Welcome to GIS DAY 2023

Using GIS technology to explore, innovate, and transform Santa Clara County

November 1, 2023

Geospatial Data Democratization and Data Governance: Empowering the Future of Location Intelligence

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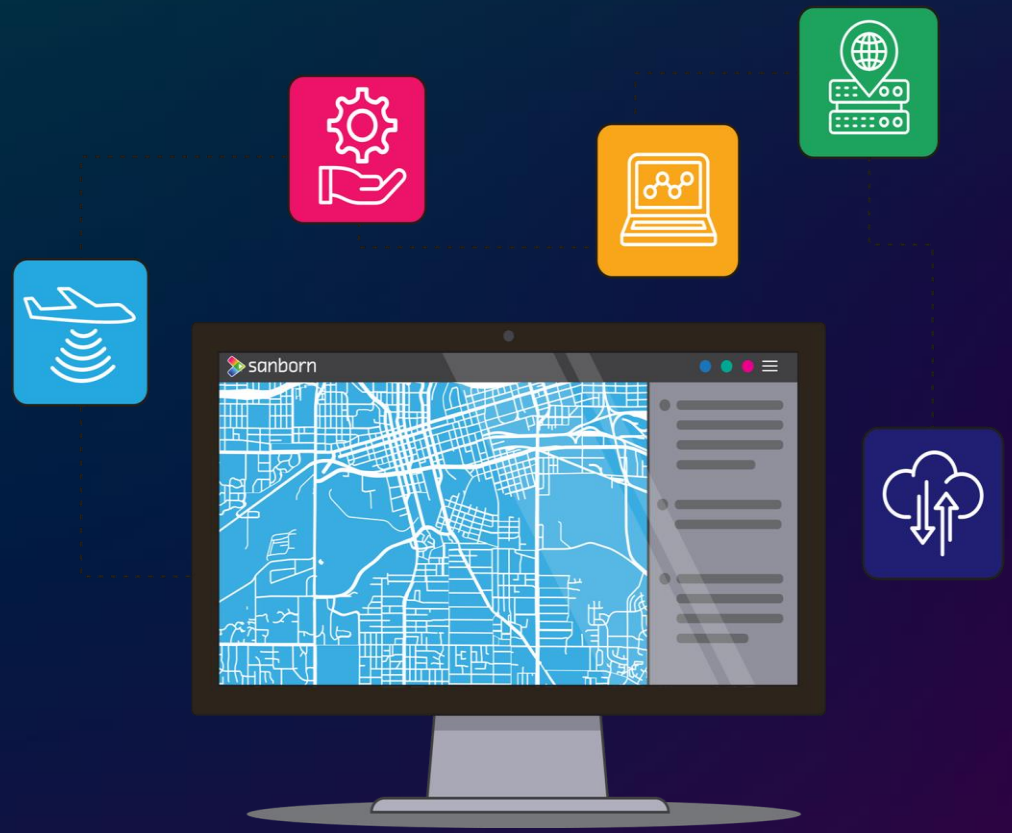
AGENDA

- Who is Sanborn Geospatial
- History
- Complete Range of Services
- Strategy And Decision Support Experience
- The Data Tsunami
- Data Democratization
- Challenges
- Governance As a Response to Challenges



SANBORN HISTORY

1866 FOUNDED & BEGAN GROUND SURVEYS

1966 BEGAN AERIAL SURVEYS

1979 BEGAN DIGITAL PHOTOGRA-MMATIC MAPPING

1984 PIONEERED DIGITAL TERRAIN MODELING

1988 FIRST DIGITAL ORTHO PRODUCTION

1998 LIDAR COLLECTION & PRODUCTION

2004 DIGITAL AERIAL IMAGERY & WEB SERVICES

2010 MOBILE & GROUND LIDAR

2012 OBLIQUE IMAGERY

2013 DRONE BASED IMAGERY

2014 BUILDING INFORMATION MAPPING (BIM)

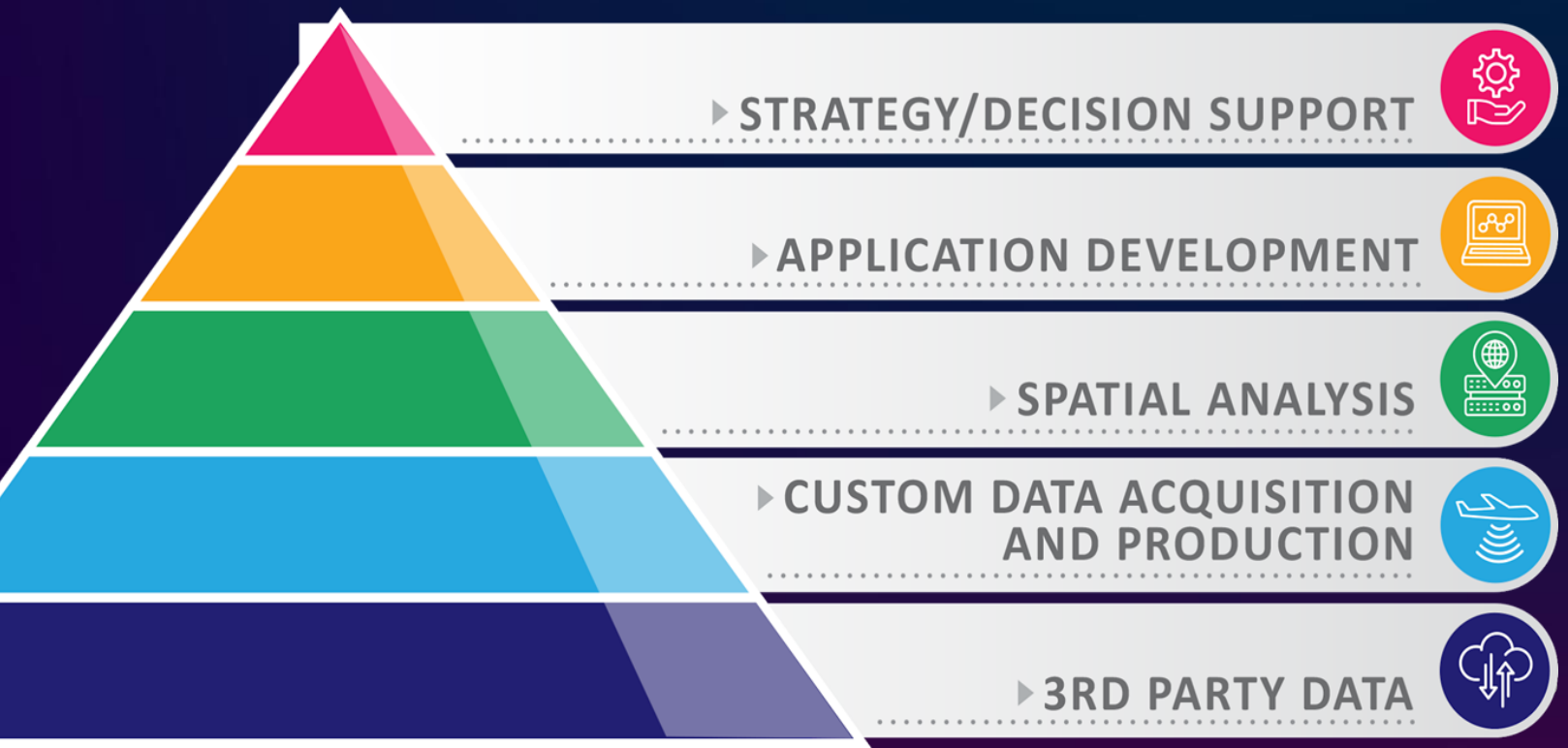
2016 HD MAPS

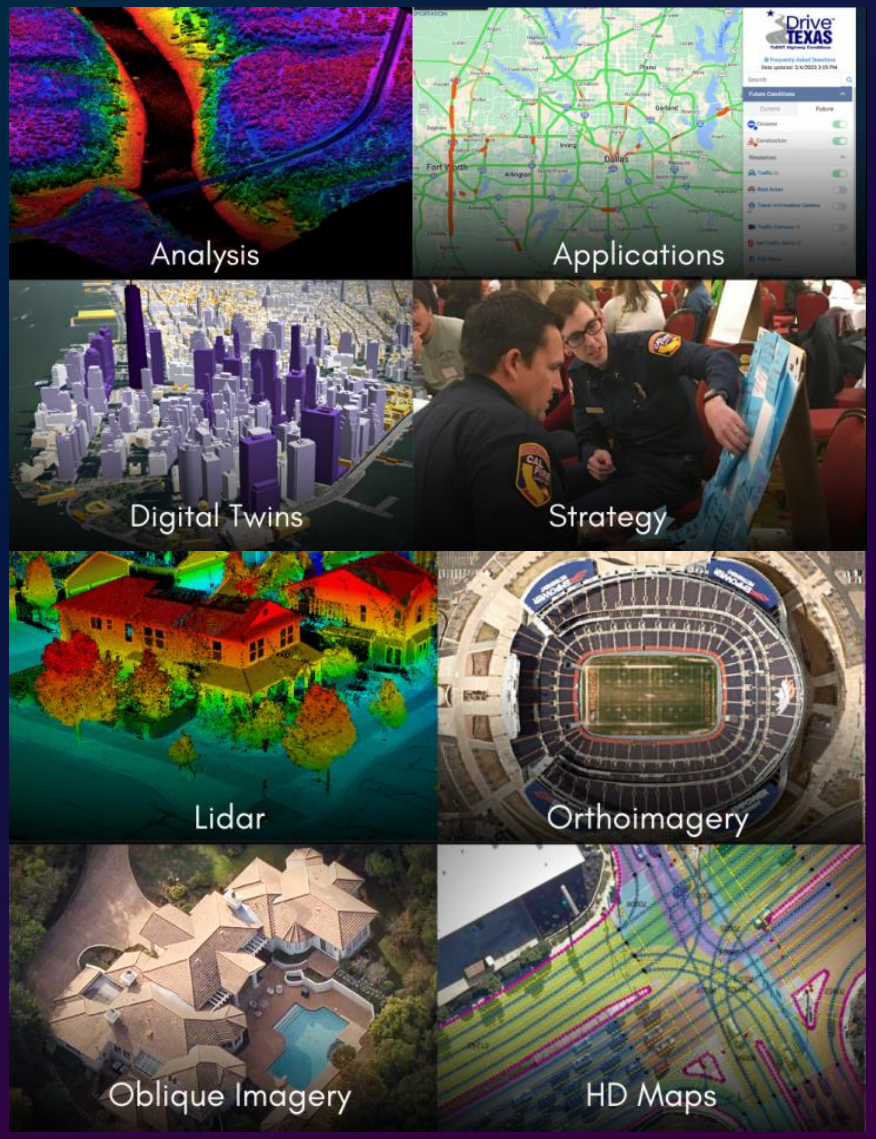
2018 CLOUD SERVICES

2022 AQUIRED APPGEO

COMPLETE RANGE OF SERVICES

Our range of strategic, technical, and data services, plus value-added solution, platform, and product offerings is unmatched.





SANBORN GEOSPATIAL

The combination of Sanborn and AppGeo provides our expanding customer base with even more solutions and capabilities to support their mission. The strategic value to customers is having all their needs for geospatial data, solutions, and strategy met by a single dependable partner.

– John Copple, Chief Executive Officer, Sanborn

STRATEGY AND DECISION SUPPORT

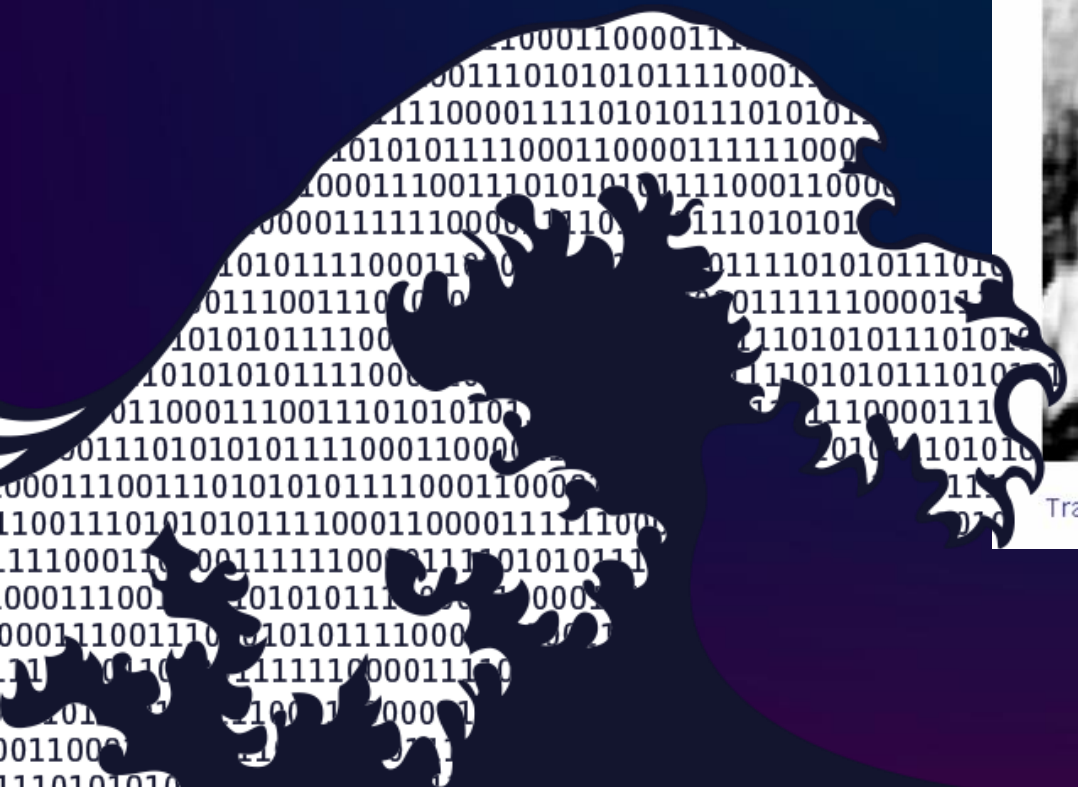
Organizations need to keep up with changing standards, best practices and funding opportunities. We're experts in addressing organizational strategy for GIS.

- Vision, mission, and strategic objectives
- Guiding legislation and funding strategies
- Organizational roles and responsibilities
- Stakeholder Input & Process Facilitation
- Establishment of Coordinating and Governing Councils
- Justification – Cost-Benefit, ROI analysis
- Implementation plans, Roadmaps, Milestones
- Data Governance and Democratization Strategizes

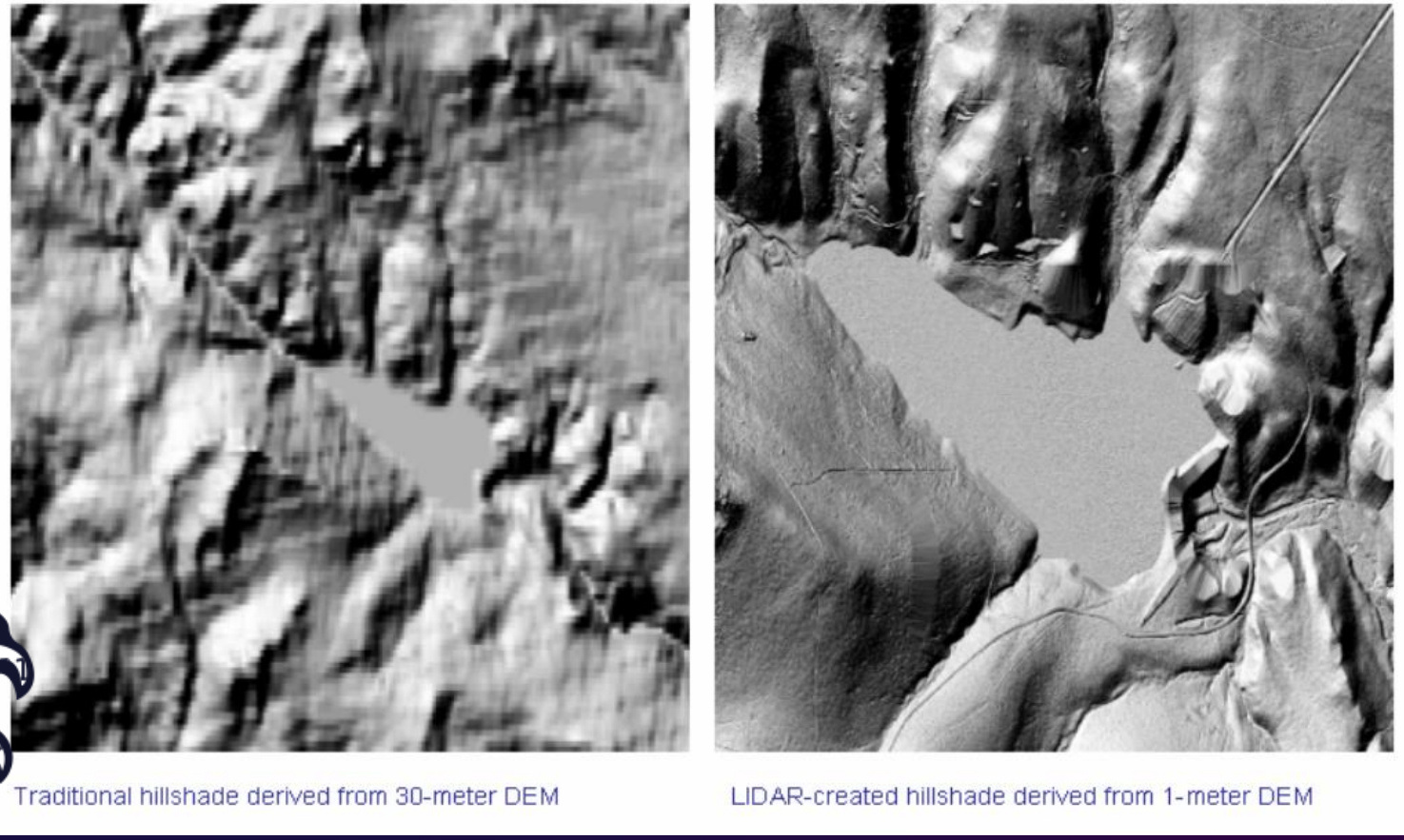
We've completed statewide GIS-related Strategic Plans and Business Plans for more than 30 states. We authored the FGDC's GIS strategic planning guide, providing a detailed roadmap that everyone can follow.

BASE MAP DATA VOLUME INCREASE

Elevation Model Example	156,000 Sq. Mi. (State)
USGS NED 10-Meter	16GB
USGS QL2	48,000GB
USGS QL1	192,000GB



30 meter DEM vs. 1 meter LIDAR-Derived DEM

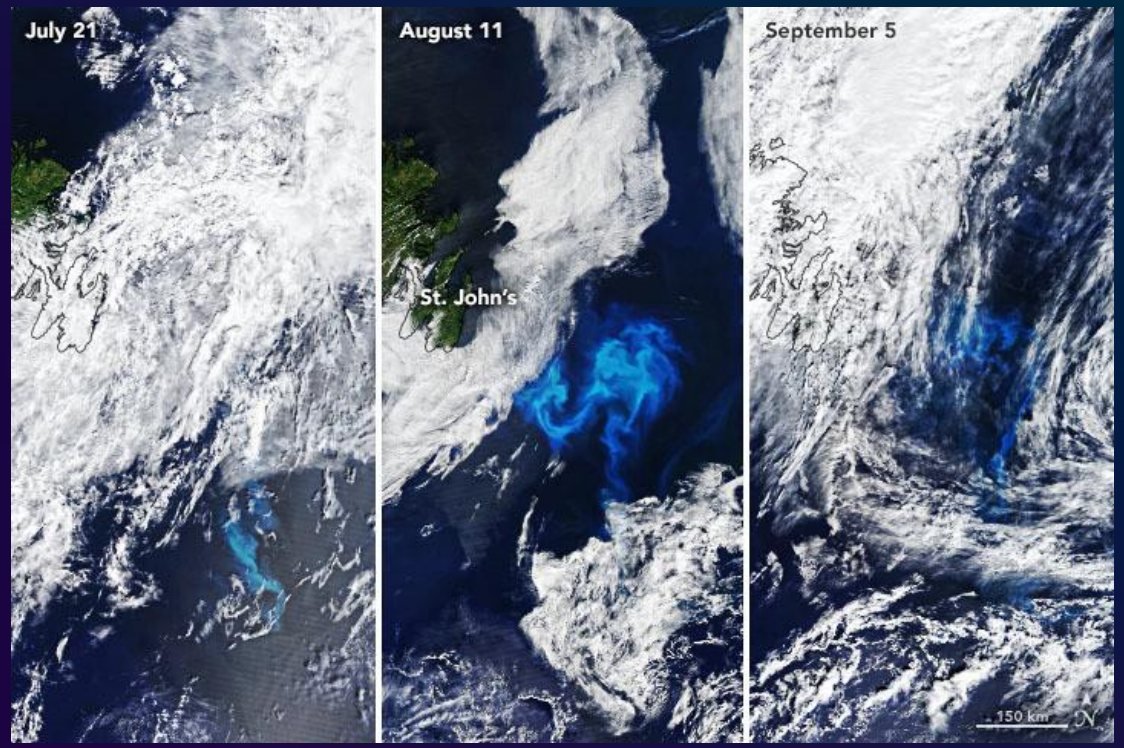


Traditional hillshade derived from 30-meter DEM

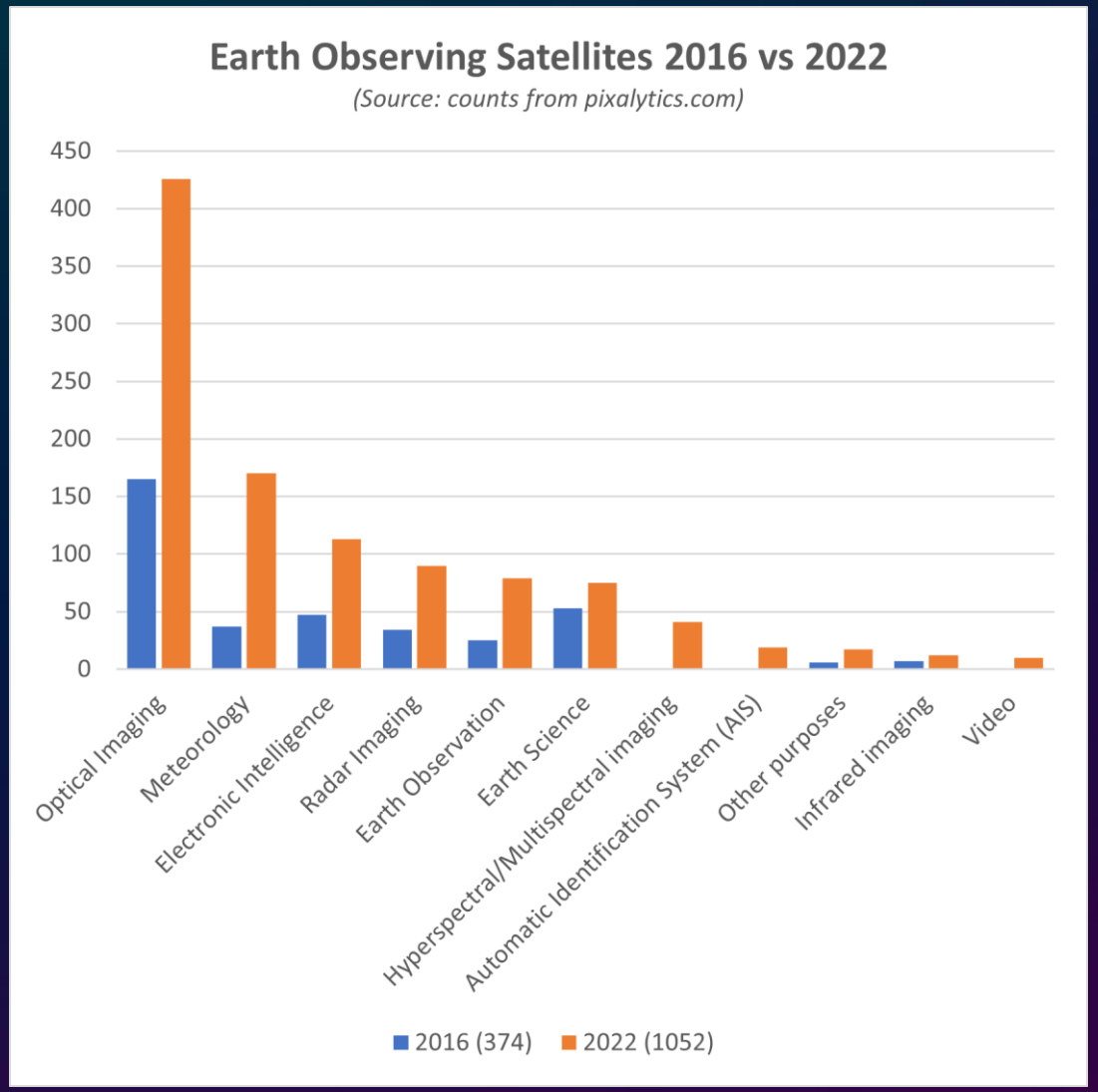
LIDAR-created hillshade derived from 1-meter DEM

THE GEODATA TSUNAMI DRIVES DEMOCRATIZATION

Earth Imaging Satellites…Everywhere

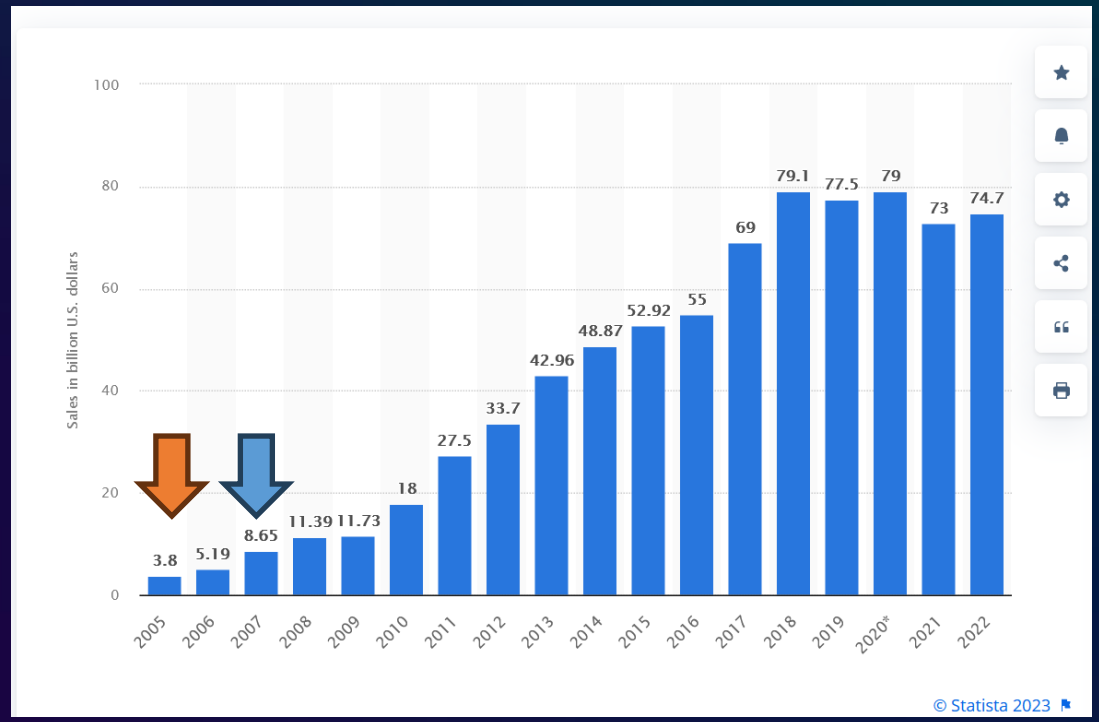


Source: https://www.weforum.org/agenda/2021/03/pictures-from-space-nasa-earth/ Images: NASA



THE GEODATA TSUNAMI IS IOT

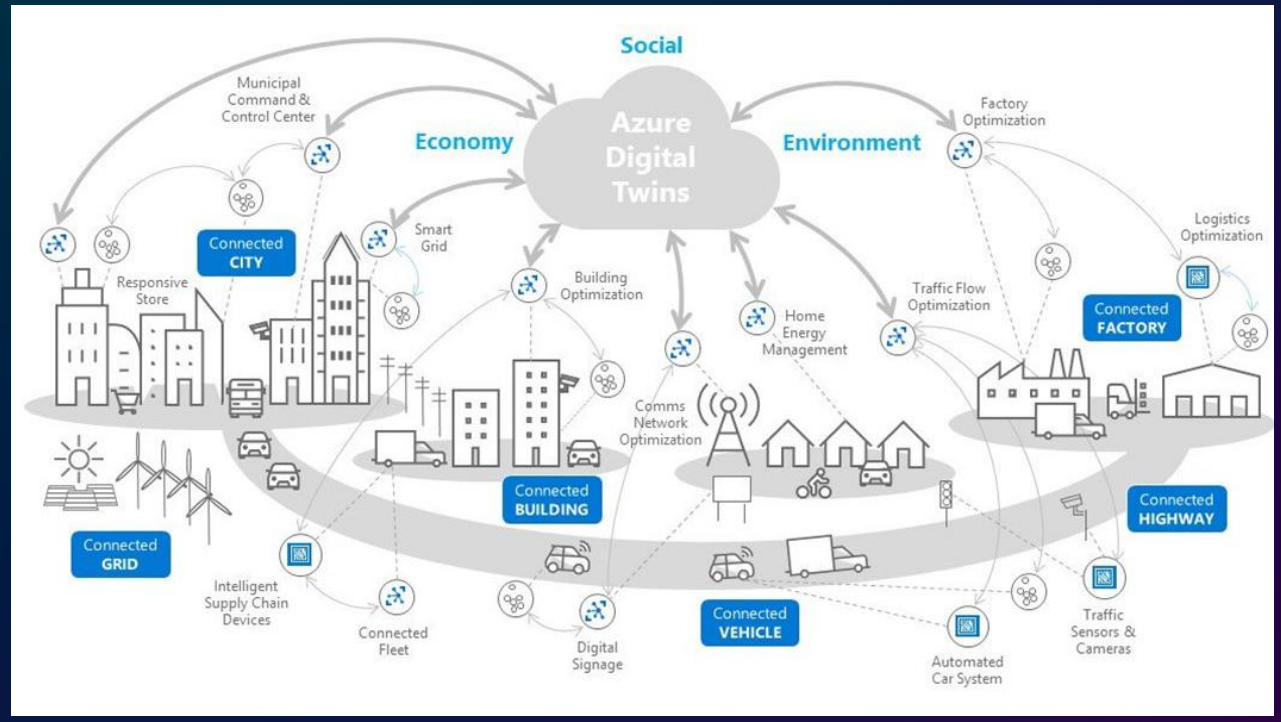
Mobile Phones Illustrate the Boom



Source: statista.com, U.S. purchases of smart phones, 2005-2022

Google Maps launch

Apple iPhone launch



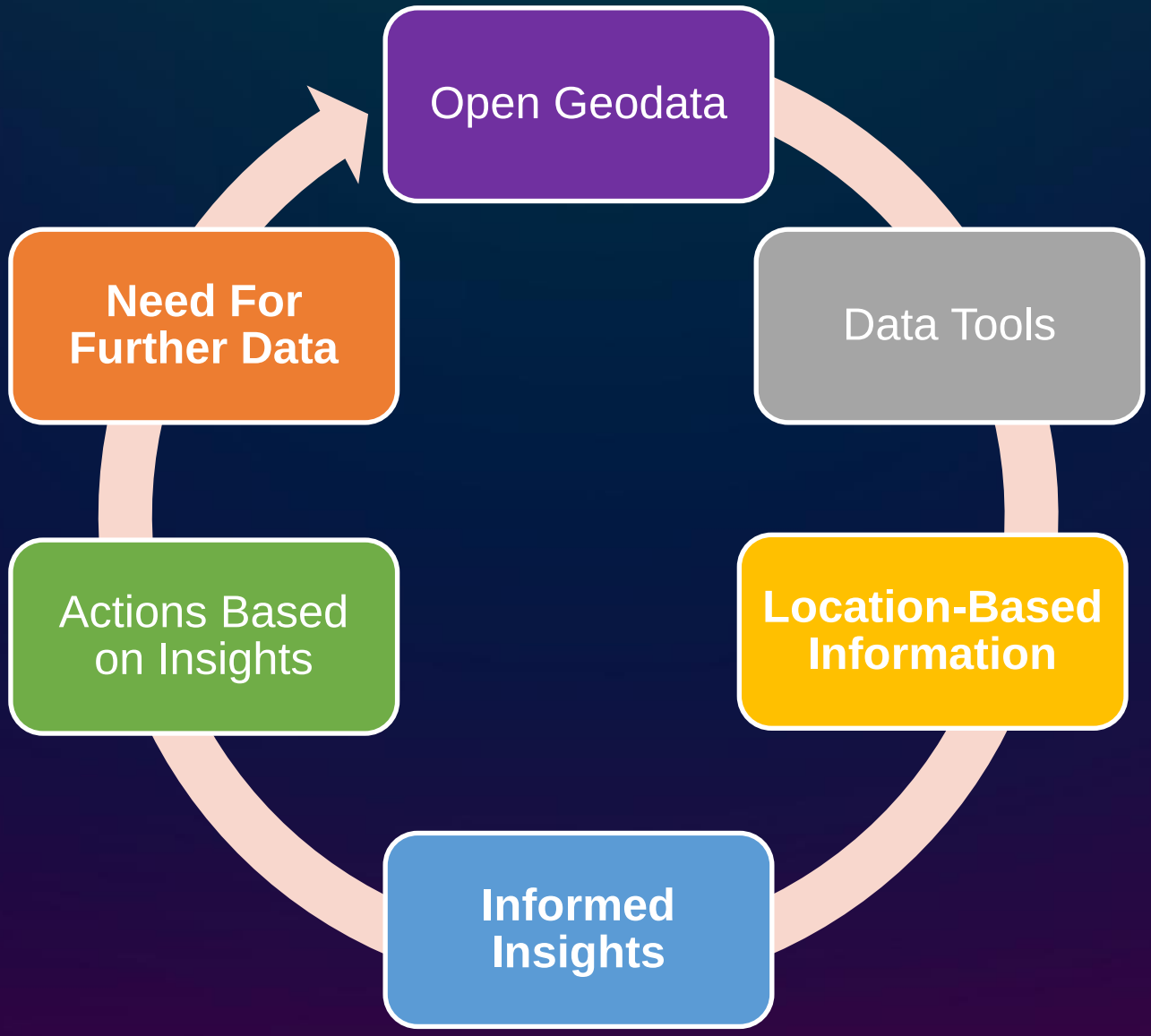
Data = Observations

Information = Knowledge synthesized from data, experience, or received from external sources

Data: Cell phone pings (data) Information: (User I.D. 22528 tracked from Pentagon to protest march)

GEODATA DEMOCRACY

Data democratization is more than just open data



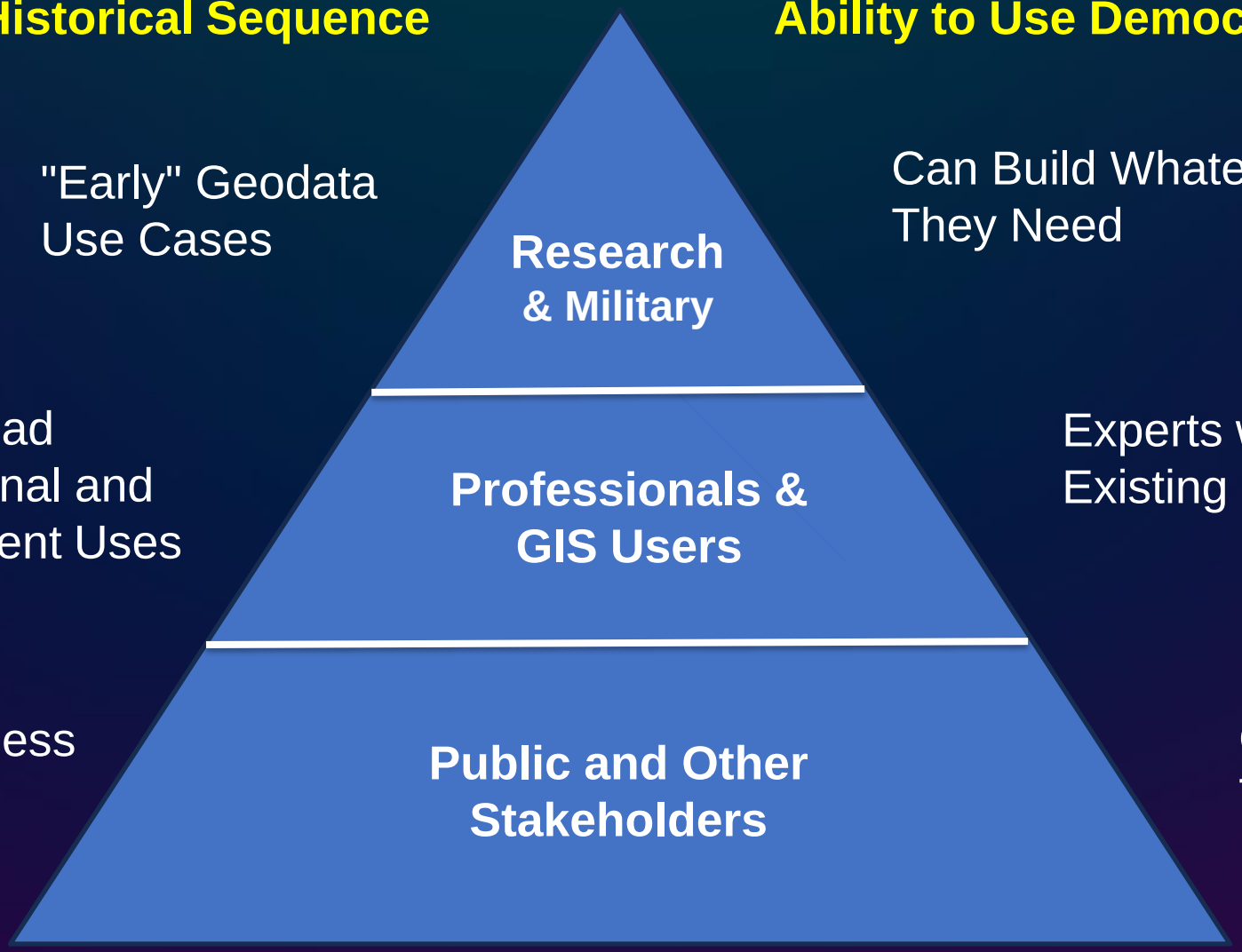
GEODATA USERS AND USES GROW OVER TIME

Historical Sequence

Ability to Use Democratized Data

"Early" Geodata Use Cases

Can Build Whatever They Need



Widespread Professional and Government Uses

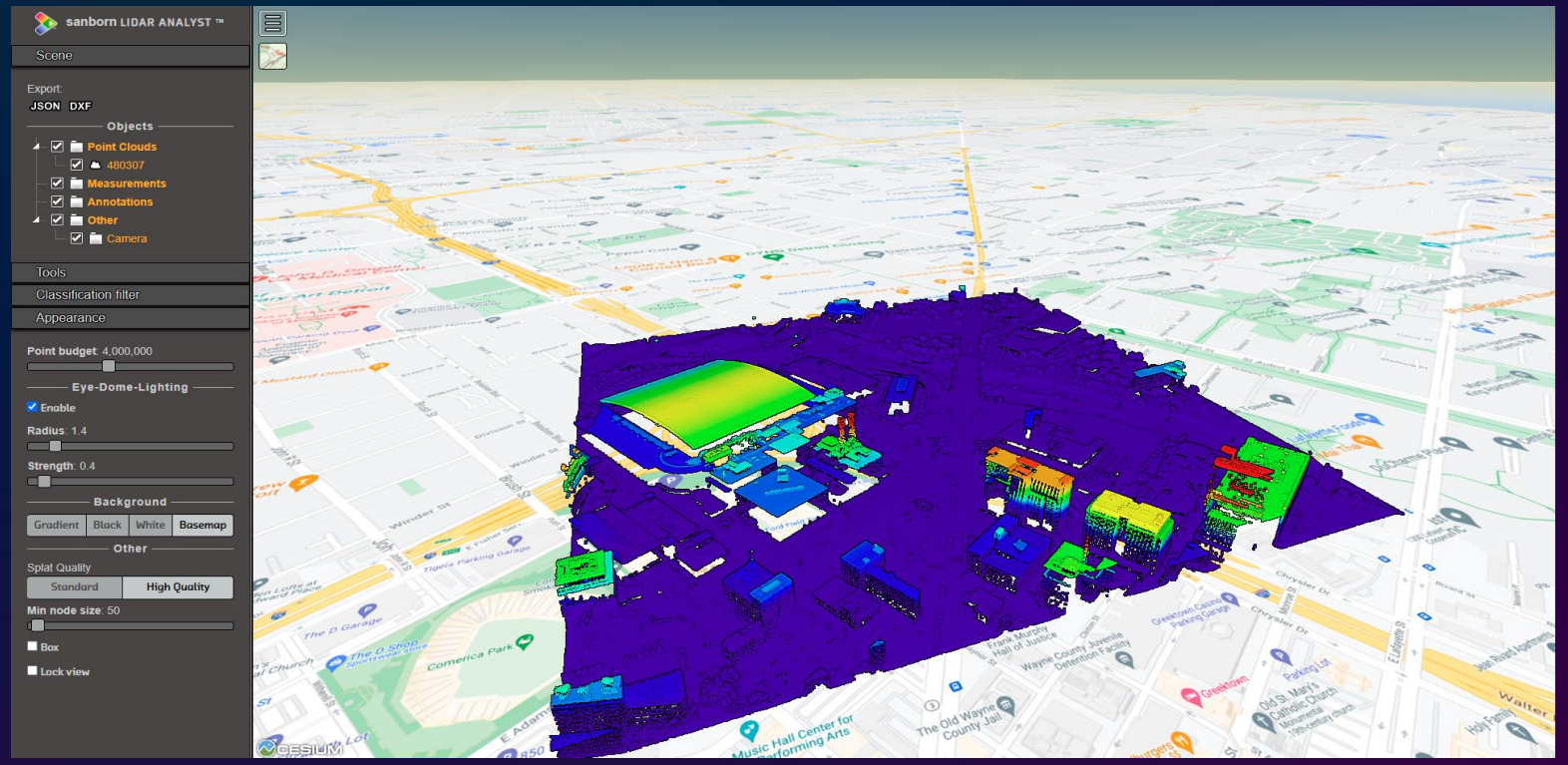
Experts with Existing Tools

Public-Facing Applications, Business Uses, and Data Publishing on the Internet

Consumers of Tool Outputs

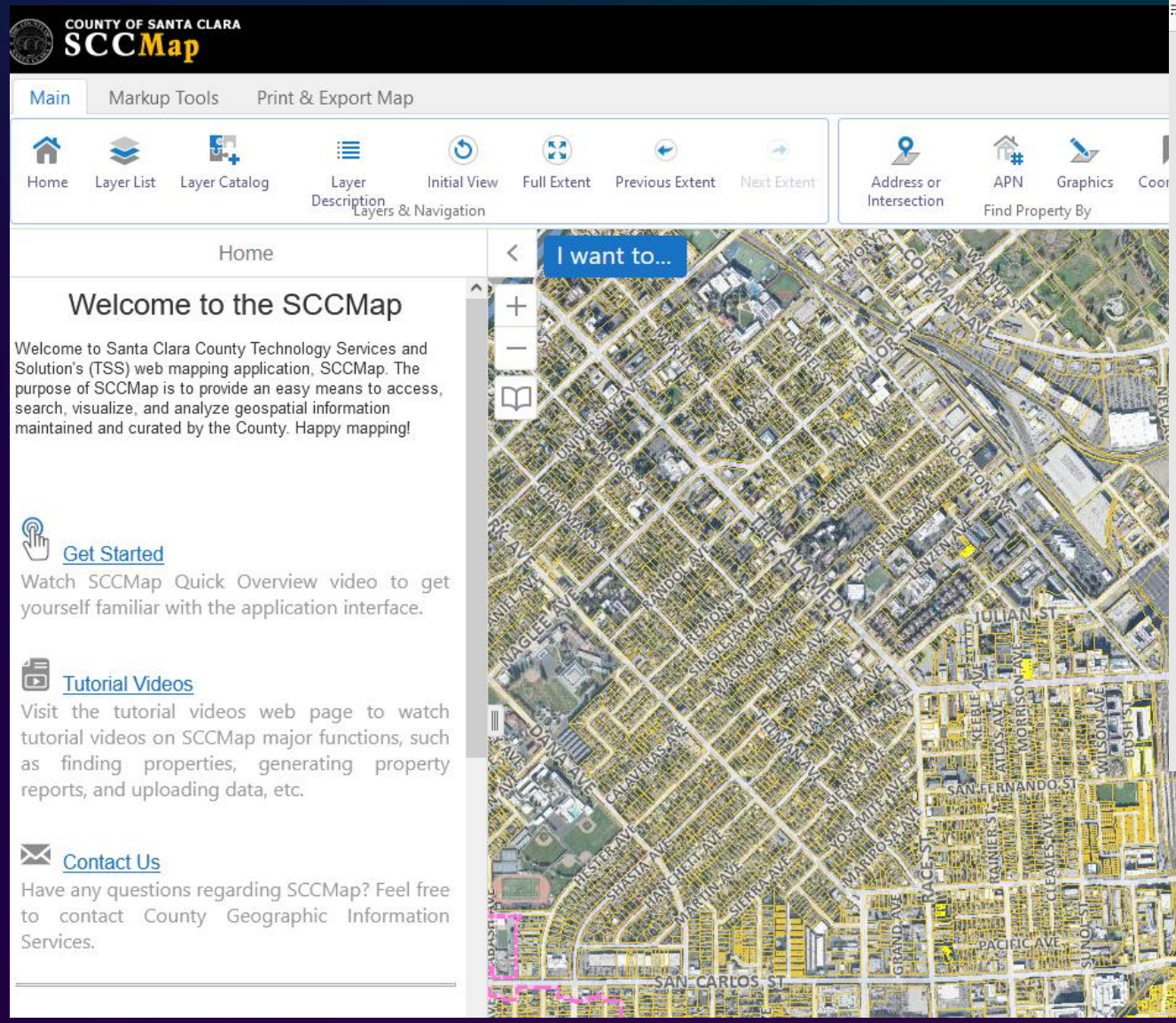
EXAMPLES OF TOOLS FOR DATA DEMOCRATIZATION
SANBORN GEODATA EXPLORER™

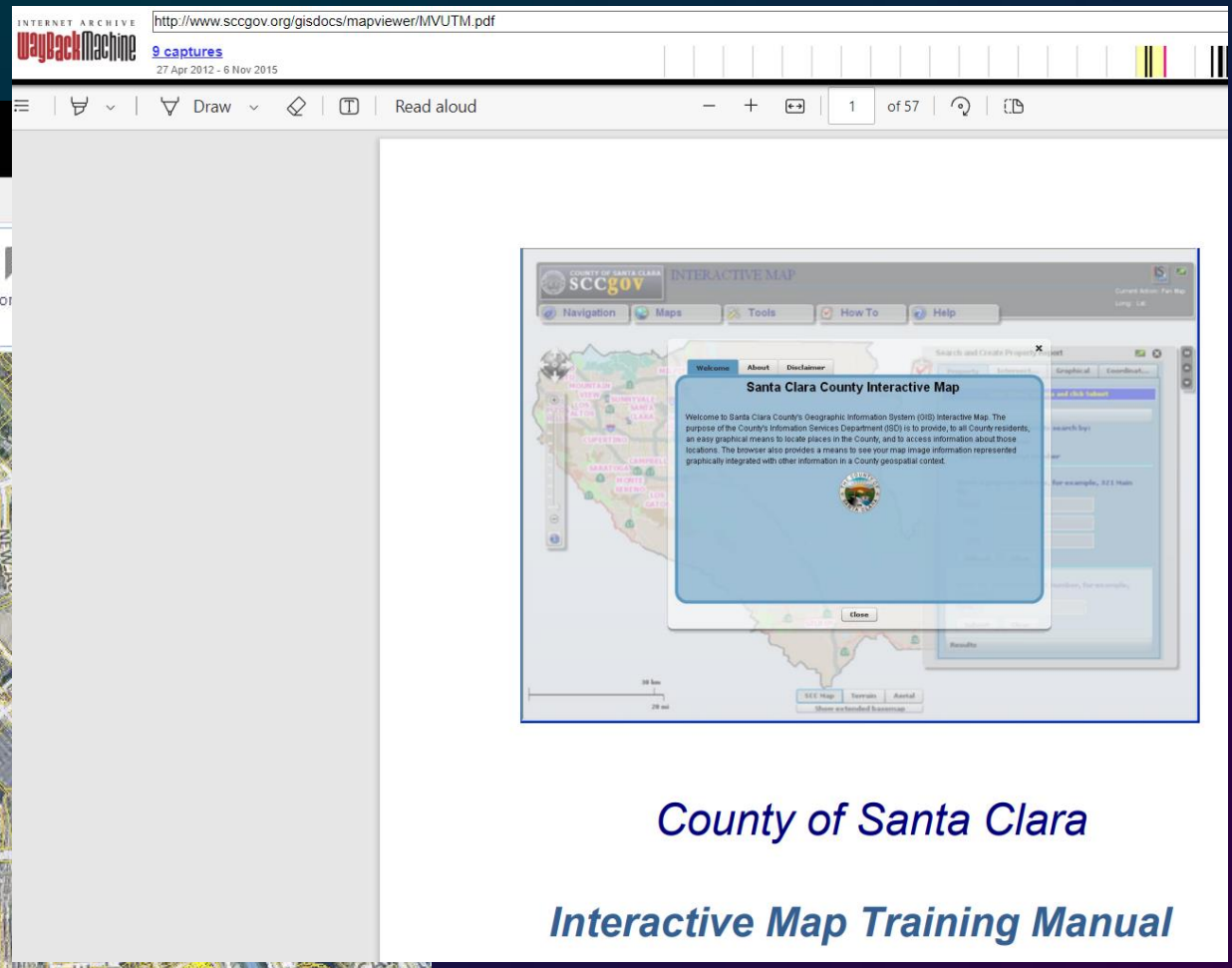
- A tool to enable our clients the ability to democratize their geospatial data
- Provides the following functionality to our clients:
  - Data Search
  - Data Visualization
  - Data Analysis
  - Access to Services
  - Clip and Ship downloads



BENEFITS (Example)

Now…



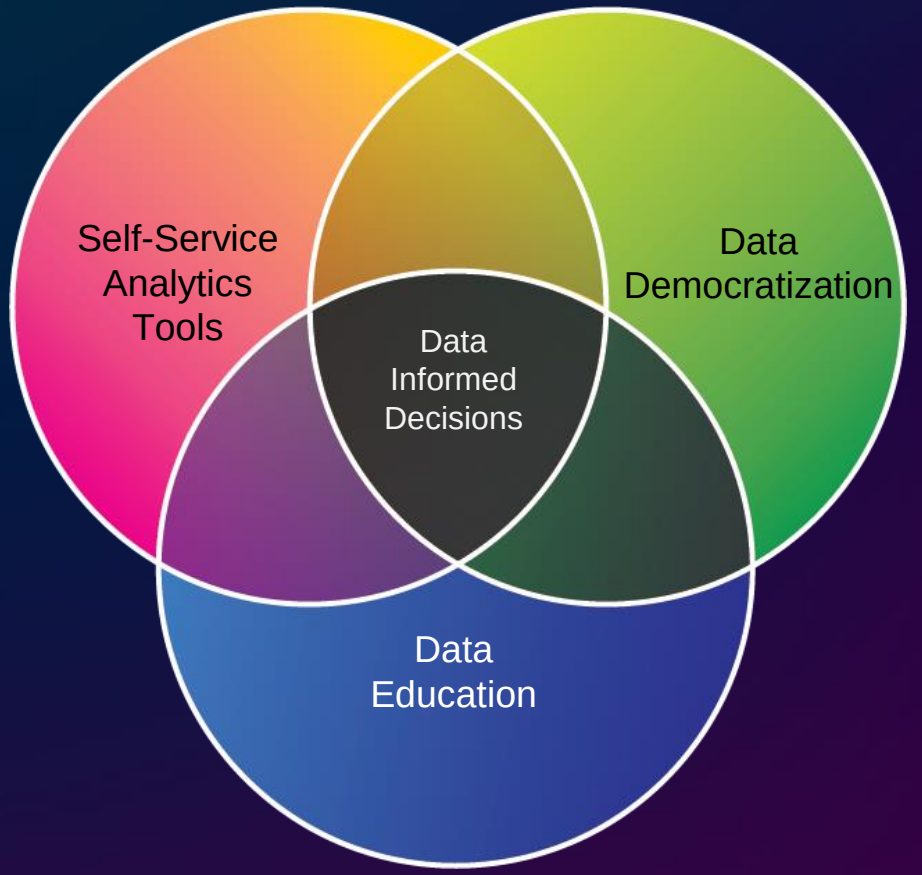


…And then (57 pages of instructions)

DEMOCRATIZATION CHALLENGES

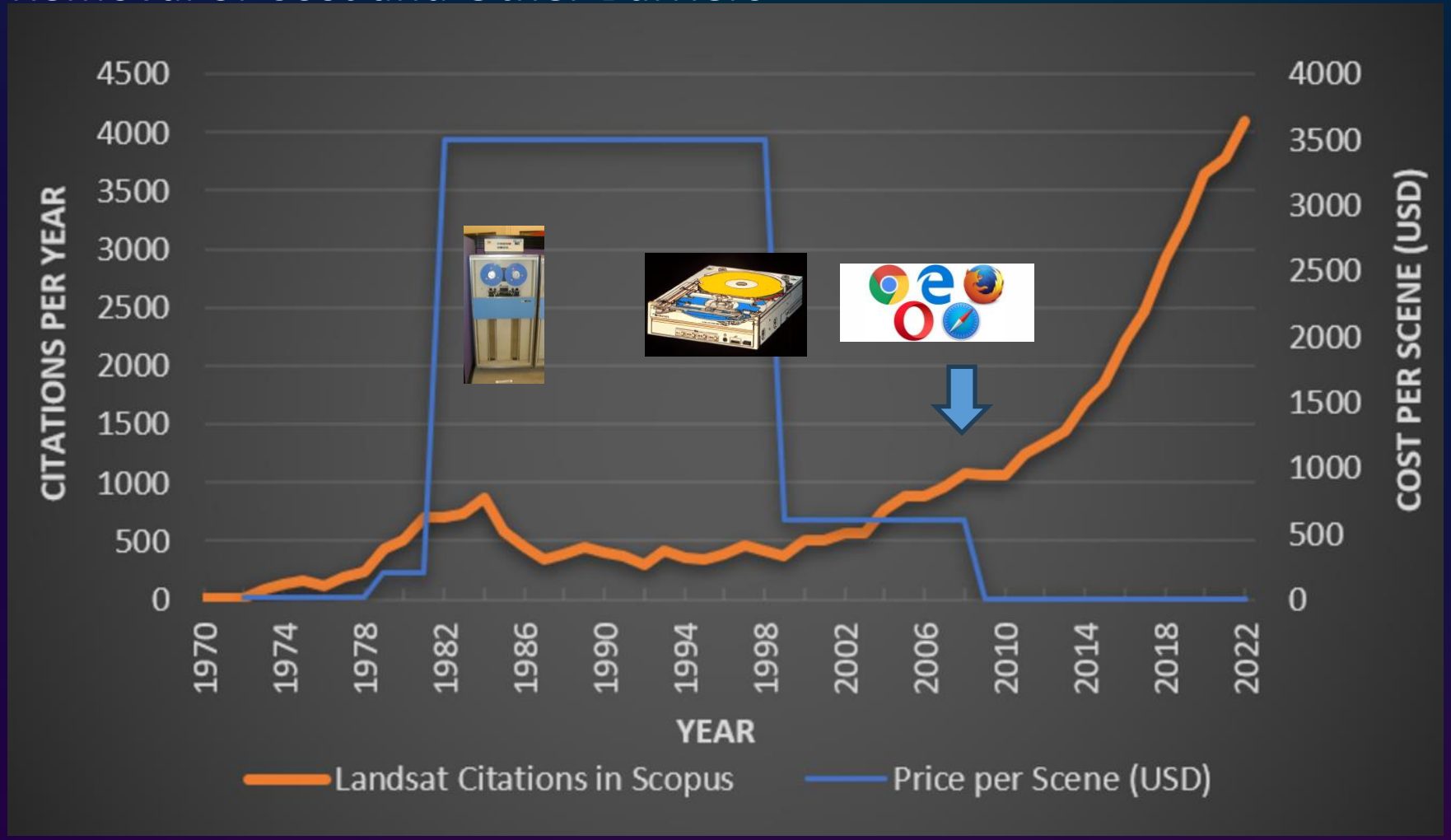
- Significant challenges exist when managing data discovery and dissemination for geospatial data sources:
  - Data storage
  - Data discovery
  - Data visualization
  - Data analysis

- Self-service analytics, data democratization and data education can control the Data Tsunami and take collaboration to a whole new level.



DEMOCRATIZATION – OPEN DATA (LANDSAT)

Removal of Cost and Other Barriers

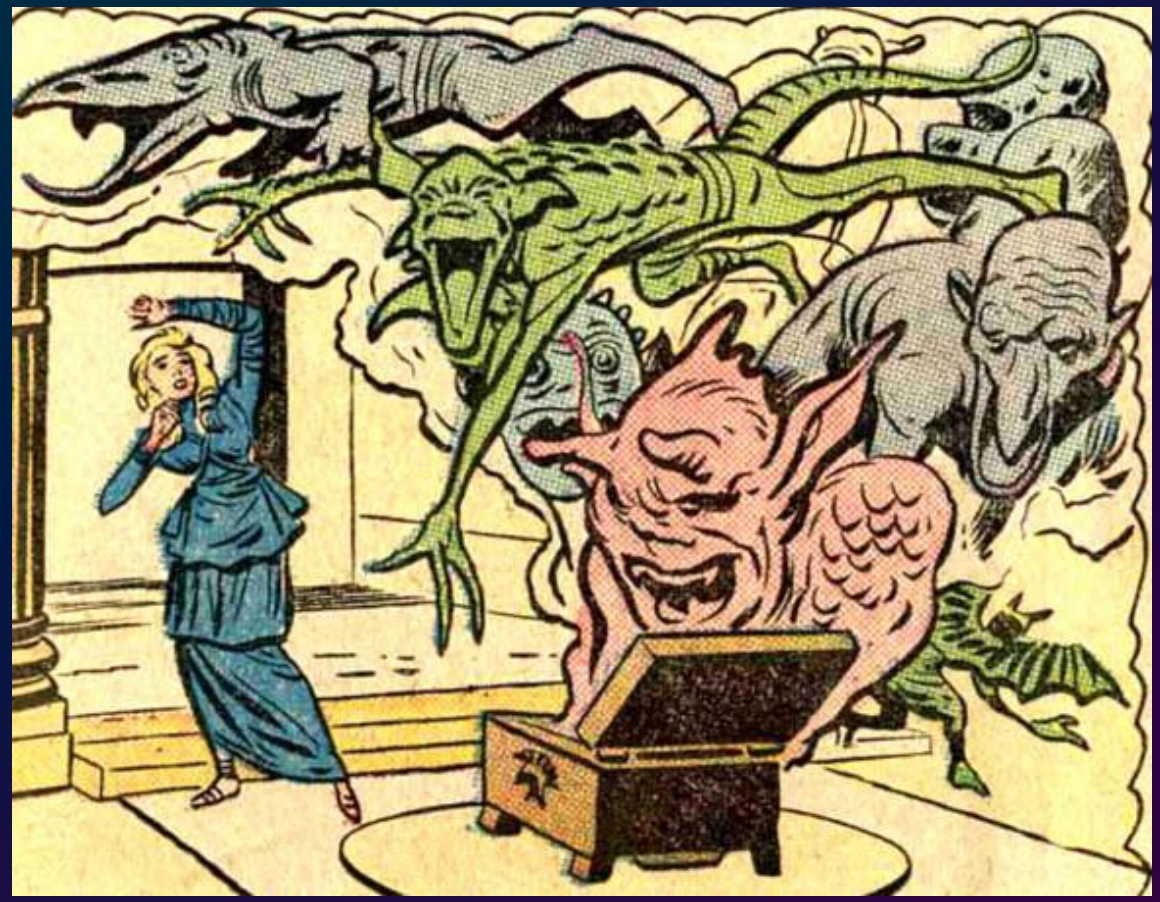


In 2008 Landsat data became accessible to all users at no cost.

Source:https://www.usgs.gov/landsat-missions/landsat-project-statistics

THE WEAKNESSES OF DATA DEMOCRATIZATION
(Pandora's Box)

- Security
  - Individual Privacy
  - Defense Against Harmful Actors
- Bias
  - Mis-purposed Data
  - Exclusion From Data Collection
- Inequitable Access
  - Education and Training
  - Opportunity
  - Resources (hardware, software, bandwidth)
- Data Quality
  - Inaccuracy (spatial and content)
  - Incompleteness
  - Timeliness



GOVERNANCE: A FITNESS PROGRAM FOR DATA DEMOCRACY

- Governance -- *"Data governance is the systematic management of public data from its creation to its storage, use, and disposal."* (https://digitalprivacy.ieee.org/publications/topics/principles-of-open-data-governance)

- The *basis* of management, not the management itself

- Strengthens power of data to be information because it addresses weaknesses

EXAMPLE GOVERNANCE "FITNESS PROGRAM"

SECURITY	• DEFINED STANDARDS • RANDOMIZATION & AGGREGATION • NEED TO KNOW ACCESS • PUBLIC CLARITY ON SECURITY
BIAS	• DATA SCIENCE REVIEW • NON-PUBLICATION • DATA REVIEW BOARD • PUBLIC CLARITY ON PURPOSE and METHODS
INEQUITABLE ACCESS	• MOST COMMON DENOMINATOR • ACCESS AT PUBLIC PLACES • PROVIDE TRAINING & EDUCATION • PUBLIC CLARITY ON ACCESS and USE
DATA QUALITY	• STANDARDS-DRIVEN • RESOURCE ALLOCATION • EXPLICIT QUALITY PROCESSES • PUBLIC CLARITY ON QUALITY FACTORS

SOUND PROCESS --> BETTER DATA --> GREATER VALUE

	Processes and Procedures	Datasets and Data
Principles	The State is open and honest about how it collects, uses, and shares data	Datasets are available to anyone, within statutory and regulatory requirements
	Data governance is a public process	Authoritative datasets are easily discoverable.
Policies	Authoritative data is available to all	The State shall maintain a catalog of enterprise authoritative datasets
	Agencies shall develop criteria for authoritative data	Every authoritative dataset has a defined steward
	Data stewards will create and update enterprise catalog entries	Dataset catalog entries require a data dictionary, metadata, and appropriate descriptor tags
Standards	Data stewards review their enterprise catalog entries annually	Survey monument data must contain the following attributes: ____, _____.
	Data stewards convene appropriate SMEs to review data standards as needed but at least every XX years	Geospatial data will be stored in either XXX coordinate system or YYY coordinate system
Best Practices	When an enterprise authoritative data catalog entry has not been updated for 5 years, contact the data steward to make certain the dataset is still valid	Attribute column names should be 10 characters or less to maintain shapefile compatibility for data exports

CLOSING THOUGHTS

We hope we have got you thinking about a few things:

1. You are probably a contributor to the tsunami yourself
2. If so, then think about how you are helping others use your data most appropriately.
3. When you use someone else's data and applications, think about these same questions.
4. Are THEY clear about the heritage of their data and the applications that use it?
5. Do you have governance policies? What are the principles that underlie them? Standards that support them? Are they explicit, written, guidance?

QUESTIONS

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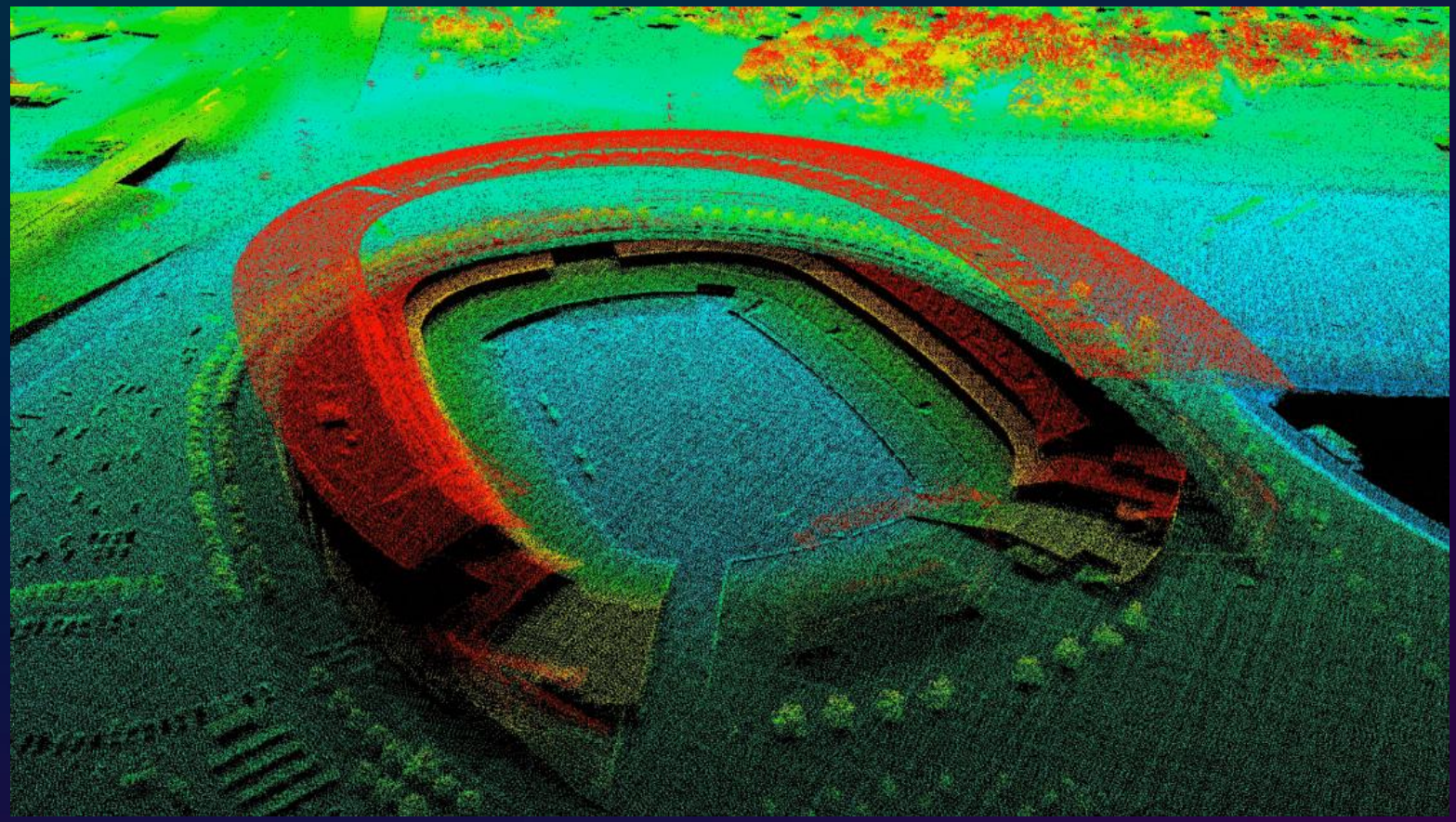

Questions	Answers
What would be the good activities about "Data Education", other than tutorials?	Look at several publications on the web to find examples of different use cases and data publication or data shared for use. Perhaps host a brown bag session with colleagues who share interest in data governance, and review the data publication (such as web maps or data archives) and ask some of the following questions: how was this data collected? how was it maintained? What biases are in the data? Ask questions and work with a group to gain different perspectives for the data and use cases you're looking at. Then think about how this might apply in your own organization.
This is incredibly useful, I appreciate learning about the importance of data governance and how as a researcher I can contribute to data democratization and governance	This comment is not a question, but it is very apropos. As geospatial professionals, we all share in the responsibility of making certain that data are governed and managed appropriately. Since many datasets are paid for out of the public treasury, we also have an obligation to think about how to make those data as "democratically available" as possible. If our short presentation got you attuned to these currents, we succeeded! Thank you
What considerations is SCC making regarding information knowledge sharing ownership? Are we collaborating with private entities? Will the public be engaged on ownership, funding, accessibility and accountability? thank you!	(Answered by Santa Clara County GIS) The County GIS strives to make the data accessible to the public where deemed appropriate. Within County's GIS central repository, we check 1) who (which department) owns the data, 2)who are the data steward (if owner department does not maintain GIS format data due to lack of resources) 3) whether the data is accessible by the public, County employees only, or particular department employee only, or requires special permission. Regarding the partnership, we partner with the private companies through contract for special data acquisition such as ortho photo or Lidar data. We also partner with the public entities for projects. Please check out the Danny Franco's presentation, that is a great example of regional multi-public agencies collaboration. For the questions regarding public's engagement on ownership, funding, accessibility, and accountability, the public are usually the consumers of the data, therefore, not engaged in ownership, funding, accountability discussion/activities.

Q & A