Open Ag Data Alliance

An open project designed to bring farmer-focused interoperability, security, and privacy to agricultural data.

Aaron Ault
OADA Project Lead

Andrew Balmos
Graduate Student

http://openag.io

WARNING

The presentation you are about to see is about a project in the v0.2 stage.

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Pro: **suggest changes!**

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Con: **subject to change**

Data Today: An Example

Prescription Planting Maps

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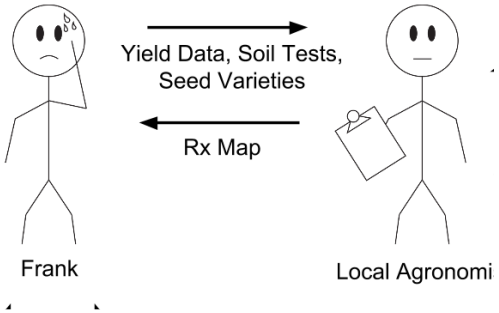
Meet Frank and Andy.

Data Today: An Example



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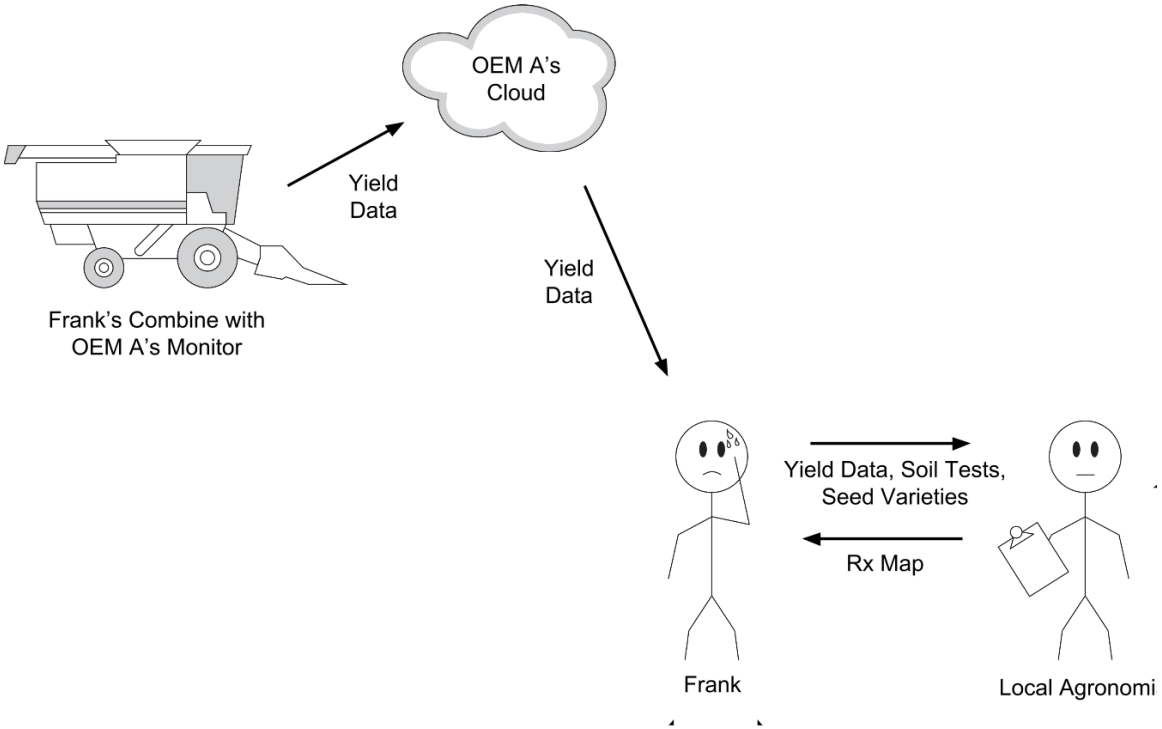

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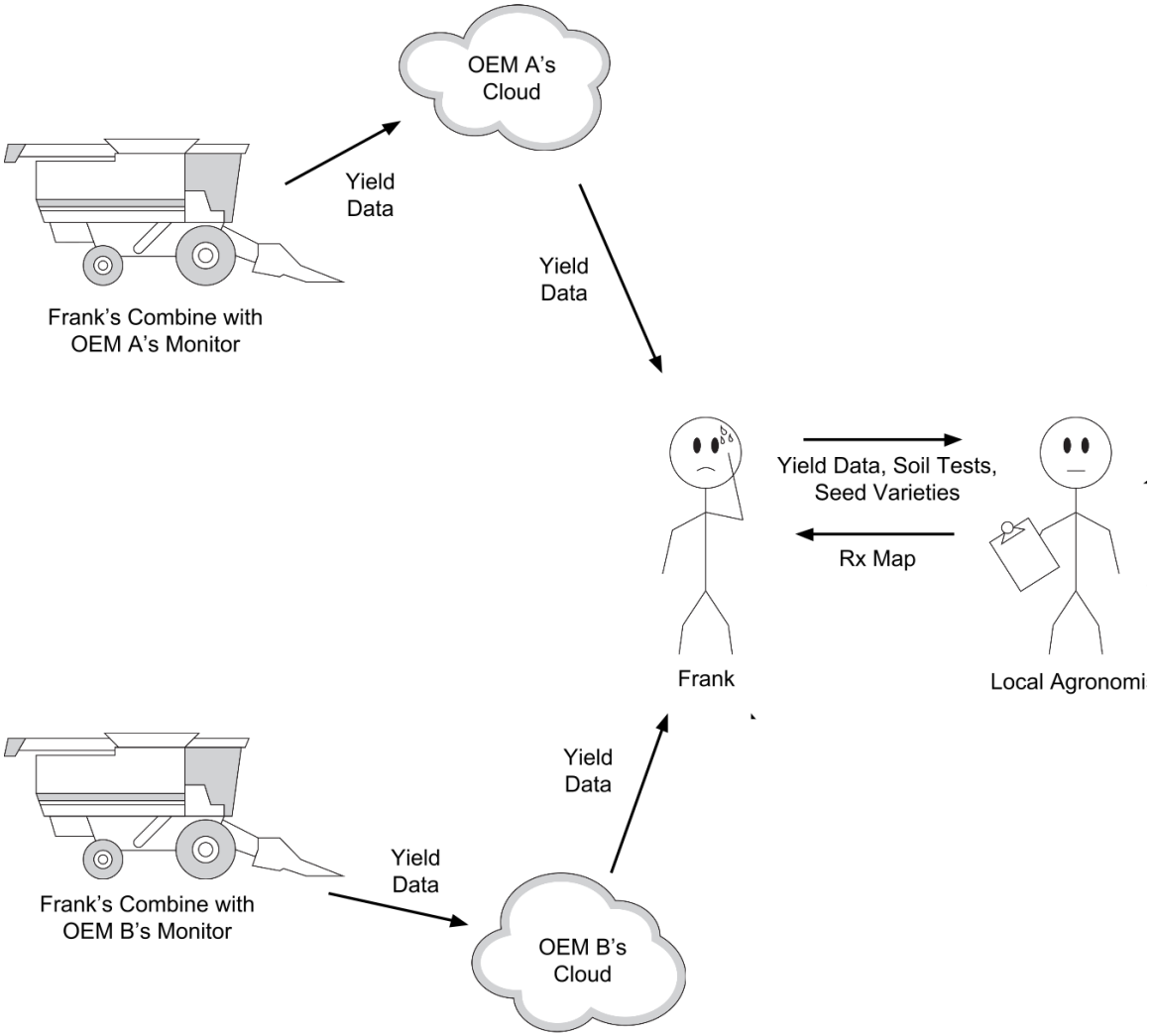

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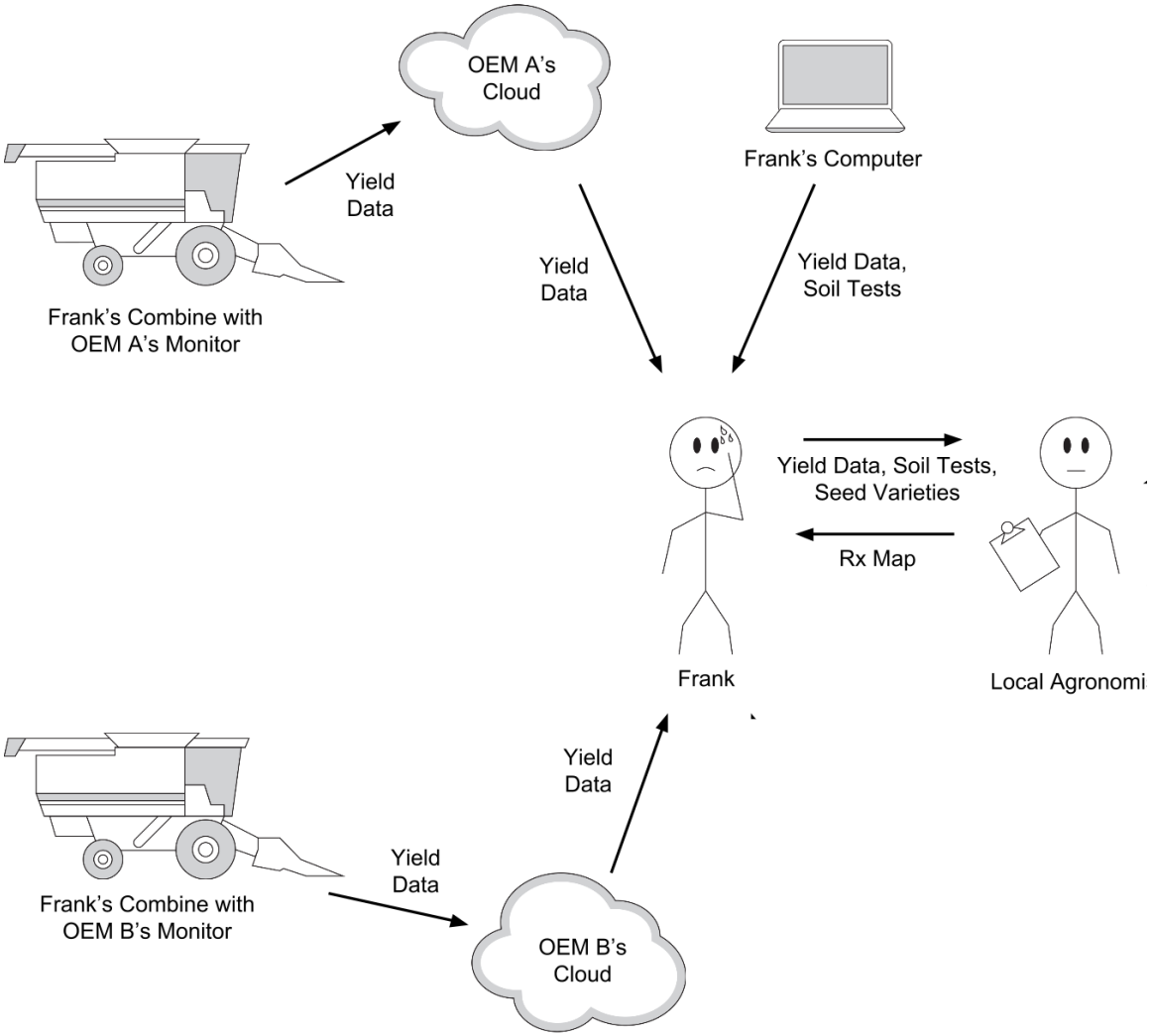

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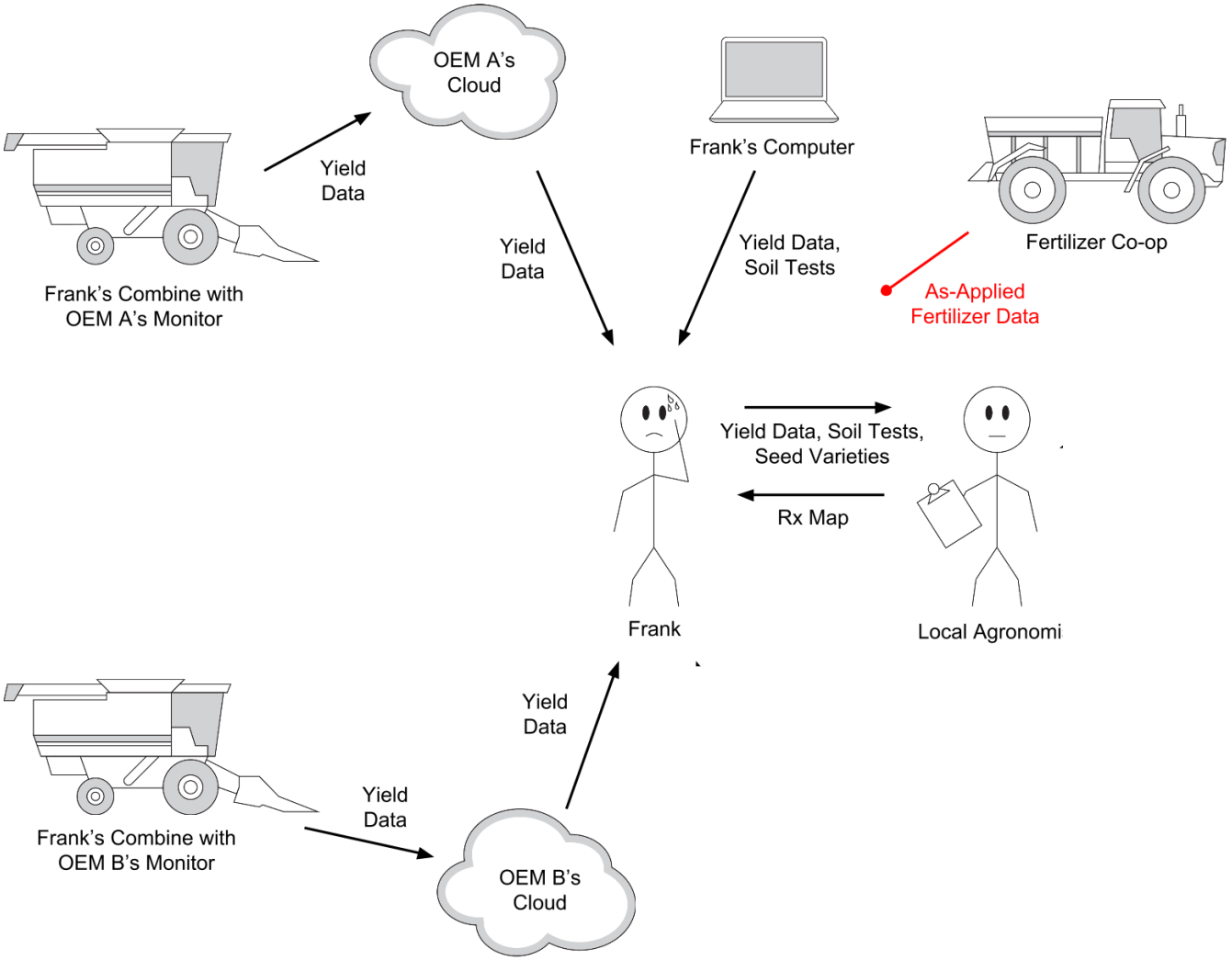

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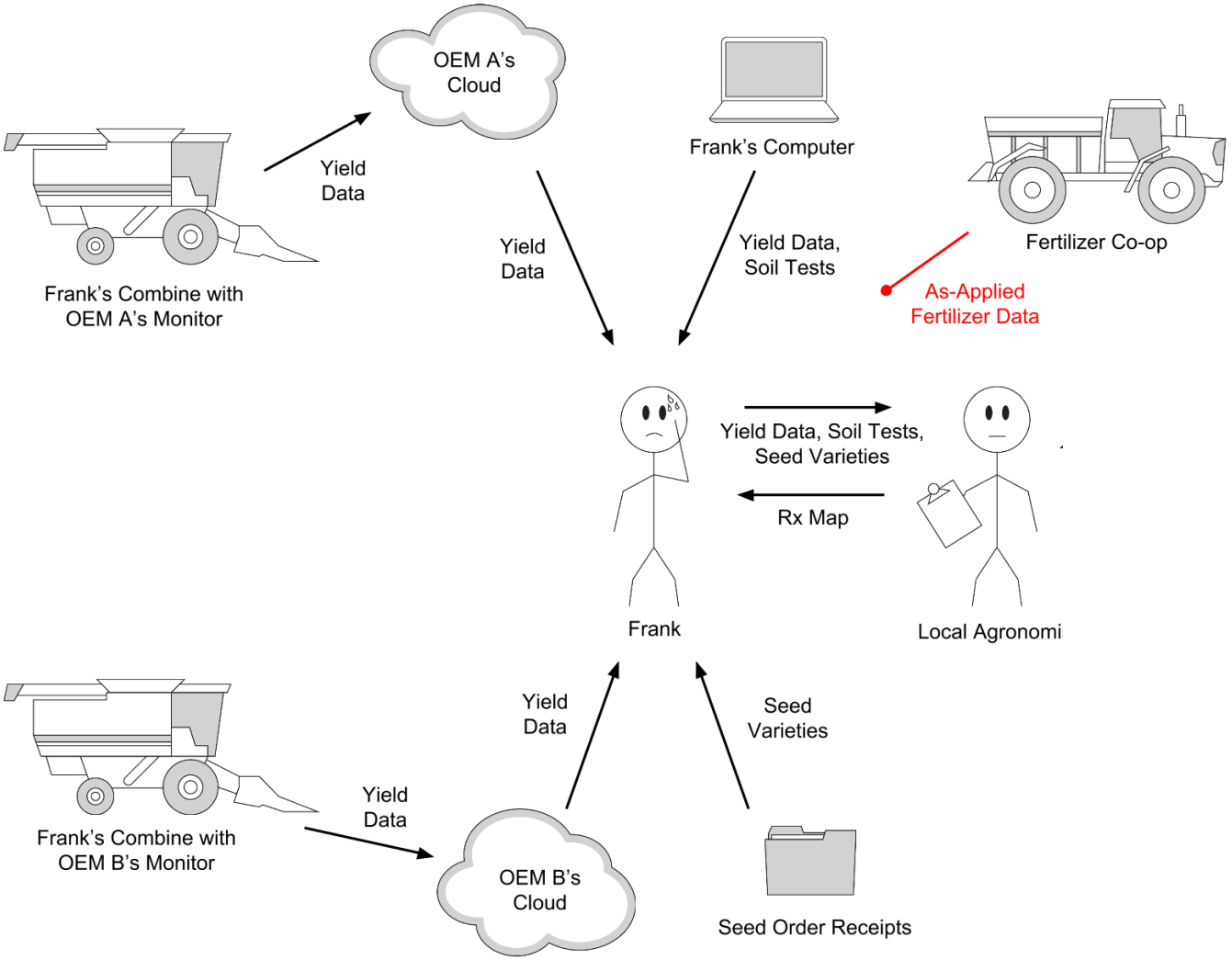

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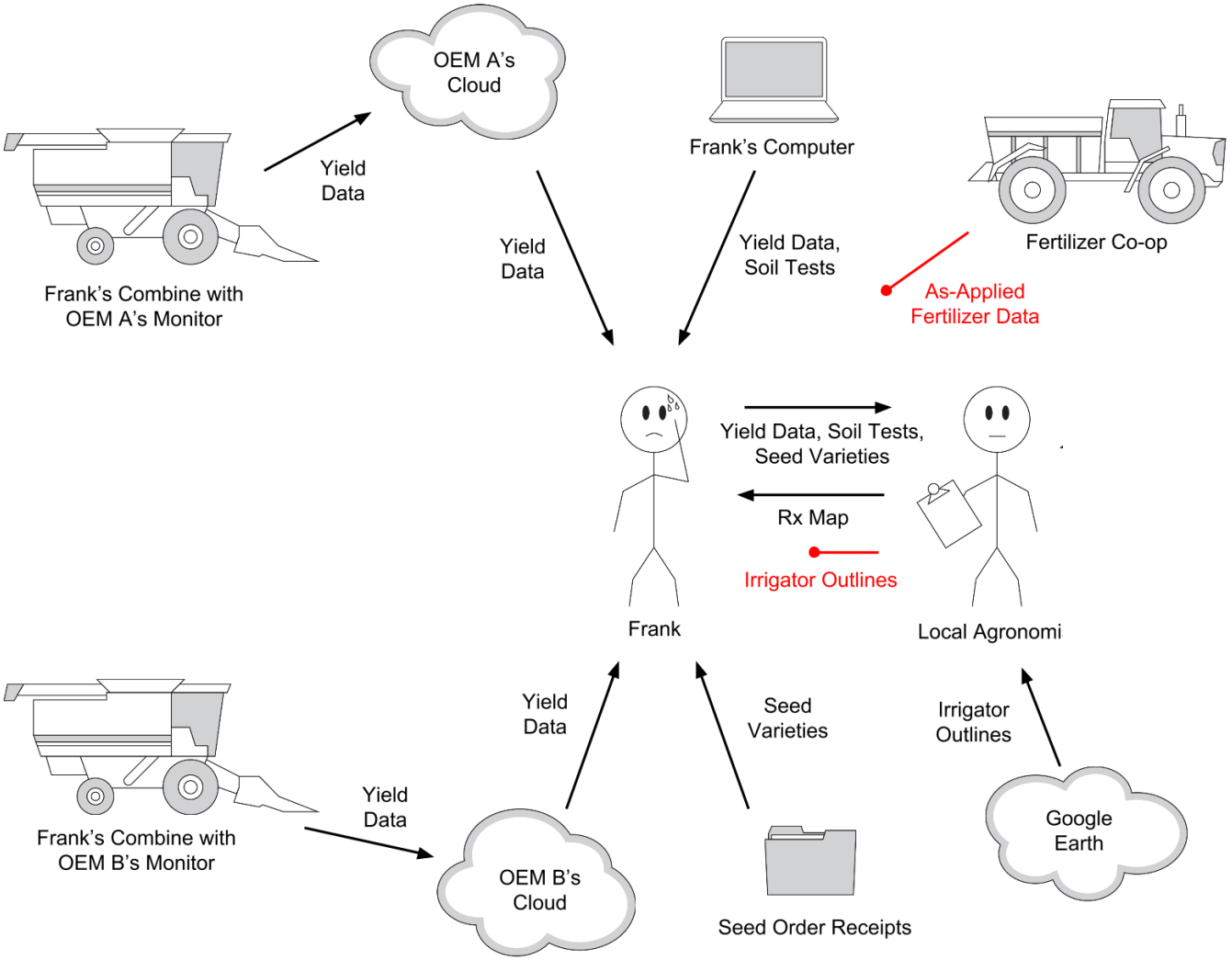

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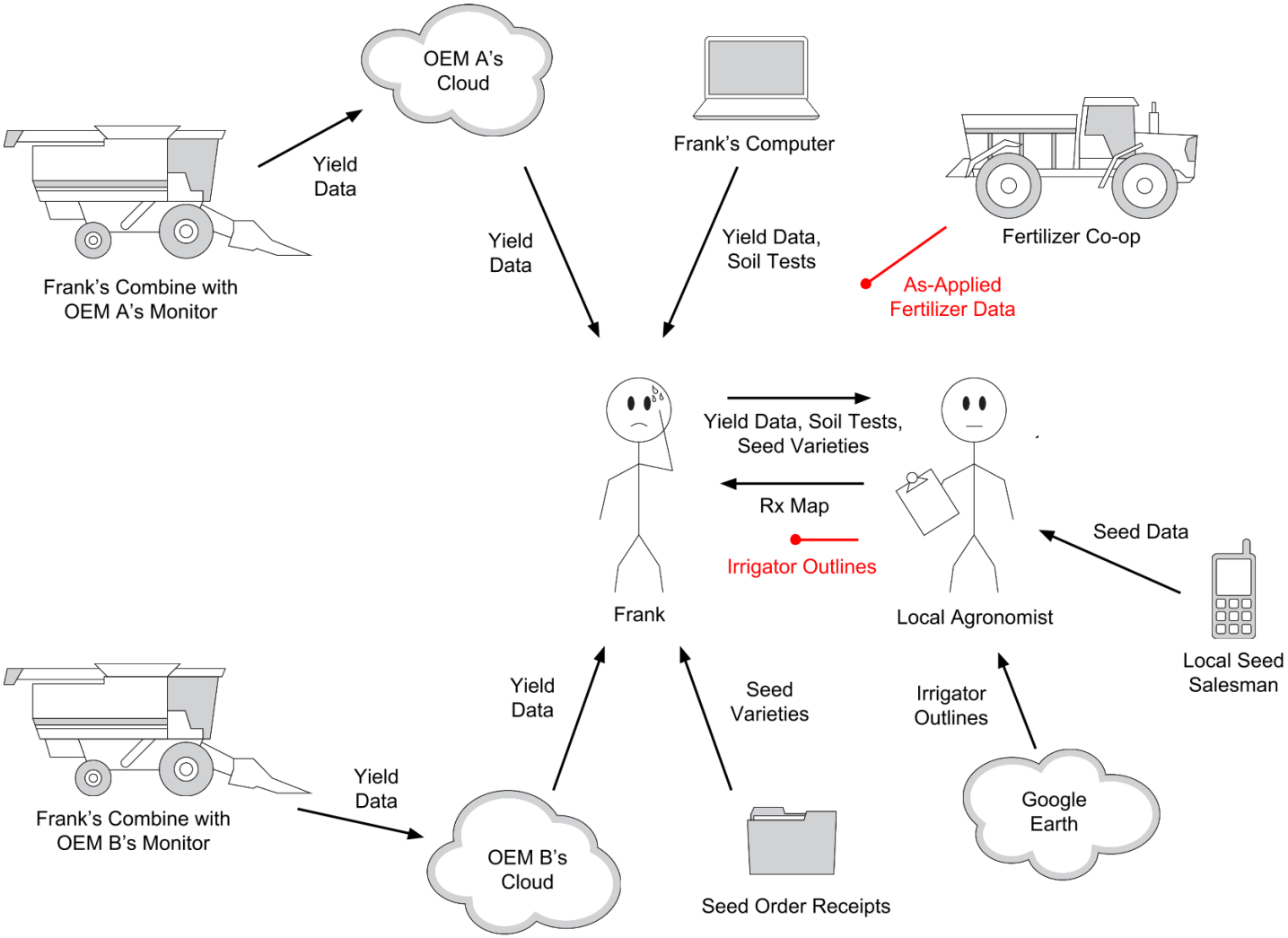

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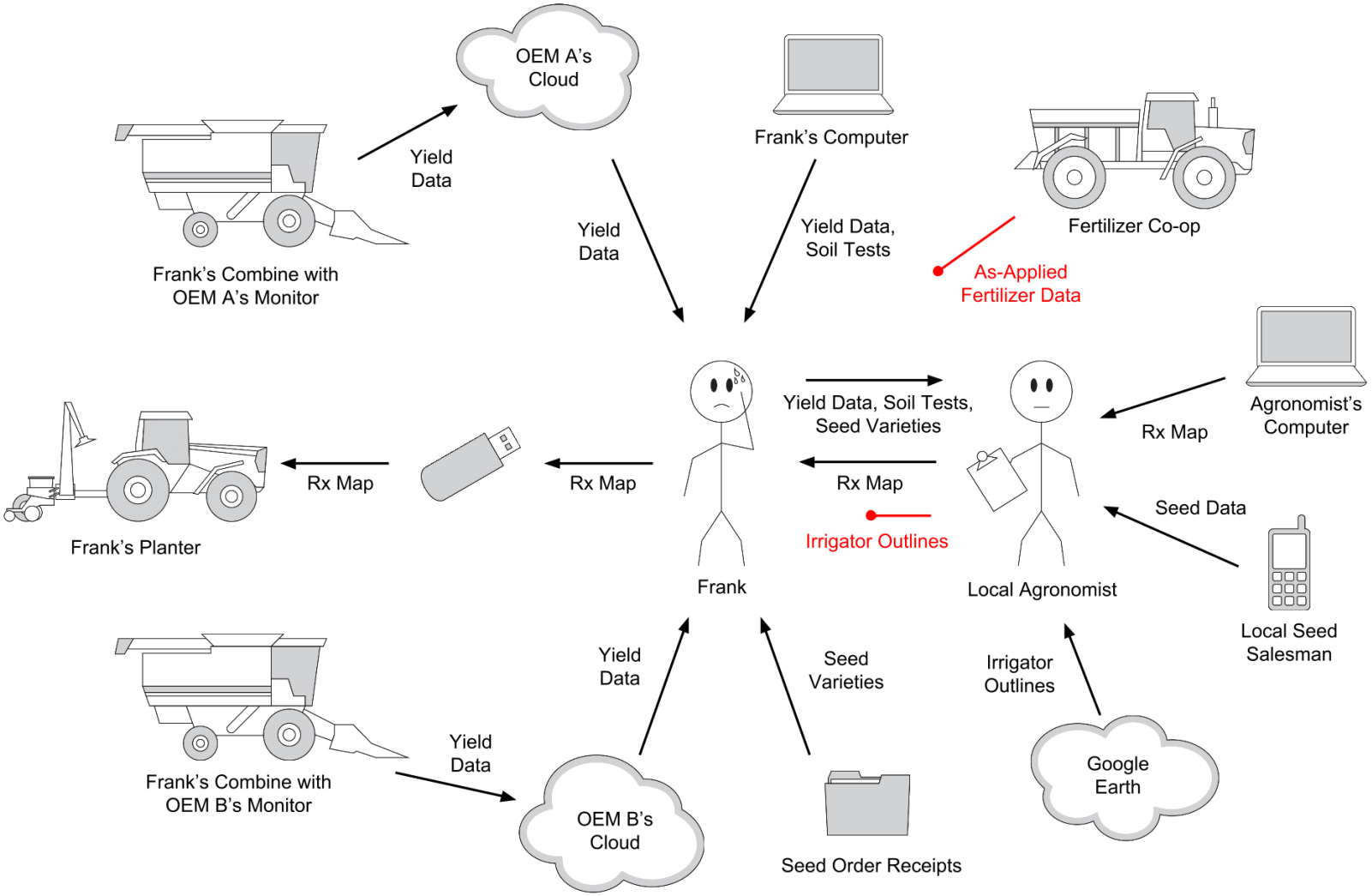
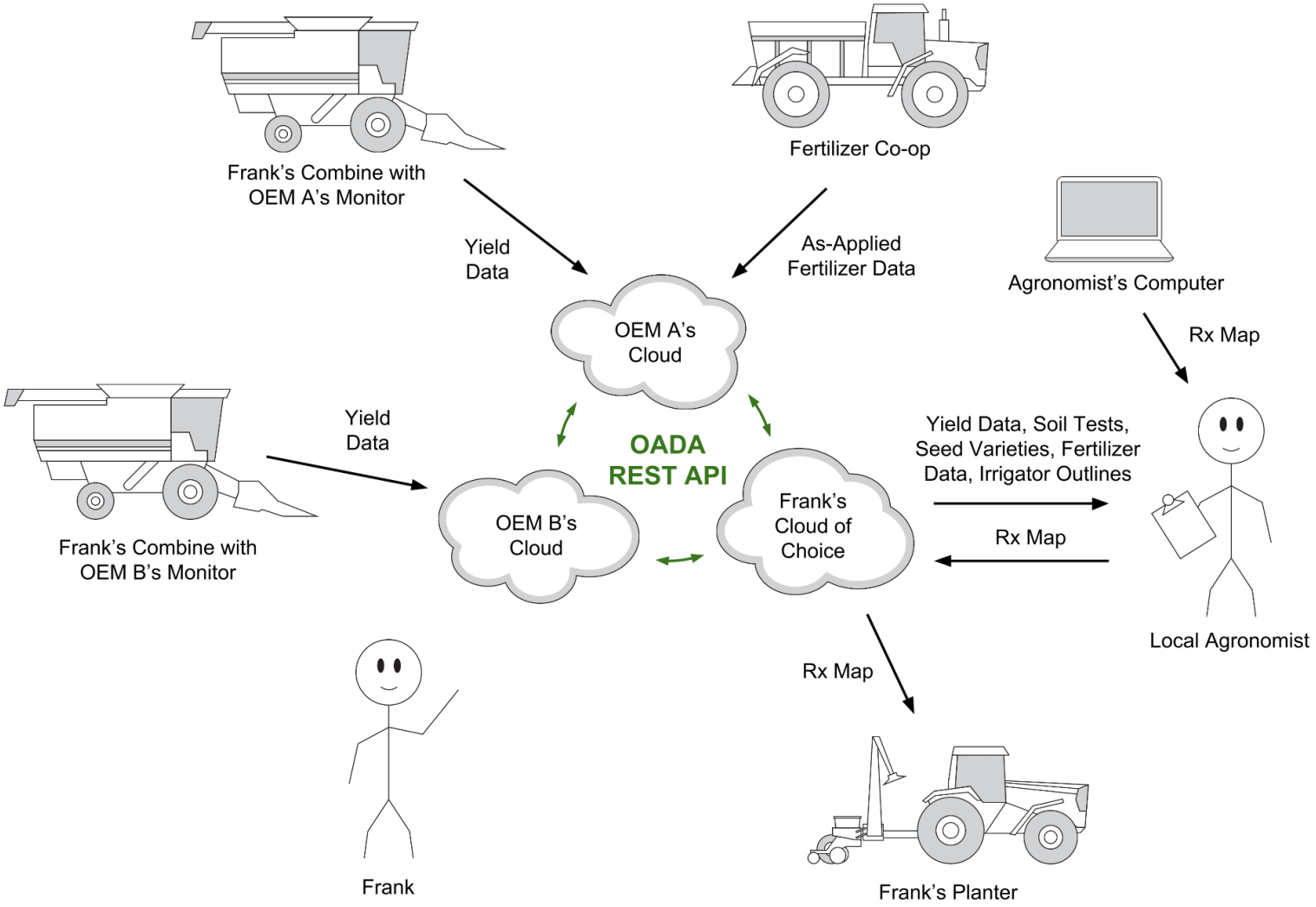


How We'd Like This To Work

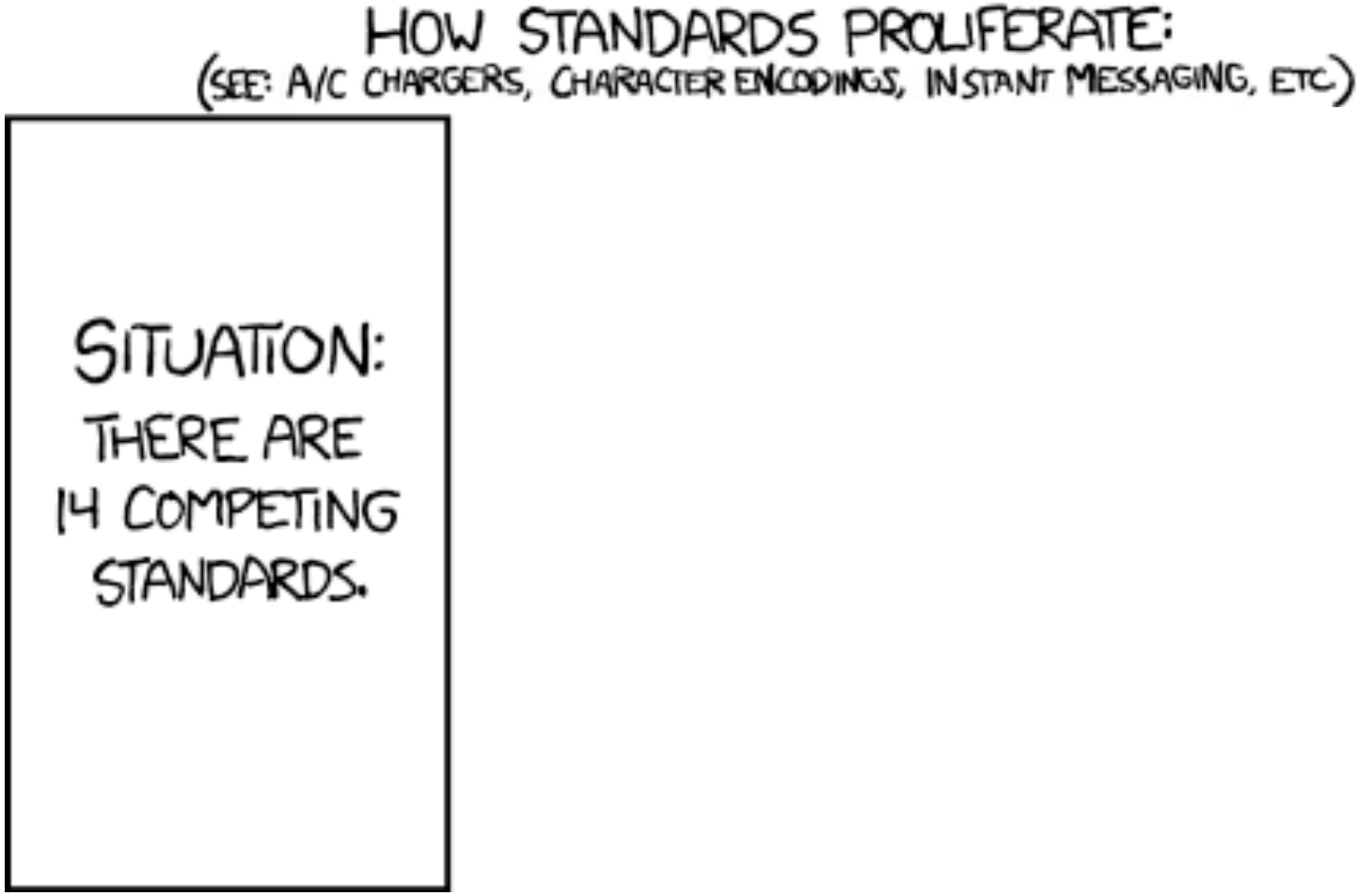
If Google Drive and Dropbox had a super-GMO-enhanced baby they would name it **"OADA"**…

OADA Overview



OADA Overview

A Word About Standards



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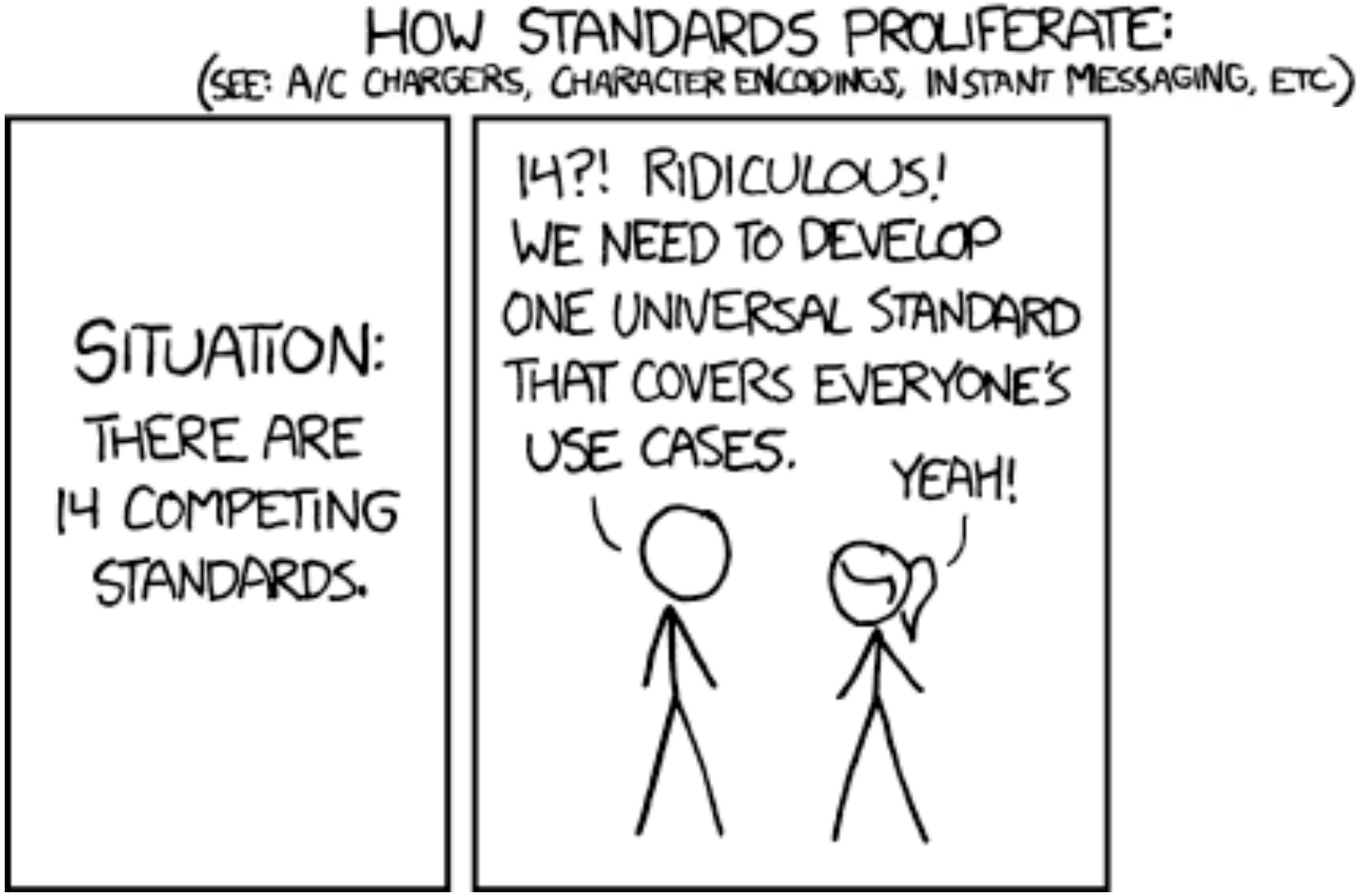

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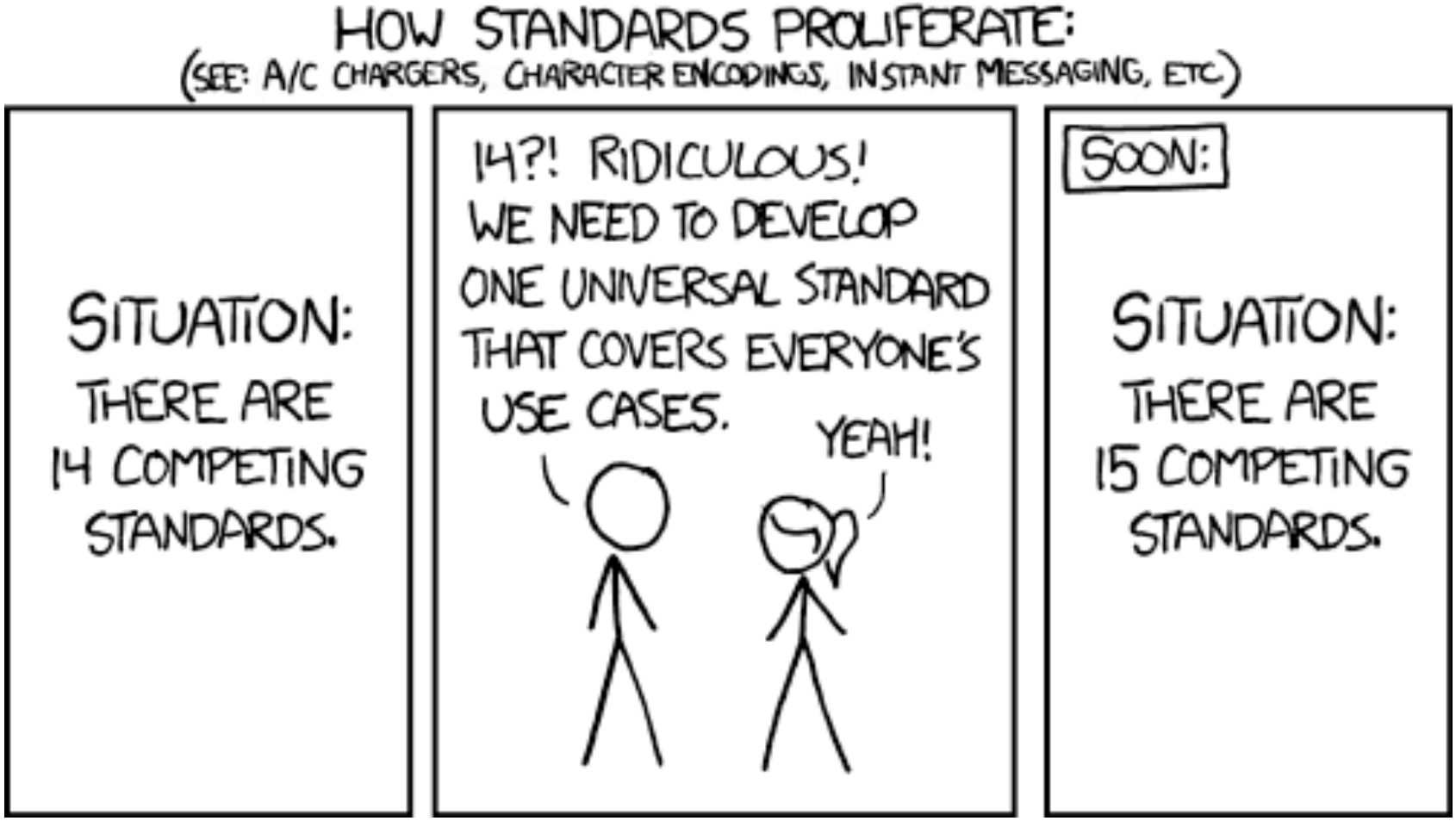

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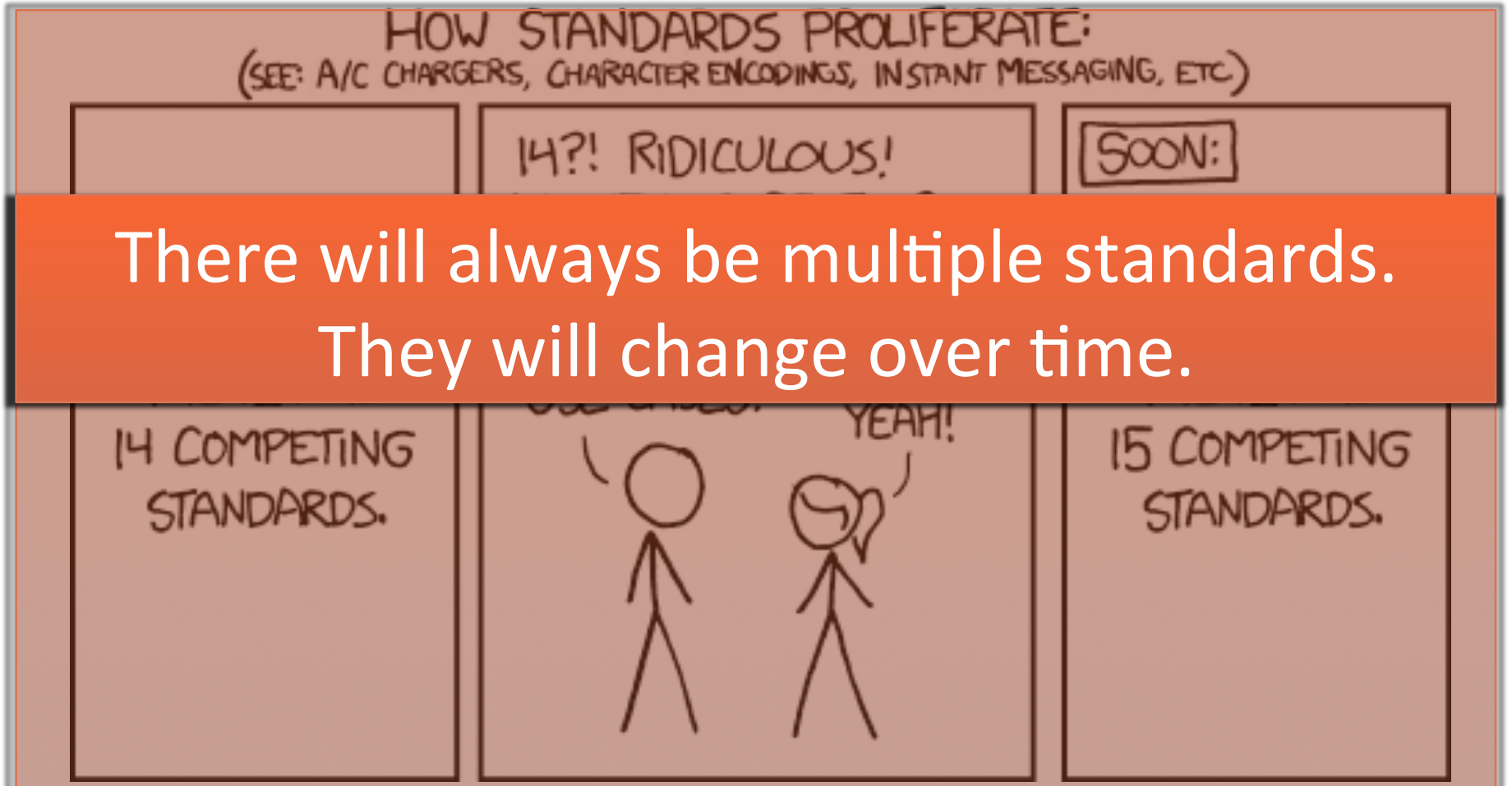

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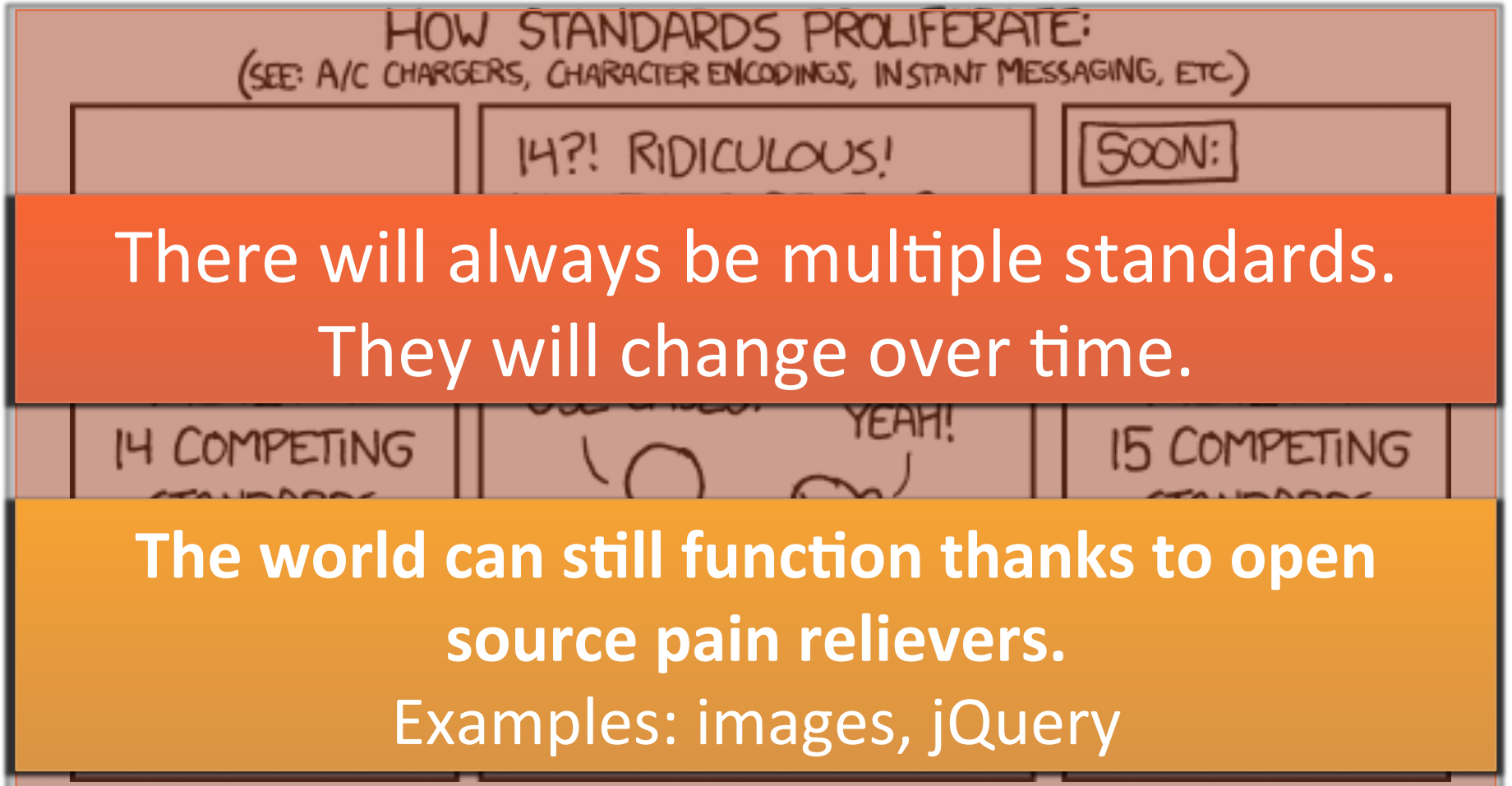

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The world can still function thanks to open source pain relievers.
Examples: images, jQuery

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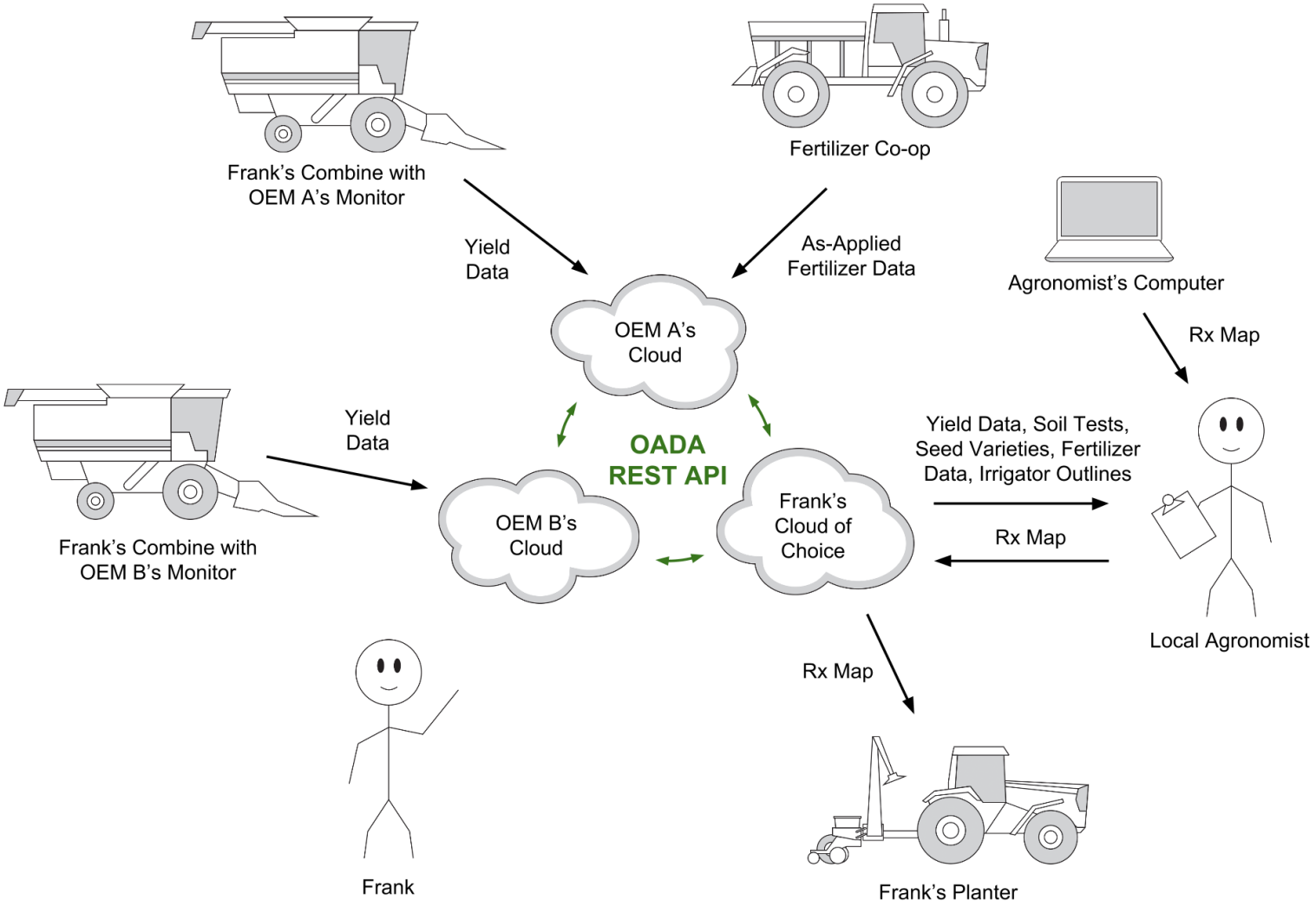
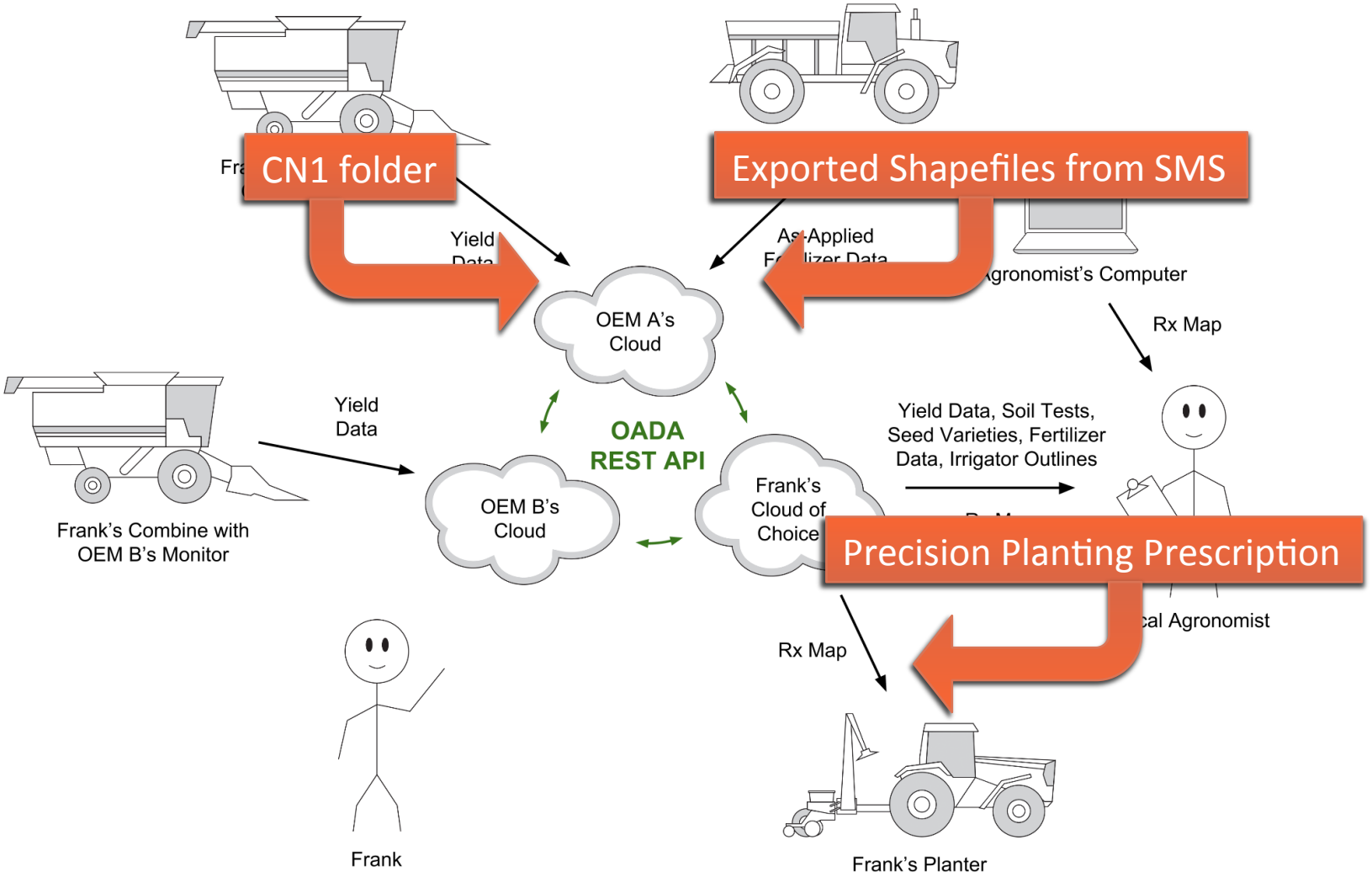


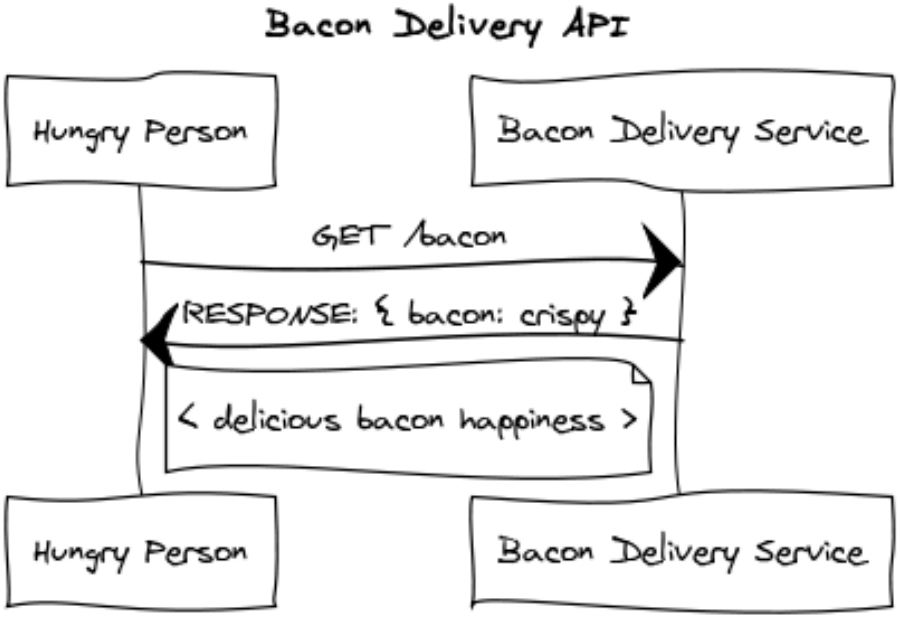
OADA Overview: Formats



Nuts and Bolts

Components of OADA To Be Created:

Open API spec: http://github.com/OADA/oada-api-spec



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http://upload.wikimedia.org/wikipedia/commons/thumb/4/42/Opensource.svg/288px-Opensource.svg.png

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Guidelines for OADA Certification

http://thevesumegroup.com/wp-content/uploads/2014/01/referral-guidelines.jpg

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Standard lists: OADA media types, configs, etc.

OADA Role Definitions

Certifiable Roles In OADA Ecosystem

OADA-Compliant **Cloud**

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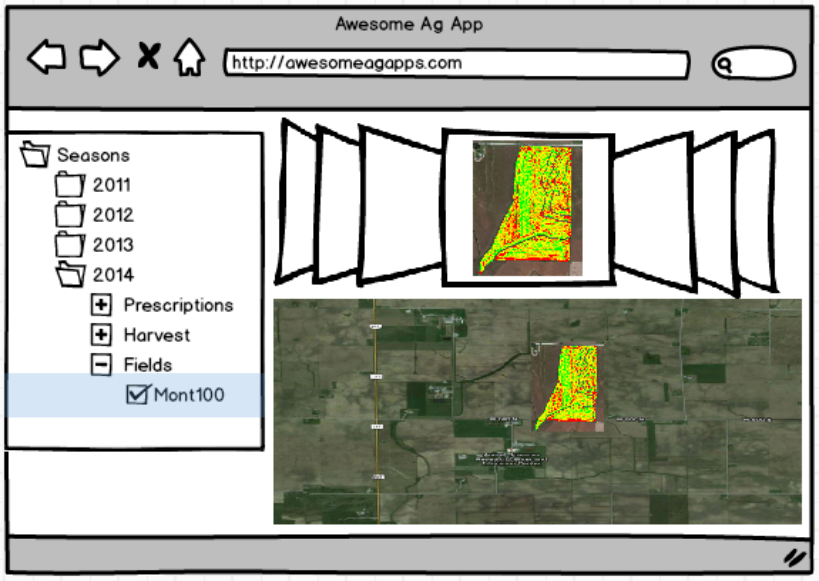

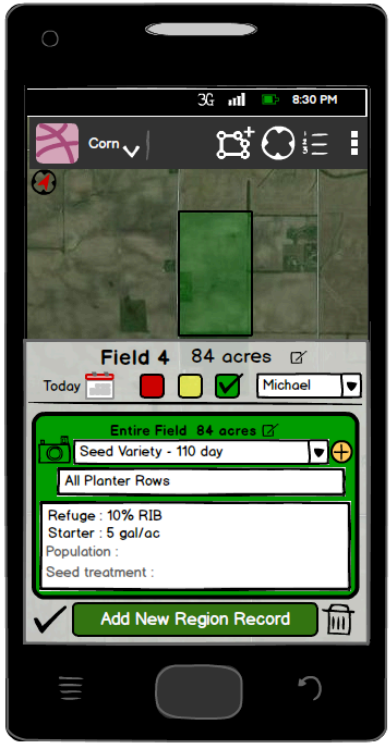

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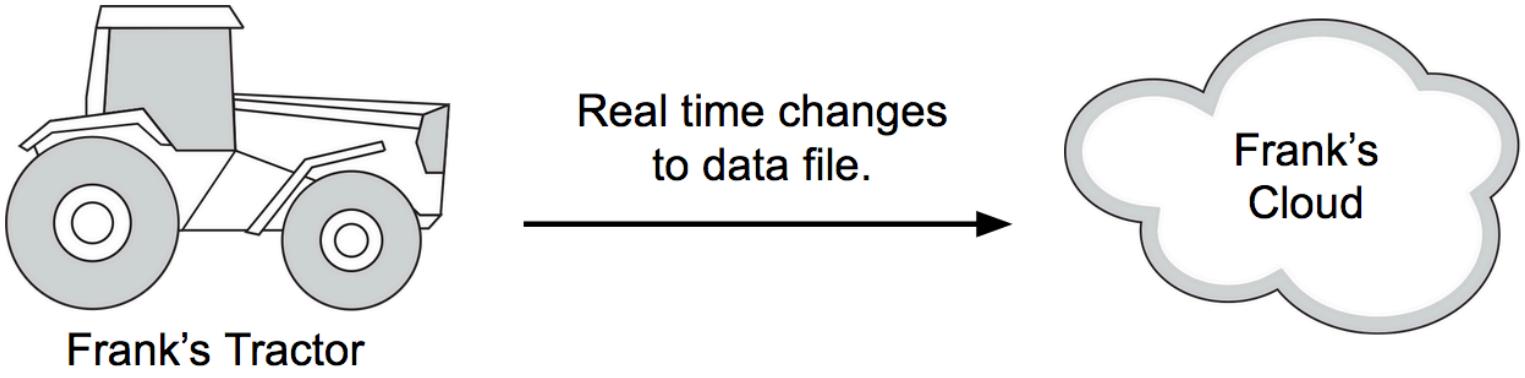

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>> Featured-reduced *Cloud* or *Device*, open formats

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OADA-Compliant **Device**

OADA-Compliant **Data Generator**

OADA-Compliant **Identity Provider**

http://www.iconhot.com/icon/png/devine/256/lock-6.png

OADA API Design Goals

RESTful: nouns, collections,
GET, PUT, POST, DELETE, (PATCH)

>> Don’t Reinvent Wheels

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Full identification of resource type/contents

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Resource-centric: OADA clouds store, transform, and serve "resources" for a farmer.

Full identification of resource type/contents

Format agnostic: media-type and transformations
(Caveat: PUT vs. GET)

OADA API Design Goals 2

Transferrable: third party apps work no matter where your data is stored

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Sharing: per-resource permissions

OADA Design Goals 3

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"Data" vs. "Files": query, partial put/get, streaming, human-readable JSON

>> Imagine your own app with your own cloud…

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Easy to upload newly generated data points: POST to an array = append

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Extension possible to existing REST API's

OADA Design Goals 4

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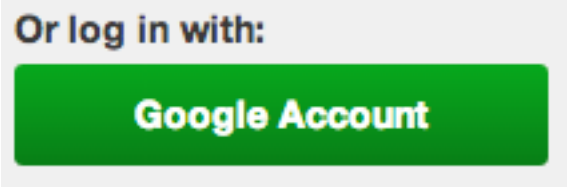
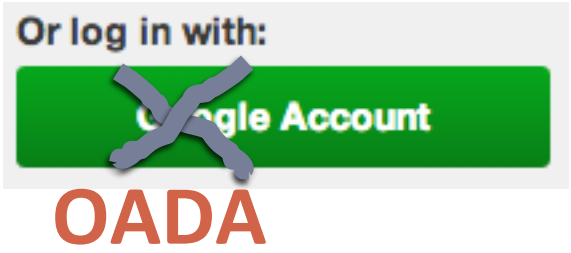
Identity securely carries across clouds:
Federated Identity

OADA Federated Identity



OADA Federated Identity



OADA Federated Identity

Frank wants to share a resource with Andy.

Frank's data is on agcloud.com.

Andy does not have an account on agcloud.com.

How does Andy's app access Frank's data?

>> Andy gives his OADA ID to Frank:

andy@agronomistidentity.com.

OADA Federated Identity: Basics

List of trusted identity providers ("OADA Federation")

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List of trusted identity providers ("OADA Federation")

API support for logging in at any OADA-compliant cloud with an identity at a trusted domain.

Farmer is warned if he shares data with an untrusted domain.

Trusted domain "vouches" for that user if they login properly, local account can be linked with remote

OADA Federated Identity and OAuth

Types of Auth Flows:

Cloud->Cloud

App->Cloud

Device->Cloud

OADA Federated Identity and OAuth

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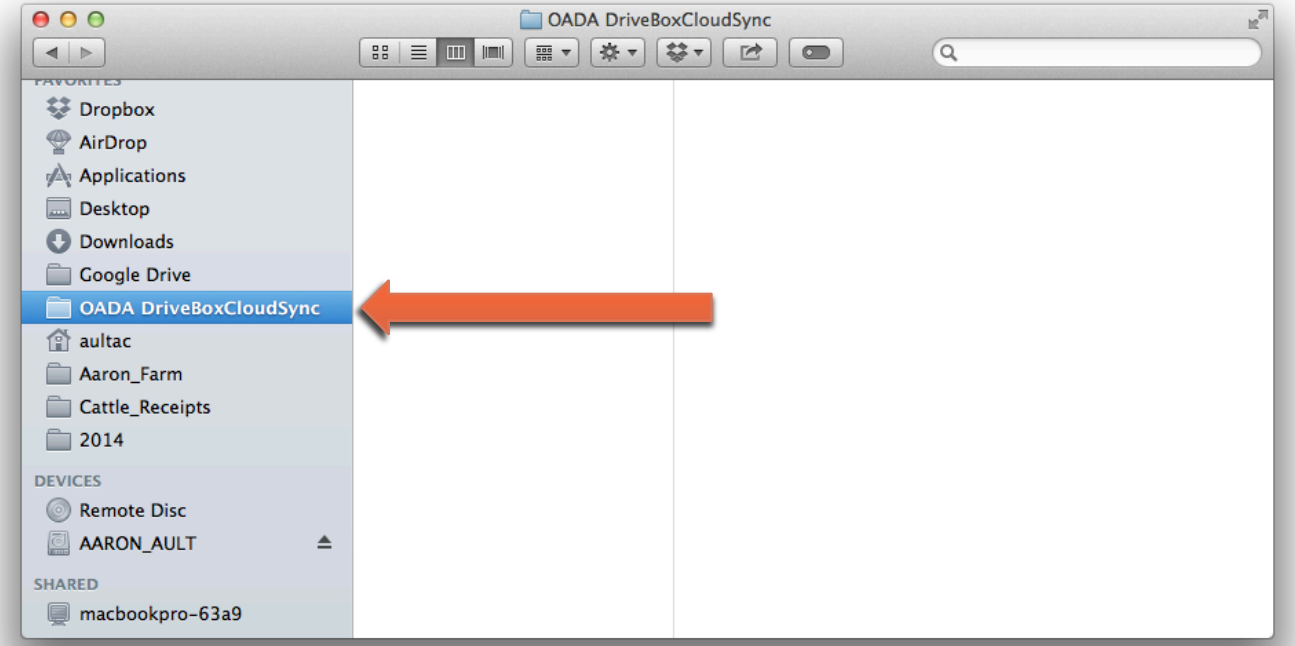
>> End goal is for requester to get OAuth token, send that token with every API request.

OADA Use Cases 1

Sync local folder to cloud, view on mobile



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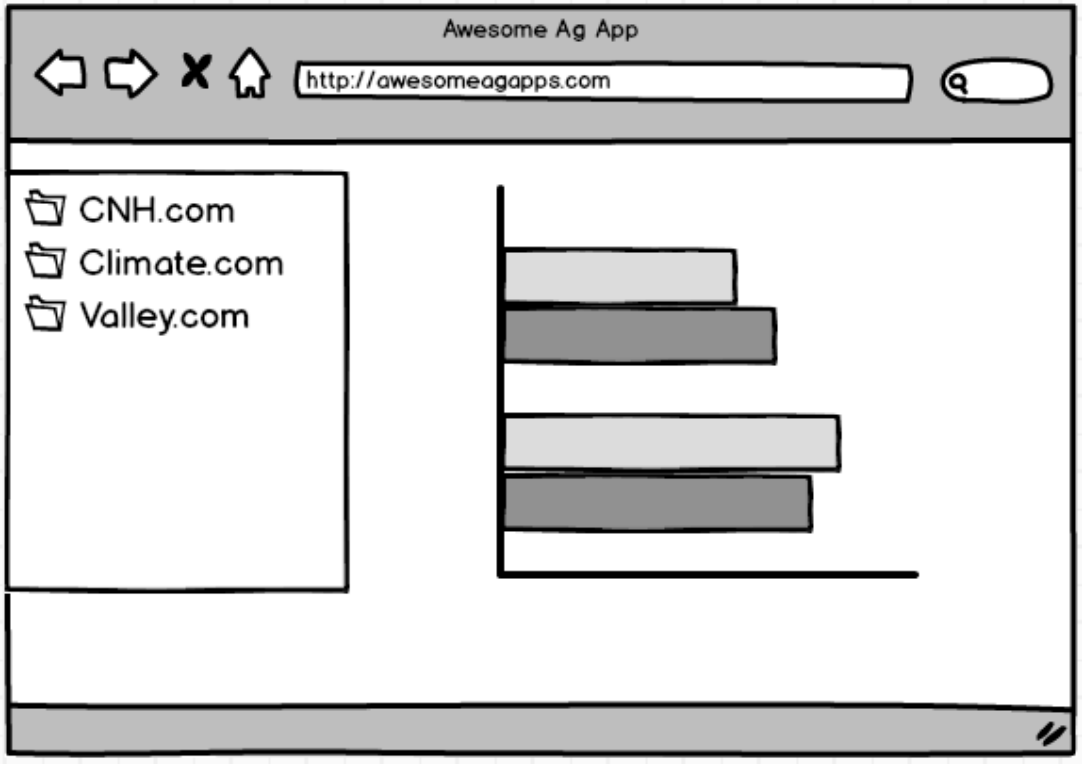
Cohesive view of all a user's OADA clouds



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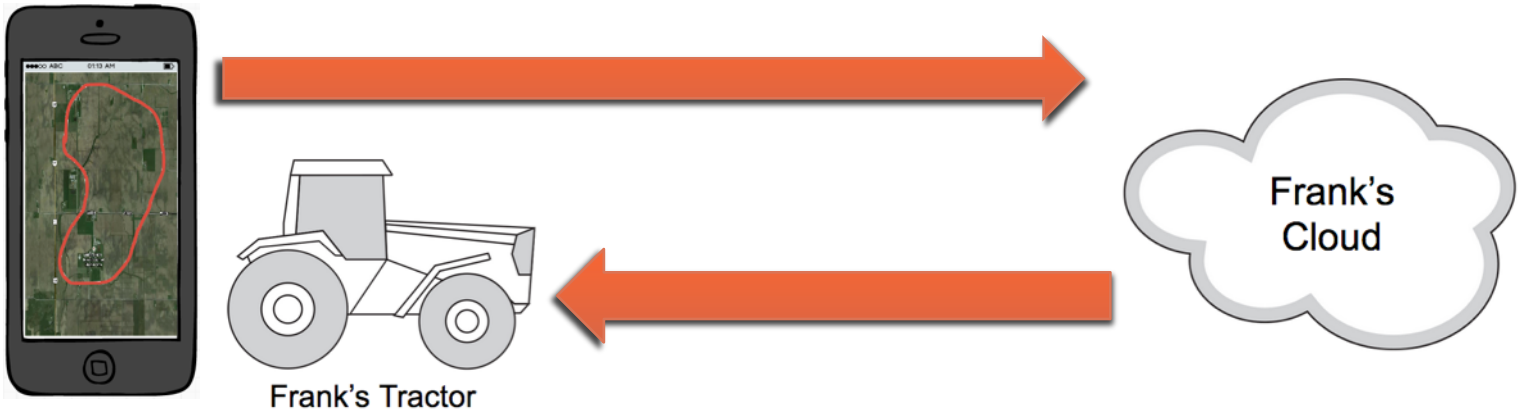

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Device generating data, posting to cloud

>> "Batch" or "real-time"

OADA Use Cases 2

Device discovers list of fields and boundaries in cloud

>> cff vs. gff vs. fields

OADA Use Cases 2

Device discovers list of fields and boundaries in cloud

Device does periodic PUT's to update machine status

```
{
  hours: 1523,
  fuel_level: "80%",
  service_intervals: {
    50_hour: -4,
    100_hour: 46,
  }
}
```

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Transfer between clouds when switching providers

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Convert proprietary formats to open formats

OADA Privacy and Compliance

Still defining this: likely will have "classes/levels" of compliance per role

Allow any app (even competitor) to access data on behalf of farmer

Allow farmer to transfer data to any other cloud unhindered

Purpose is to keep ecosystem flowing properly for everyone involved.

Store any resource a farmer wants, even if from a competitor

Pass software tests

Privacy policy putting farmer in control

OADA Status

Implementations beginning in 1-2 weeks, will adapt with changes/comments.

Many non-technical privacy issues yet to cover/resolve.

Goal of a few working commercial setups by Sept, likely not feature-complete.

Open Source project specifics as yet undefined.

No software tests, no full definitions of OADA compliance, no media-type database, limited early identity federation, no start on file transformation libraries

>> API v0.2 out for comment today