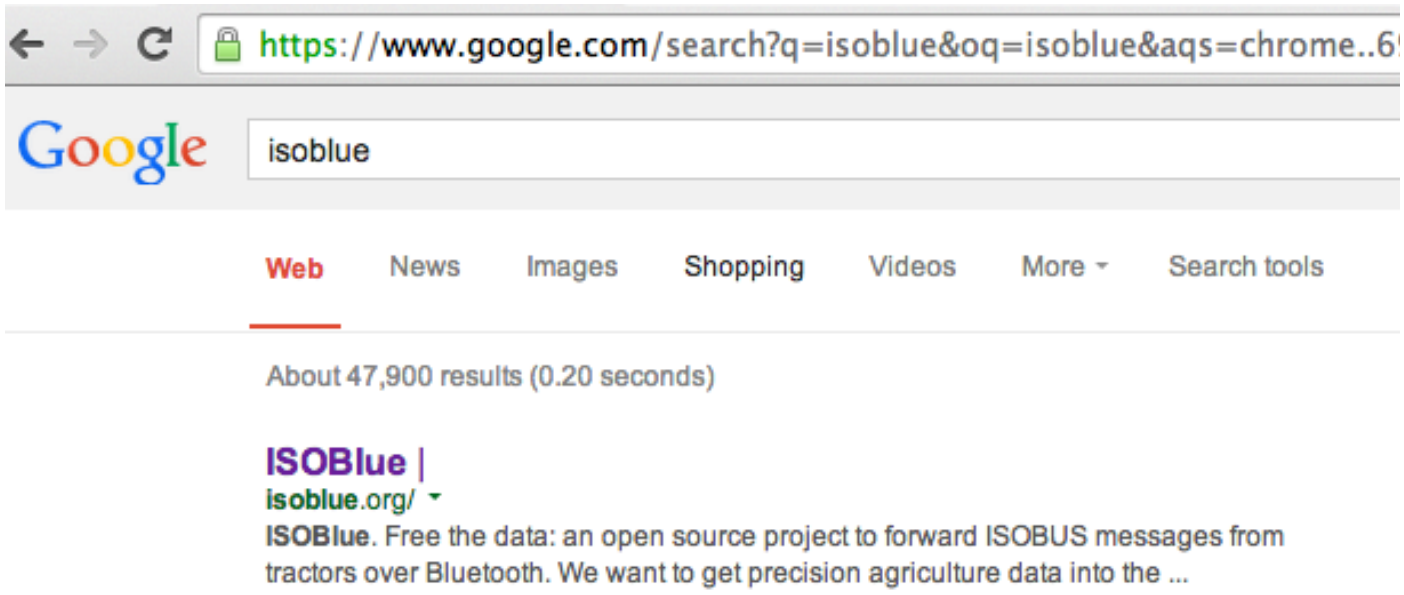
Code

News/Recognition



Drumroll.....

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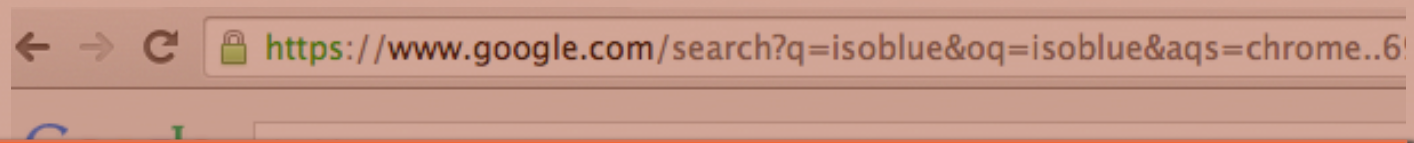
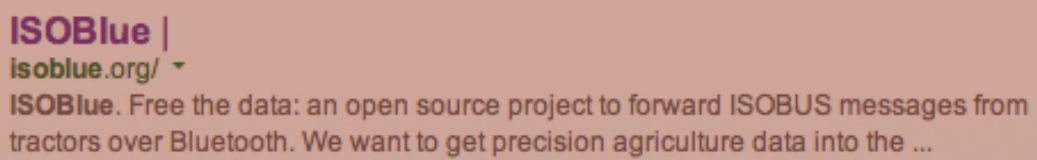


Android App Displays
Raw ISO Messages in Real Time

Mailing List

Code



News/Recognition

Drumroll.....

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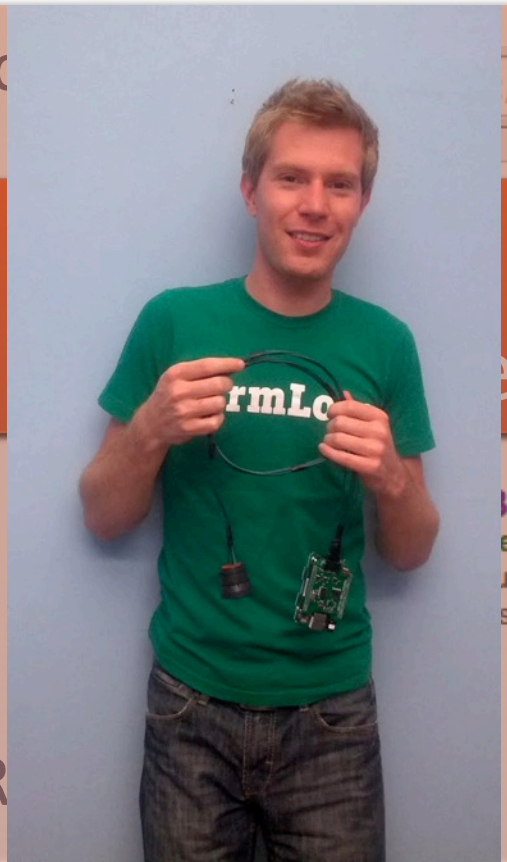

But Wait, There's More…

We Kept On Working:

Buffer and Sync: Headless

RTK GPS

Phone Optional