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Opportunities for Space based Geospatial Products & Services

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Agenda

- Inspiring new space age

- New realities of geospatial data

- Reimagine space business & missions

- Space data management & applications

- Conclusion

An inspiring new space age

4,850+ Satellites,
projected 20,000+ by 2030

A New Era of New Missions
& the New Space Economy

52 Exabytes of Satellite
Data by 2029

Modernization Opportunity – by the numbers

$467B

Estimated value of global space economy in 2022

$4.8B

2022 Space-Cloud Total Addressable Market

80%

Share of market value attributed to commercial sector, with >50% in the US alone

$3.2B

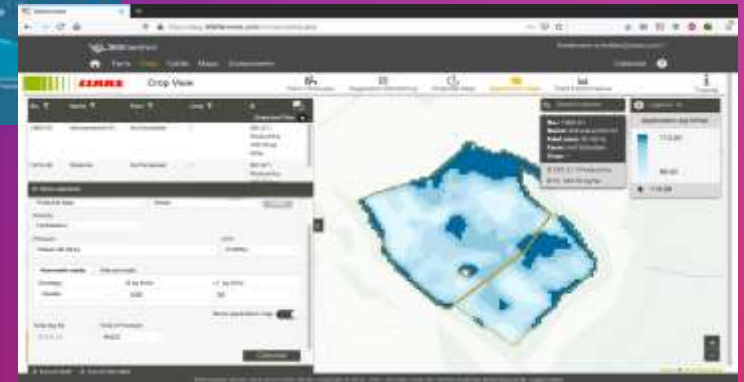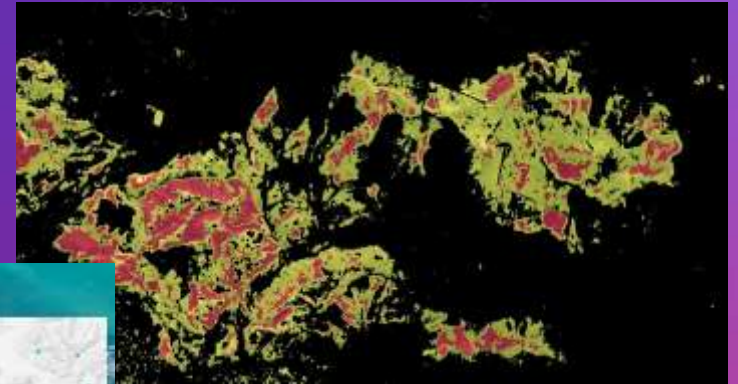Value of 61 private and venture equity financings, in Q4 2021 alone

1,022

Spacecraft put into place, in 1H 2022 alone. More than the last 52 years combined
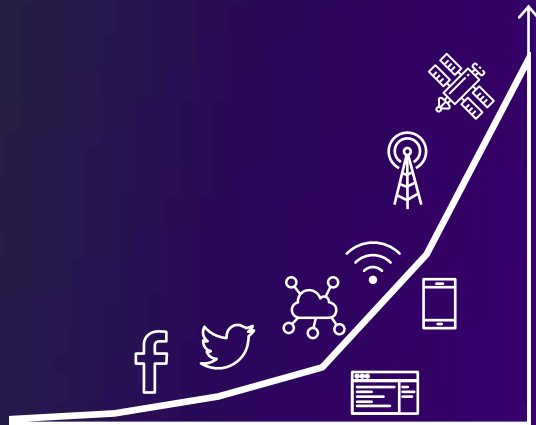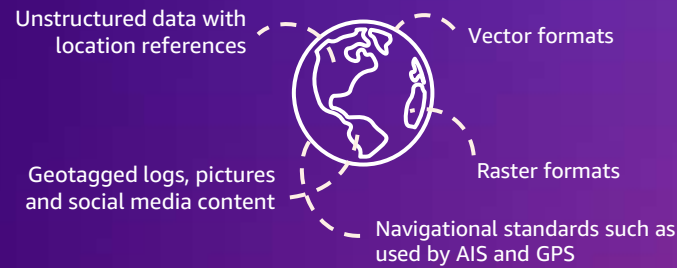
Spatial data applications across industries

- Utilities
- Environmental Services
- Local Government
- Agriculture
- Transportation
- Mining
- Surveying
- Advertising
- Retail
- Insurance
- Financial Services

The new realities of geospatial data

Unstructured data with location references

Vector formats

Geotagged logs, pictures and social media content

Raster formats

Navigational standards such as used by AIS and GPS

Explosion of data

Explosion of GIS data standards

Demand for faster decision-making

Reimagine space business & missions

The cloud is enabling space industry success

Driving down the cost of innovation

Only pay for what you use

Managing and transforming data on earth and in space

Low-latency access to global cloud infrastructure

Helping to manage and protect valuable space assets

Apply edge computing, artificial intelligence (AI), machine learning (ML) and Internet of Things

Providing modernized infrastructure and process

Focus on mission

The cloud is enabling space industry success

Edge Compute in Space

Faster Time to Insights and More Value for Data

Expanding our Connected World

Automating and Optimizing Space Systems

Analyze data in-orbit to save time and money

Easy access to high performance compute

Internet of Things (IoT) networks for greater accessibility

Virtualization and digital engineering

Region & number of Availability Zones (AZs)

United States

GovCloud (U.S.):
U.S.-East (3), US-West (3)

U.S. West
Oregon (4), Northern
California (3)

U.S. East
N. Virginia (6), Ohio (3)

Canada
Central (3)

Africa
Cape Town (3)

South America
São Paulo (3)

Europe
Frankfurt (3)
Ireland (3)
London (3)
Milan (3)
Paris (3)
Spain (3)
Stockholm (3)
Zurich (3)

Middle East
Bahrain (3)
UAE (3)

Asia Pacific
Beijing (2)
Hong Kong (3)
Hyderabad (3)
Jakarta (3)
Mumbai (3)
Ningxia (3)
Osaka (3)
Seoul (4)
Singapore (3)
Tokyo (4)

Australia
Sydney (3)

Announced Regions: 5 Regions and 15 AZs in Australia, Canada, Israel, New Zealand, and Thailand

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Space Data Management

Space data is only as valuable as the information & decisions it enables. The AWS cloud overcomes the limitations of traditional, disparate data sets and data collection means with solutions that are secure, flexible, scalable, and cost-efficient. We support mission-critical work with visualizations that enable holistic understanding.

Registry of Open Data on AWS

registry.opendata.aws

MODIS · NOAA GHE · USGS 3DEP LiDAR · NWM · GEFS · TCGA · OpenStreetMap · GEOS-Chem · ECMWF ERA5 · NEXRAD · Sentinel-1 · HRRR · Sentinel-2 · OFS · eBird · Terrain Tiles · GOES-16 · NAIP · CBERS · NOAA ERI · HIRLAM · ISD · gnomAD · GHCN · Kids First · Landsat · GFS · SILAM Air Quality · NREL Solar Radiation · CESM LENS · TARGET · GOES-17 · OpenAQ · NREL Wind Integration · Common Crawl
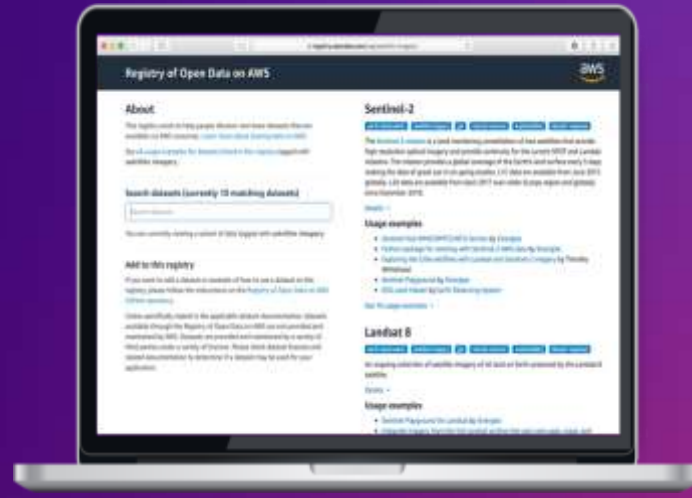
AWS Ground Station gets space data when and where customers need it.

AWS Ground
Station Antenna
Locations

AWS Ground Station is a fully managed service that lets you control satellite communications, process data, and scale your operations without having to worry about building or managing your own ground station infrastructure. These facilities provide communications between the ground and the satellites in space.

Benefits

- Low-latency global fiber network
- Direct access to AWS services
- Fully managed service (no infrastructure commitments)
- Pay as you go pricing
- No licensing requirements
- Scale satellite communications on-demand when your business needs it
- Global coverage

Data management at scale

Serverless data processing

Operational analytics

Big data processing

Real-time analytics

Security and governance

Data warehouse

ETL and catalog data management

Predictive analytics

Cloud data lake infrastructure

Decoupled storage and compute resources

Data migration

Streaming services
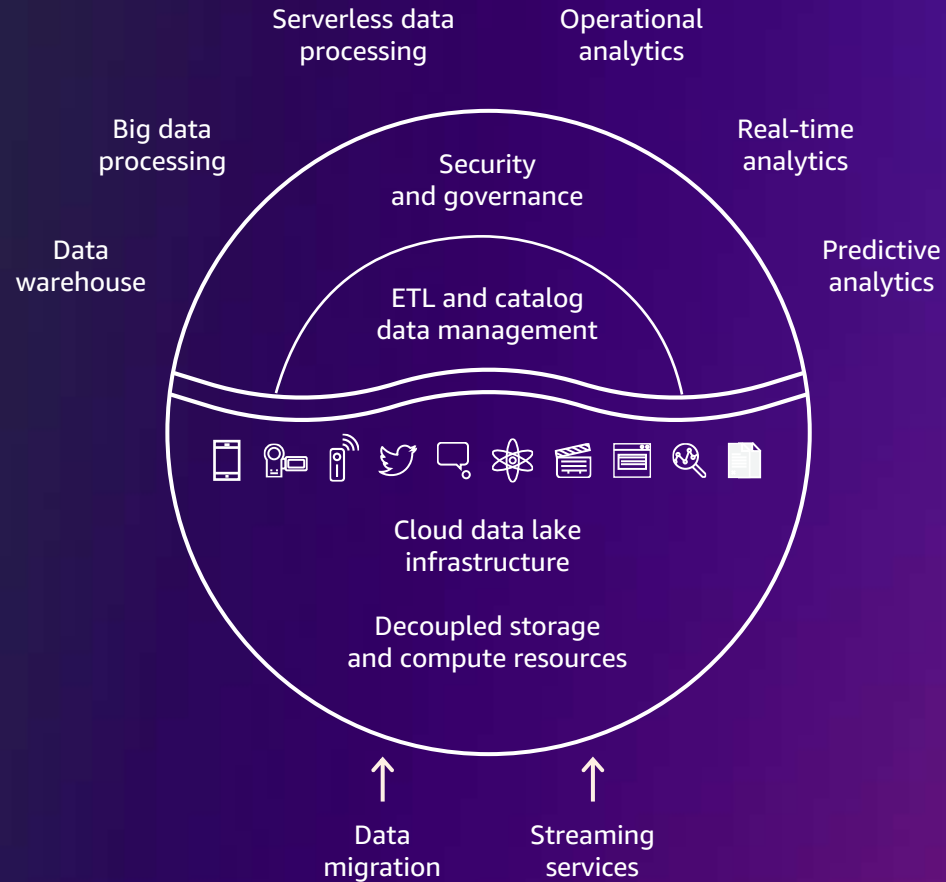
Customers want

A single data store that is scalable and cost-effective

Use the standards-based data format of your choice

To analyze the data in a variety of ways

Customers want to process more data **on-orbit** closer to space sensors and vehicles

More efficiently use constrained or expensive downlinks

Process data closer to sensors to reduce latency
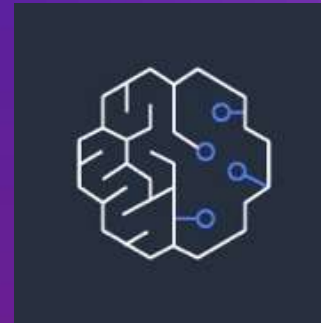
Operate without the ground in the loop

Update missions through software defined capabilities

AWS Cloud Edge Compute & ML On-Orbit

Generative AI for the geospatial industry

Create realistic land cover maps and 3D models of geospatial features

Enhance satellite imagery analysis through predictive scenario generation

Enhance image resolution, fill in missing parts, and denoise geospatial data

Delivering value

AWS Data Exchange enables customers to easily find, subscribe to, and use third-party data in the cloud


- 250+ data providers and 3,000+ public data products

- Over 1,000 free public data products to easily evaluate the data you need

- Support for private products and private data trials

- Data delivery via files, tables, and APIs

Unlocking new applications and new capability for Space

Build Secure, Highly Available Applications

Mobile & web applications

Back-end web services

IoT

Data processing
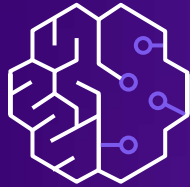
Leverage Machine Learning

Earth Observation data

Object detection

Change detection

Land cover monitoring

Modernize Data Analytics

Unlimited storage

Scalable Data Lake

ETL

ML powered Insights

Build High Performance Applications

Earth Observation Pipelines

Digital Twins

Autonomous rovers

Robotics for Space

Thank you!

Nicholas Teo

Next steps

What problem can we help solve?