USDA FPAC GEO

Mission

Provide best-in-class innovative customer-focused geospatial information and solutions that are accessible, current, and authoritative .

Vision

Serve the producer with advanced, usable geospatial products using modern IT.

Target Market

Climate-Smart Agriculture and Forestry Market & Beyond

Company Name	USDA FPAC GEO
Established Date	2021
Type of Industry	Agriculture
Business Model	Fee for Service
No. Of Employees	90

FPAC GEO Website

Our Services

- NAIP
- LiDAR
- Derivative Product Generation
- Training

Important Info About Organization

FPAC GEO represents the enterprise class capability around as a shared service provider to USDA and the producer community

Operating Authority

- Title VII 7 CFR Parts 2.41 & 1470
- NEPA
- 7 USC 2276
- OMB Circular A-16
- GDA
- USDA DR 3465-001

Milestones

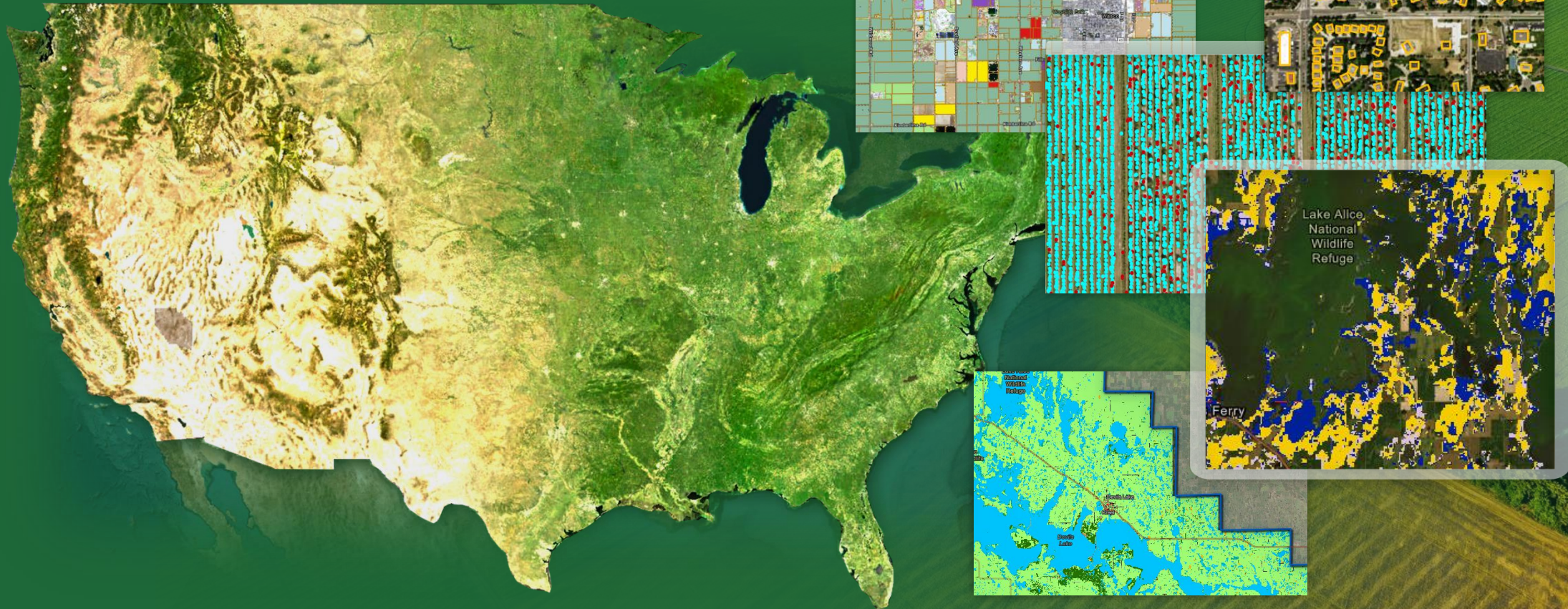| 1862	1937	2002	2021	2023	2028
USDA Founded	Aerial Photo Labs	NAIP Program	FPAC GEO Established	Cloud Migration Began	FPAC DAAC???

NAIP   National ǀ Agriculture ǀ Imagery ǀ Program

The Problem

Shifting NAIP to **<u>digital delivery</u>** severely impacted the program's revenue stream, putting the program at risk.   Rivaling other data centers, data volume growth has significantly increased costs, but budget has been fixed or reduced.

Funding

Two customers are the primary funders of the program, leading to program risk.

Staffing

Retirements & inability to hire inhouse have impacted the ability to handle new demands.

Misunderstood Demand

Inability to track data copies limits understanding of the broader value of the program to many known and unknown customers.

Why Keep NAIP Free & Open?

"NAIP Helped us Grow"

"NAIP Powers Innovation"

"NAIP is Good for Business"

"Public Data Should be Open"

Source: Keeping NAIP free & open. By: Charlie Loyd | by Mapbox | maps for developers [2018]

Why NAIP and/or Satellite data?
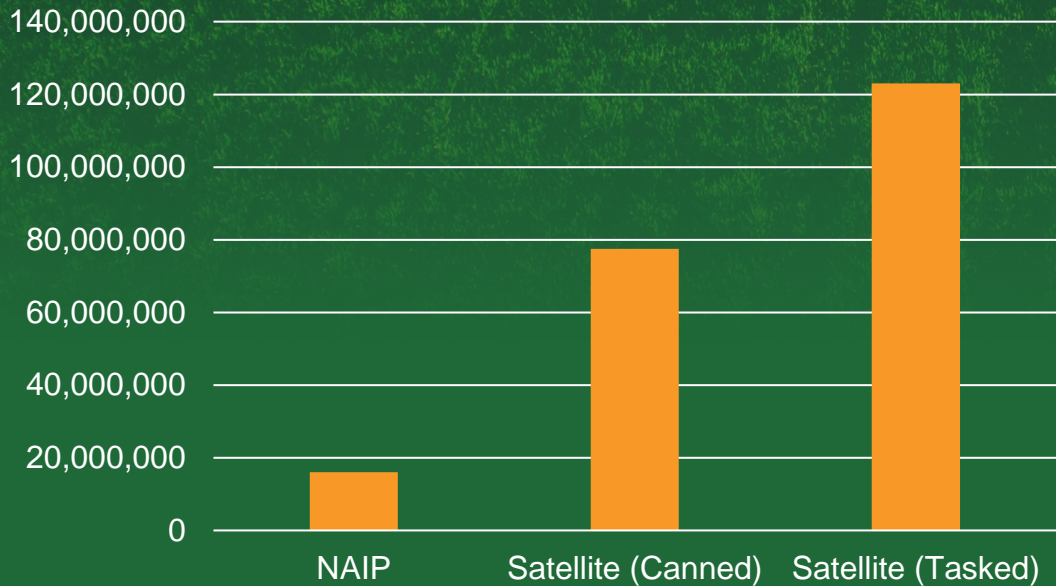
Cost

Emergency Acquisition

Licensing Models

Satellite as a supplemental

WYSIWYG

Rising Costs without NAIP?

Shift to Satellite Data Capture?

1,413 Missing DOQQs

Aerial imagery cost (2024) : $163k

Satellite (Canned) Cost: $961k

Satellite (Tasked) Cost: $1.5M

Annual Costs for ½ CONUS Coverage
(9.14M sq KM in CONUS)

Bar chart — Annual Costs for ½ CONUS Coverage:
- NAIP: ~16,000,000
- Satellite (Canned): ~78,000,000
- Satellite (Tasked): ~124,000,000

Cost Per KM²

Bar chart — Cost Per KM²:
- NAIP Cost: $3.5
- Satellite (Canned): $17
- Satellite (Tasked): $27
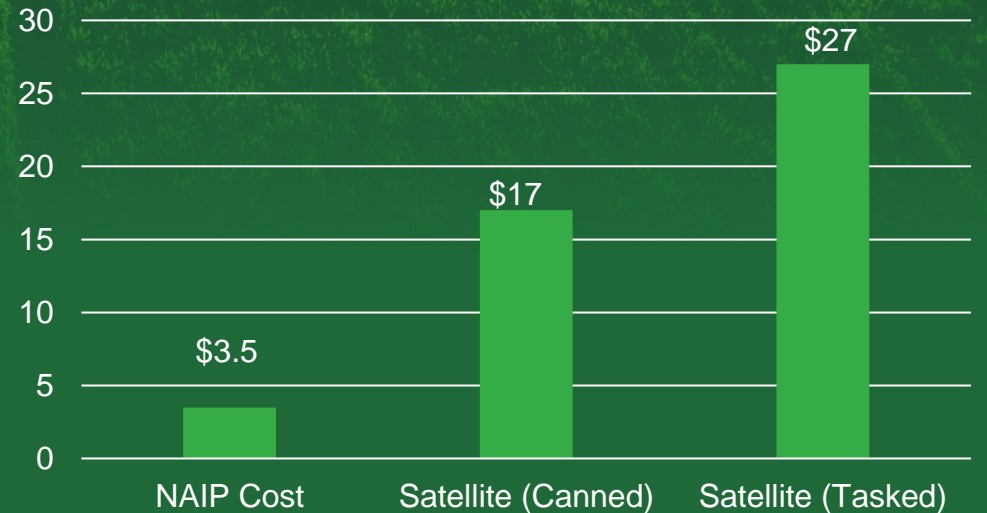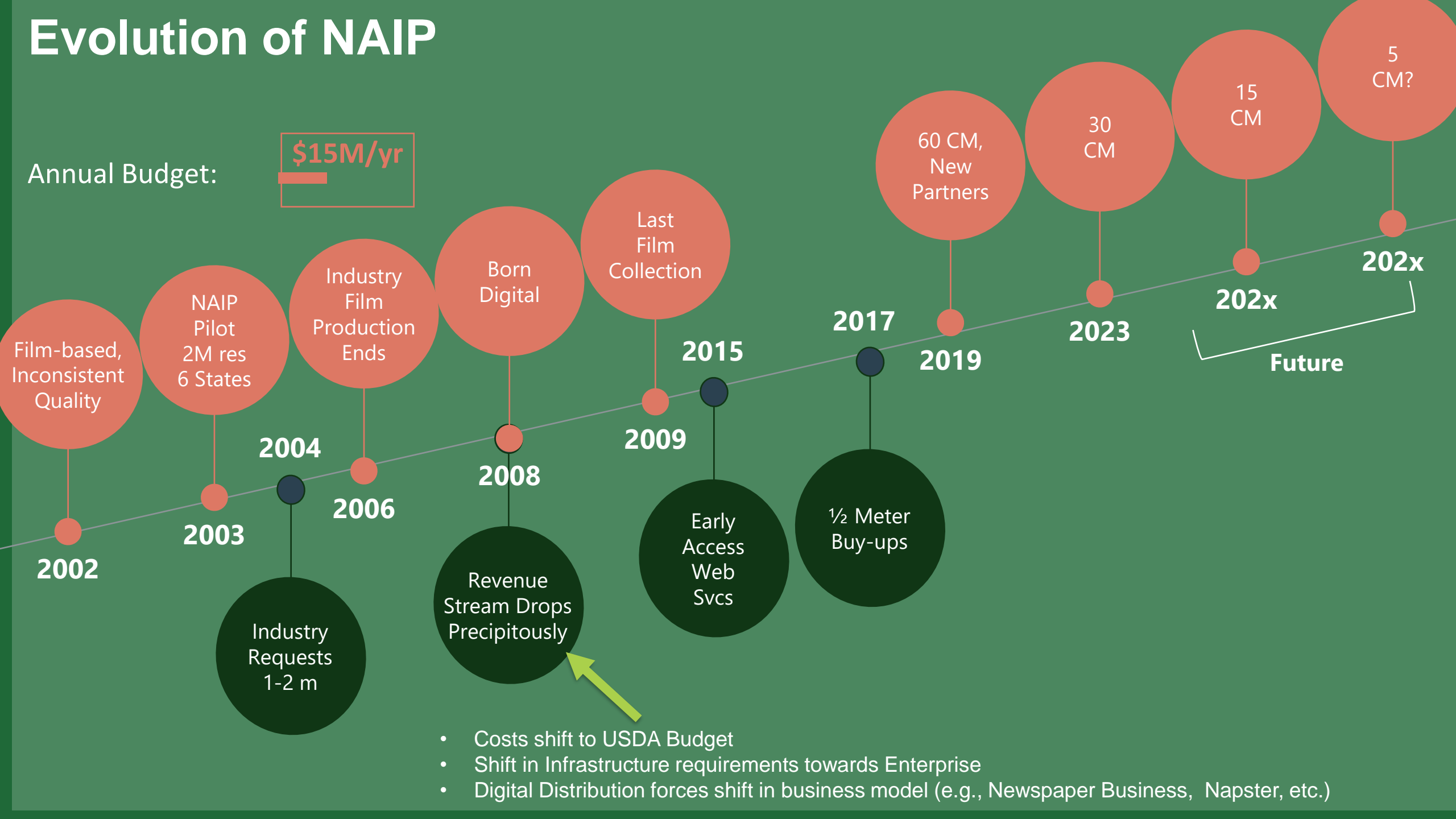
Costs get passed onto the Customer!

NAIP is Everywhere

Evolution of NAIP

Annual Budget: **$15M/yr**

2002 — Film-based, Inconsistent Quality

2003 — NAIP Pilot 2M res 6 States

2004 — Industry Requests 1-2 m

2006 — Industry Film Production Ends

2008 — Born Digital / Revenue Stream Drops Precipitously

2009 — Last Film Collection

2015 — Early Access Web Svcs

2017 — ½ Meter Buy-ups

2019 — 60 CM, New Partners

2023 — 30 CM

202x — 15 CM
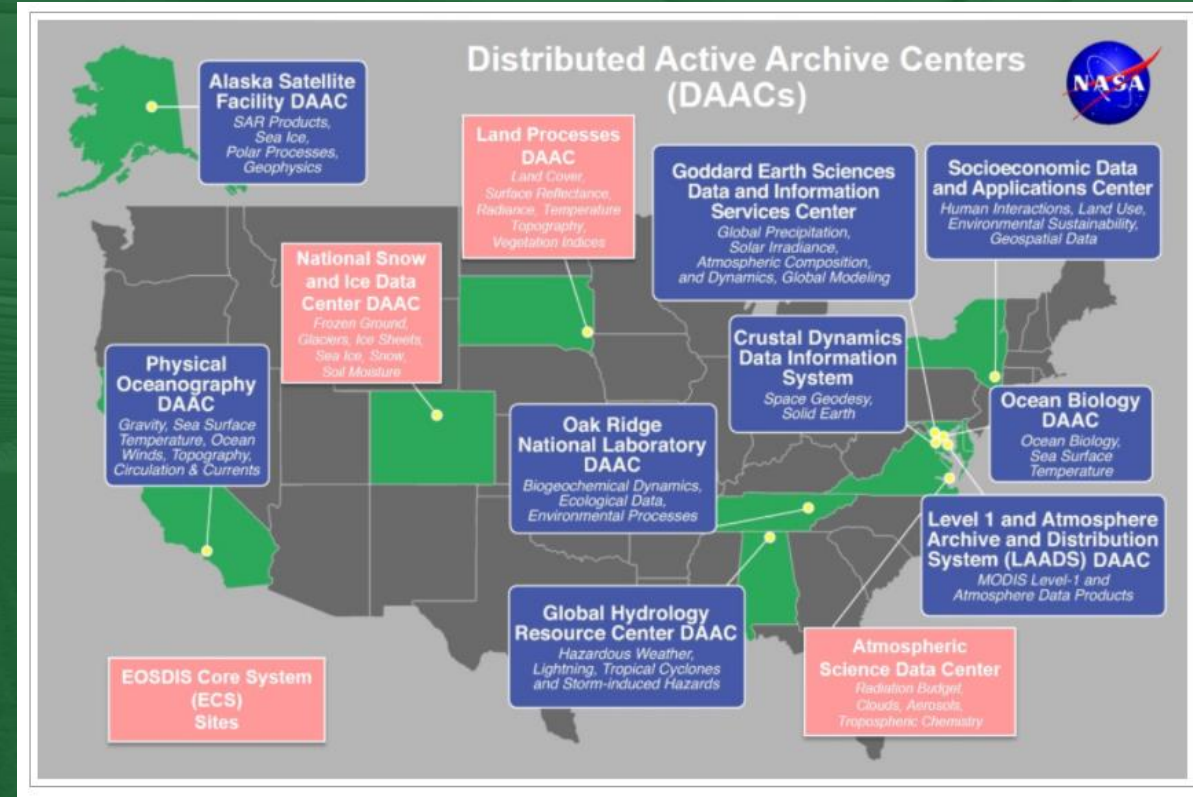
202x — 5 CM?

Future

- Costs shift to USDA Budget
- Shift in Infrastructure requirements towards Enterprise
- Digital Distribution forces shift in business model (e.g., Newspaper Business, Napster, etc.)

Program Evolution

Resolution
(Meter)

0.3
0.6
1
2

2003　2008　2023　2024

Drives

Data Volume
(Terabytes per Year)

1024
300
60
30
20

16 petabytes

2003　2008　2018　2023　2024

Delivery
(Months)

60
36
18
9
3

2003　2008　2018　2023　2024
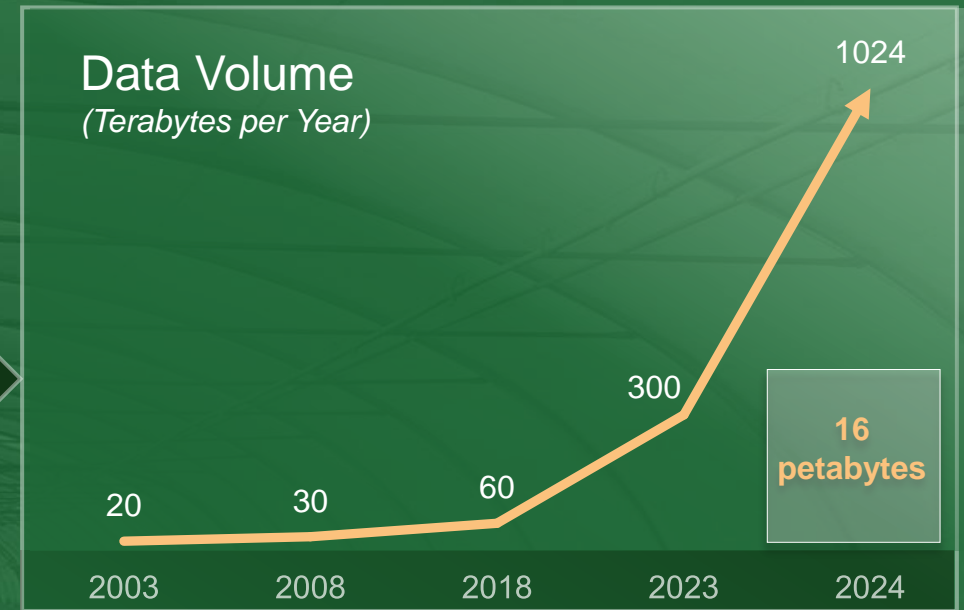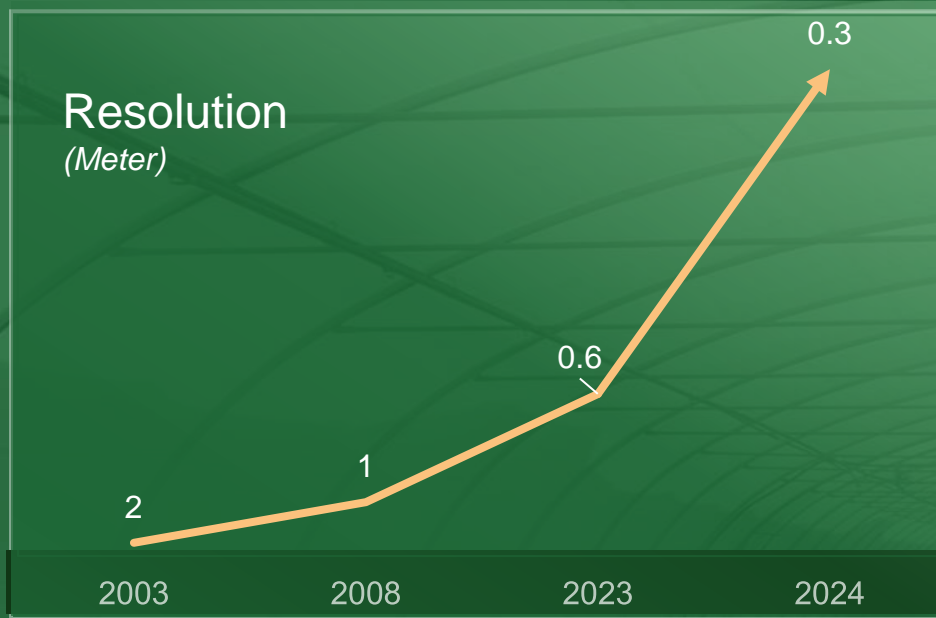
- 1 60cm Tile – 500M
- 1 30cm Tile – 2GB
- 1 15cm Tile – 8GB

Future of NAIP?

Data Volume
(Terabytes per Year)

4096

Partnerships
Explode

1024

300

64 petabytes

20 30 60

2003 2008 2018 2023 2024 2025+

?

=

=

Distributed Active Archive Centers (DAACs)
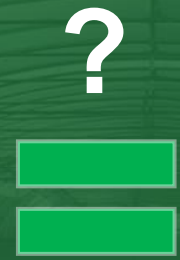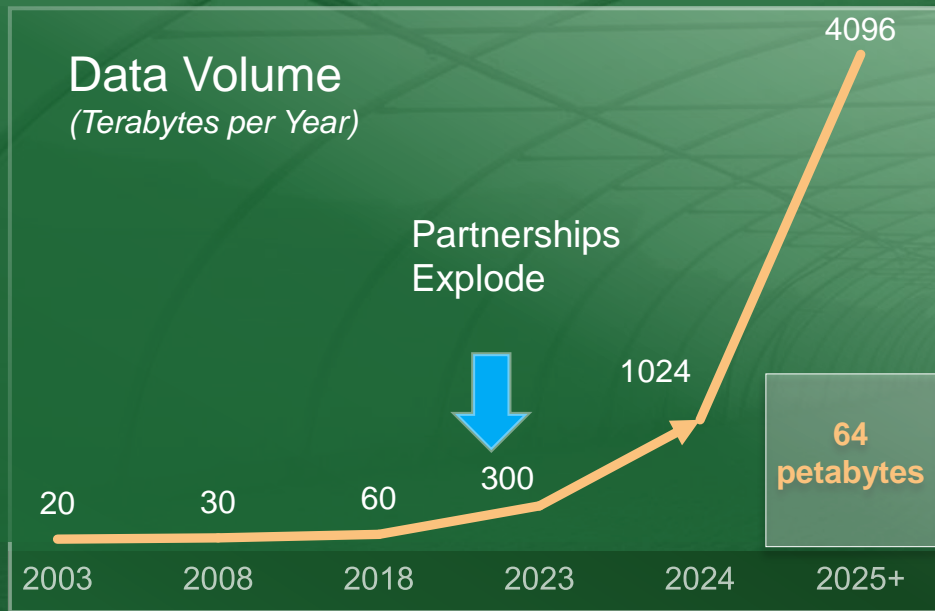
NAIP 2024:   16 petabytes (total)
Expected volume increase: 1 PB/Yr.
FY 23 Funding: $15.8M/Yr.
Cost/PB: $1.25M

$80M/Yr. Funding???

EOSDIS 2023:   96 petabytes (Total)
Expected volume increase: 42PB/Yr.
FY 23 Funding: $291.1M
Cost/PB: $3M

Our Solution

✓ **New Revenue Model for funding problem**

Acknowledgement of broader applicability than Ag leading to new revenue model, elevating NAIP to the level of the NASA DAACs and other Federal Data Center

✓ **Focus on Automation for staffing problem**

Utilize advanced technologies (cloud capabilities, AI/ML, etc.) to increase productivity of existing staff and keep costs down.

✓ **Know Your Customer for misunderstood demand problem**

For the NAIP industry, leverage customer relationship systems to capture usage, value metrics, etc. to better know the customer's needs
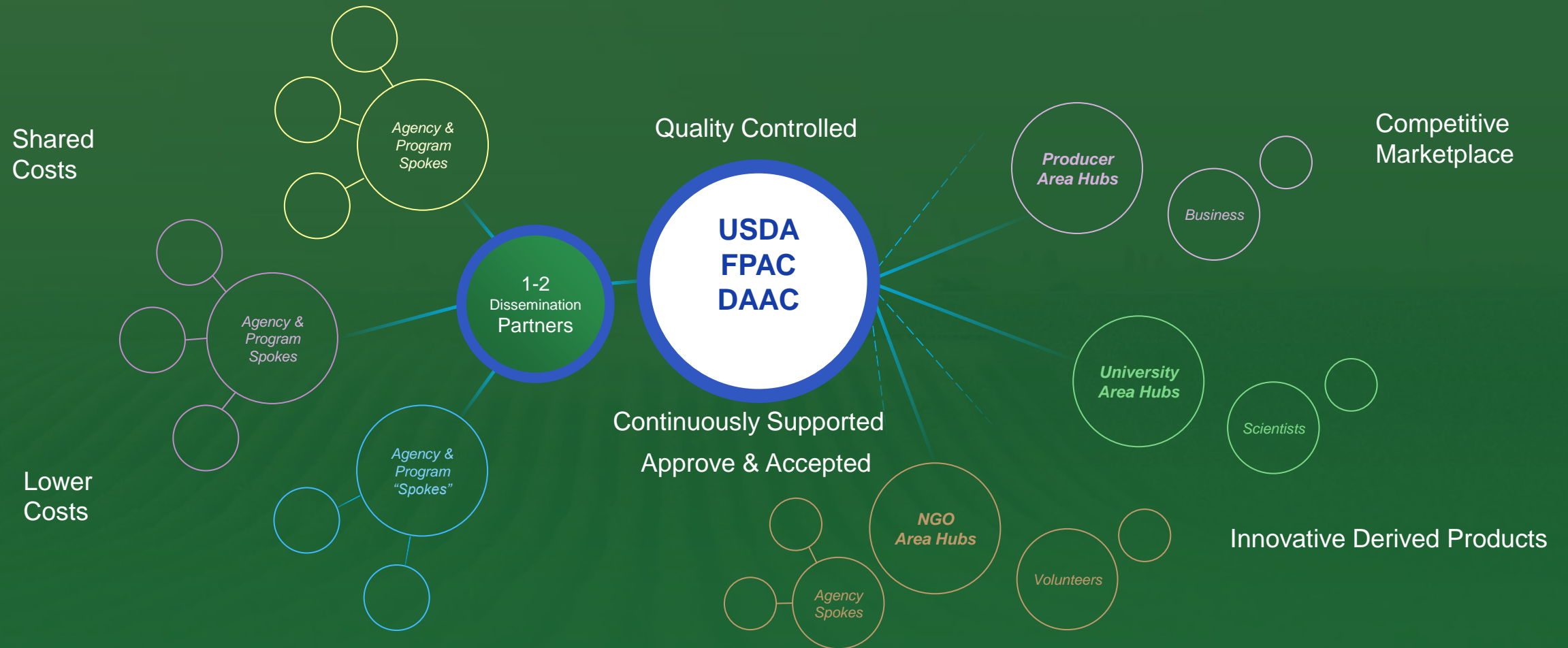
FPAC Business Center Geospatial Enterprise Operations Branch

Providing a modern imagery infrastructure for geospatial services for all of FPAC

Cloud & On-Prem Storage

Reality Capture

Visualization & Exploitation

Analytics

Simulation

FPAC GEO Vector & Imagery System

Services

Desktop

Web

Mobile

Dashboard

Simulation
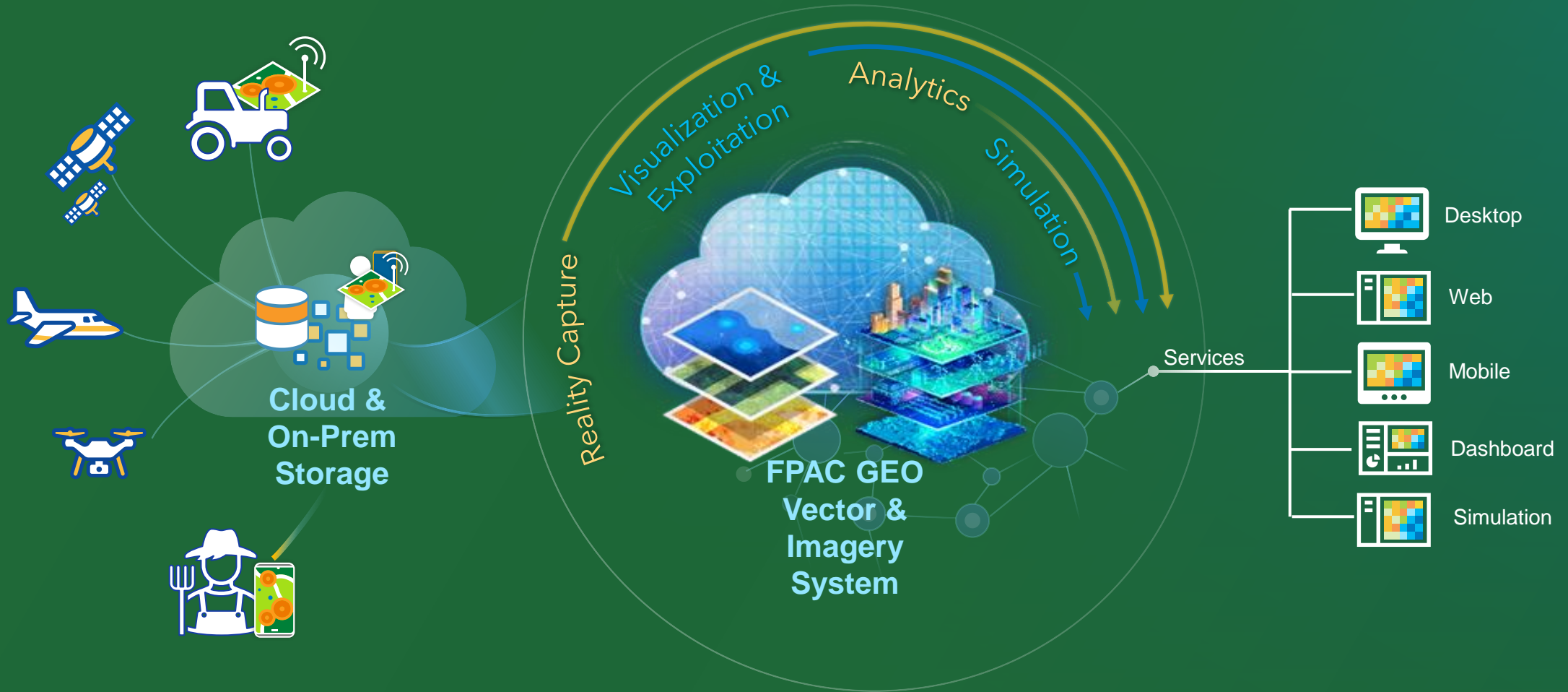
The Farmer's ALMA-DAAC

Remote Sensing for the Farmer

Analysis

Reality Mapping

- Generate analysis ready content
- 2D & 3D Outputs
- Large scale at large extent

- Classification
- Change detection
- Extraction
- Raster analytics
- GeoAI (ML & DL)

Know Your Customer

- Mobile Data Input
- Customer Relationship Management
- Dashboard Reporting
- Knowledge Sharing

Visualization

Catalog Datasets

Management

- Simplify access to FPAC content
- Hosted imagery & features
- Open standards compatible

Mosaic Datasets

LAS Datasets

Multidimensional

Oriented Imagery

- Image Exploitation
- 3D, Radar, Temporal, Voxels, Oriented Imagery, Stereo
- Build Apps with low code or no code
- Integrate map and image Space

Content

- LIDAR, Historical NAIP, Landsat, etc.
- ArcGIS Living Atlas
- Commercial data

Catalogs (e.g. STAC)

Storage

Agricultural Land Management Asset (ALMA)

Request for Support from NGAC

- Help in developing the new business model and business value messaging

- Support from the community to elevate FPAC GEO in front of key stakeholders

- Support for IT modernization to minimize technical debt

Concerns, Questions, & NGAC Recommendations?
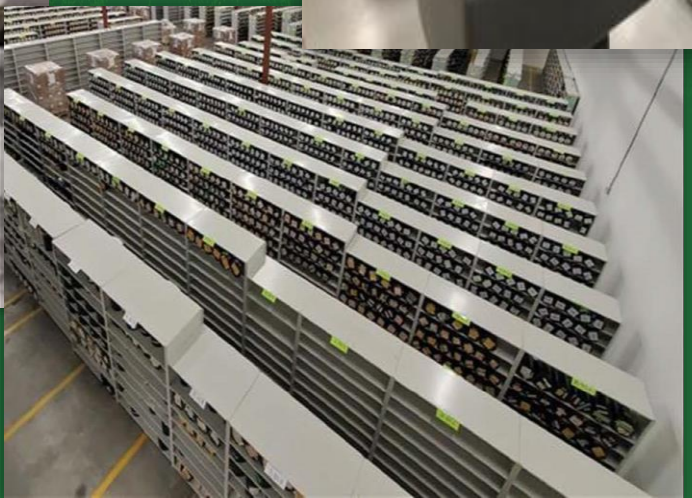
Authoritative Data Challenges

How are we going to deliver data quickly?
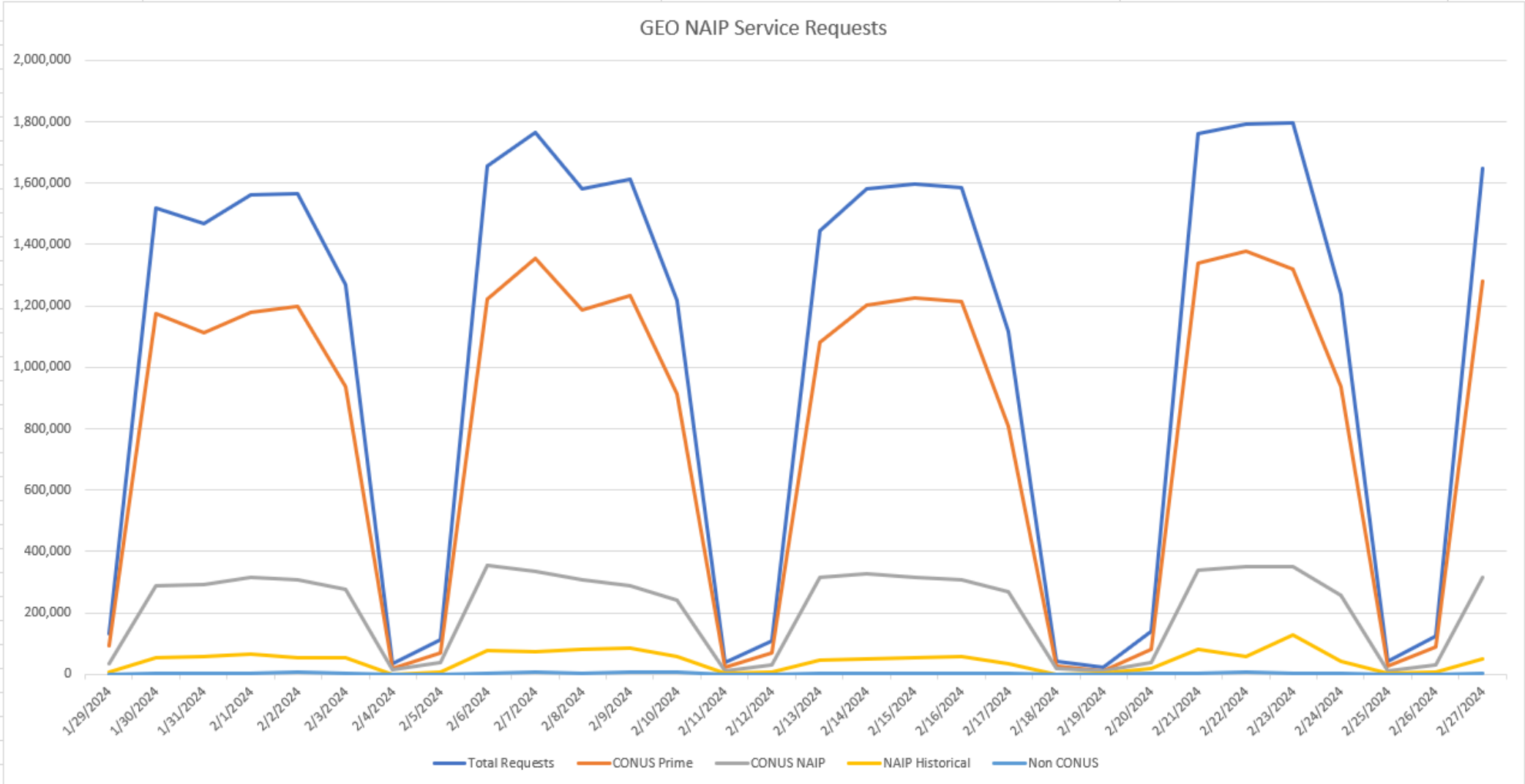
Can it be accessed efficiently?

Is my infrastructure built for this?
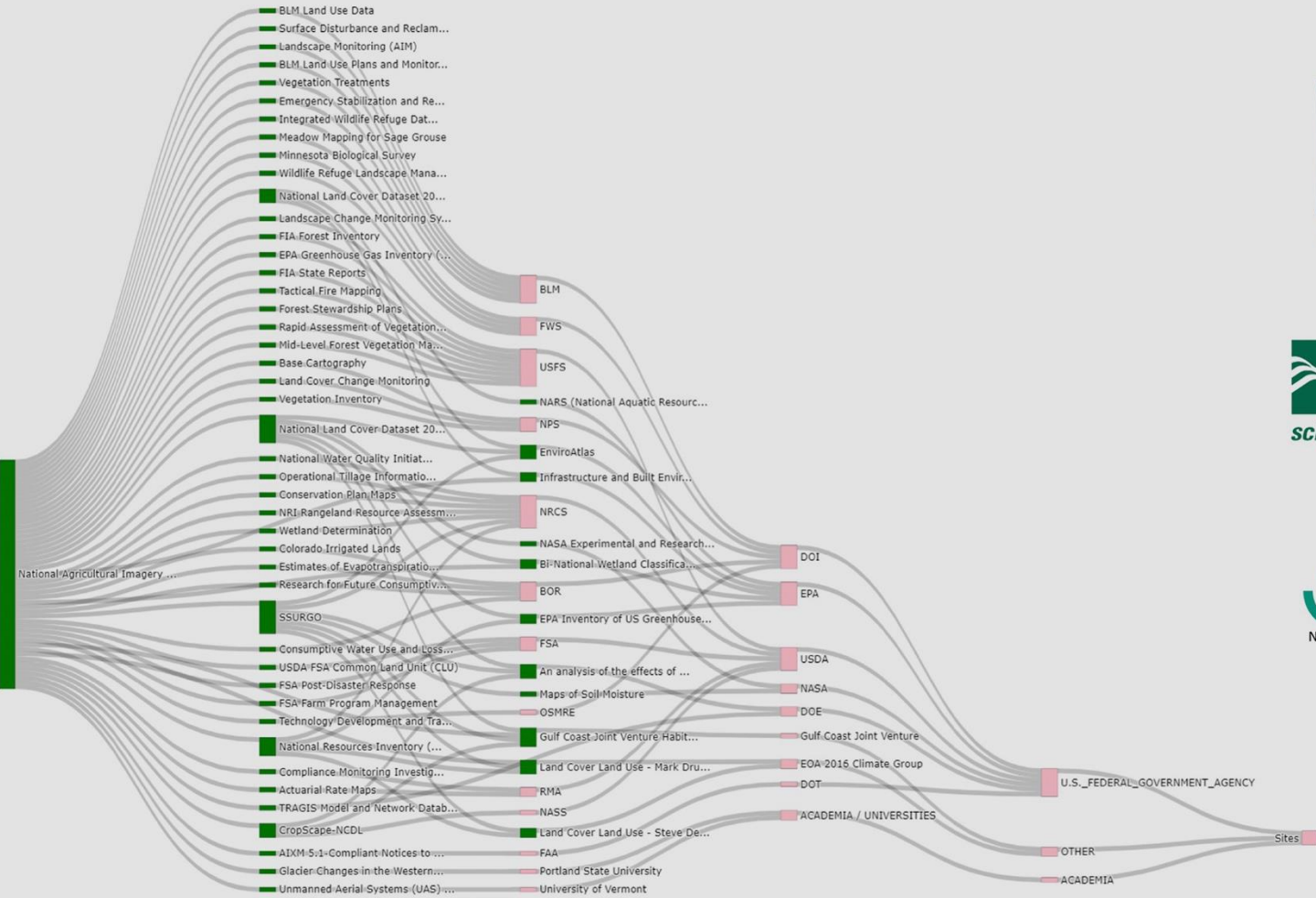
How much is this going to cost?

Infrastructure Challenges

Services Demand for NAIP

GEO NAIP Service Requests

Legend: Total Requests, CONUS Prime, CONUS NAIP, NAIP Historical, Non CONUS

Applying NAIP Through Partners

How it Works

Insert your desired text here. This is a sample text. Insert your desired text here. This is a sample text. Insert your desired text here. This is a sample text. Insert your desired text here. This is a sample text. Insert your desired text here. This is a sample text. Insert your desired text here. This is a sample text. Insert your desired text here. This is a sample text.

Step 1

This is a sample text. Write your text here. Put your desired text here. This is a sample text. Write your text here. Put your desired text here. This is a sample text. Write your text here.

Step 2

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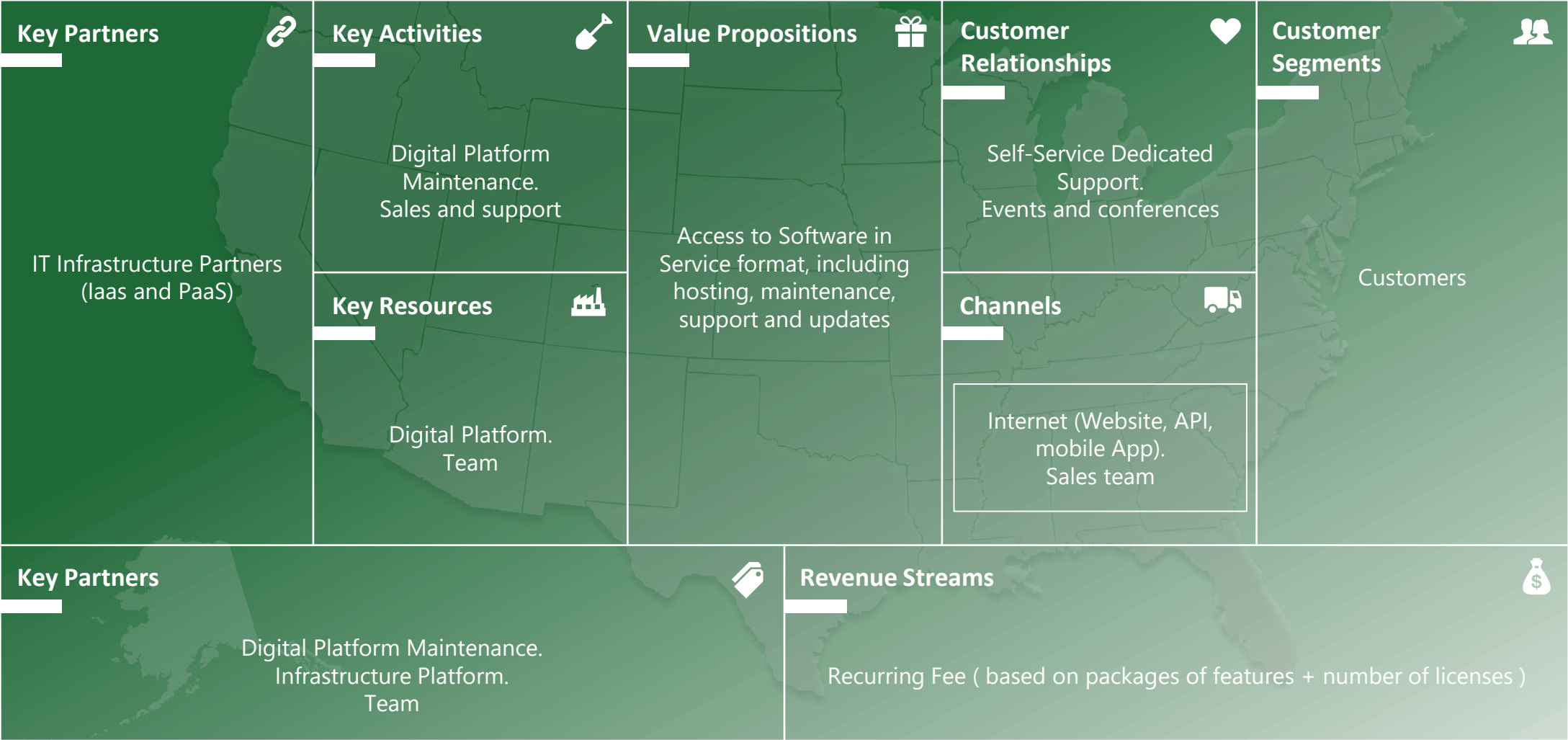
Step 3

This is a sample text. Write your text here. Put your desired text here. This is a sample text. Write your text here. Put your desired text here. This is a sample text. Write your text here.

Mapping the Future of Farming & Conservation

Key Partners 🔗

IT Infrastructure Partners (Iaas and PaaS)

Key Activities 🪏

Digital Platform Maintenance.
Sales and support

Key Resources 🏭

Digital Platform.
Team

Value Propositions 🎁

Access to Software in Service format, including hosting, maintenance, support and updates

Customer Relationships ❤️

Self-Service Dedicated Support.
Events and conferences

Channels 🚚

Internet (Website, API, mobile App).
Sales team

Customer Segments 👥

Customers

Key Partners 🏷️

Digital Platform Maintenance.
Infrastructure Platform.
Team

Revenue Streams 💰

Recurring Fee (based on packages of features + number of licenses)

Plans & Pricing

Basic

Sample text

Placeholder

Text here

Pro

Sample text

Placeholder

Text here

Text

Premium

Sample text

Placeholder

Text here

Text

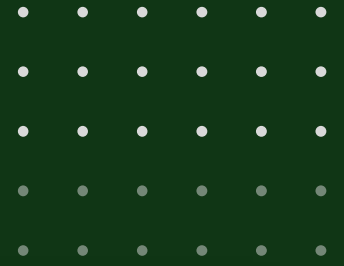# Partnering for Success

Partners

First Class Delivery

Current Data

Quicker Benefits

Expertise

Premium Support

Prioritized Quality Assurance

Status Updates

Direct Access

Customers

First Come, First Serve

Community Expertise

Standard Support

Standard Quality Assurance

Standard Delivery

Standard Access

NAIP: Imagine Your Possibilities

Evacuation

Perimeter Planning

Water and Gas Pipeline Analysis

Inspections

Natural Disaster

Soil Analysis