

Geospatial on AWS

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AWS



The world is entering an exciting and daring new space age



The space industry is rapidly growing and transforming



A new era of human spaceflight is dawning



Satellites launched into orbit will quintuple over the next decade

MAY
THE 4TH
BE WITH
YOU

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

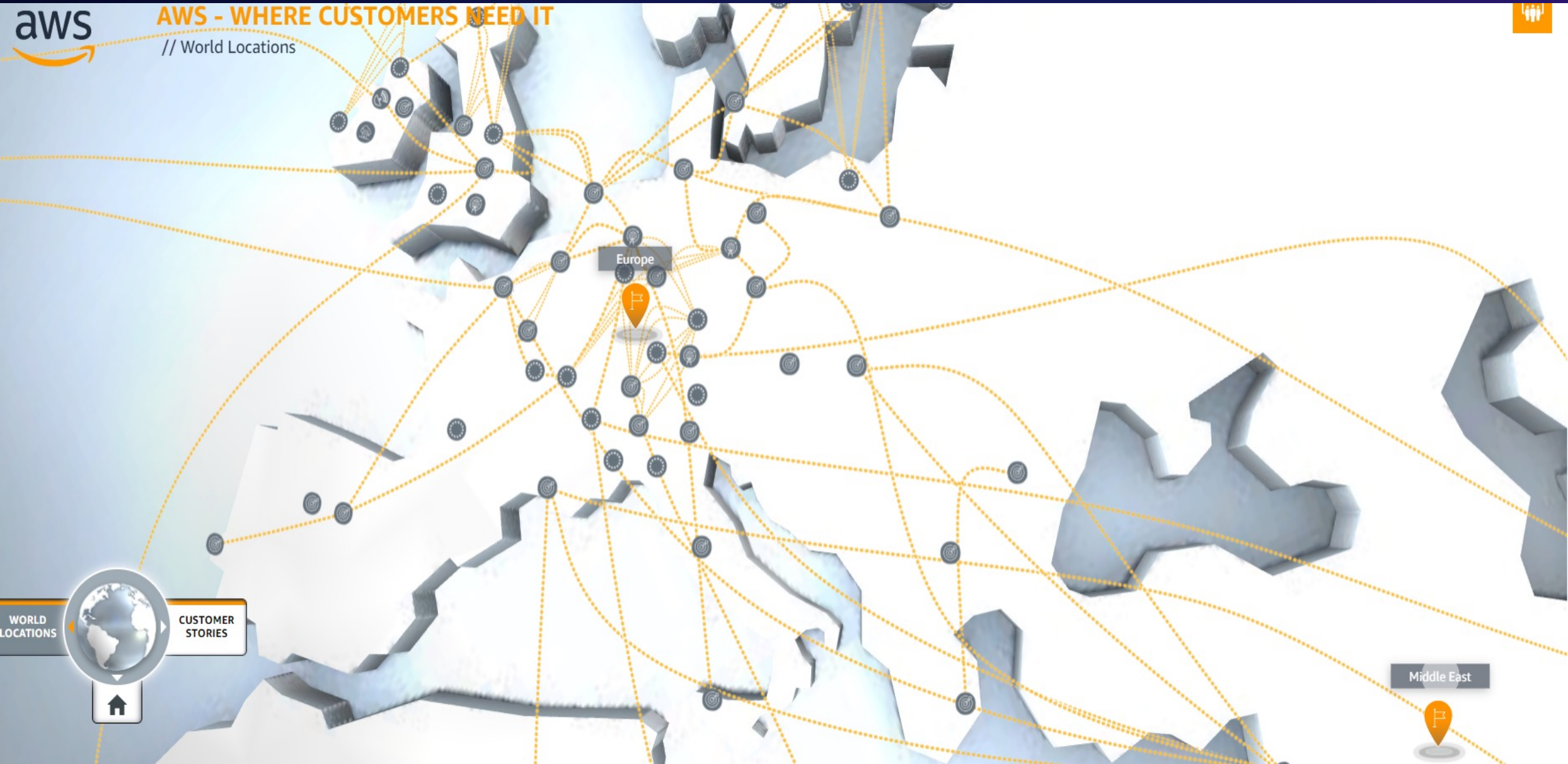
Helping to
manage and
protect valuable
space assets

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

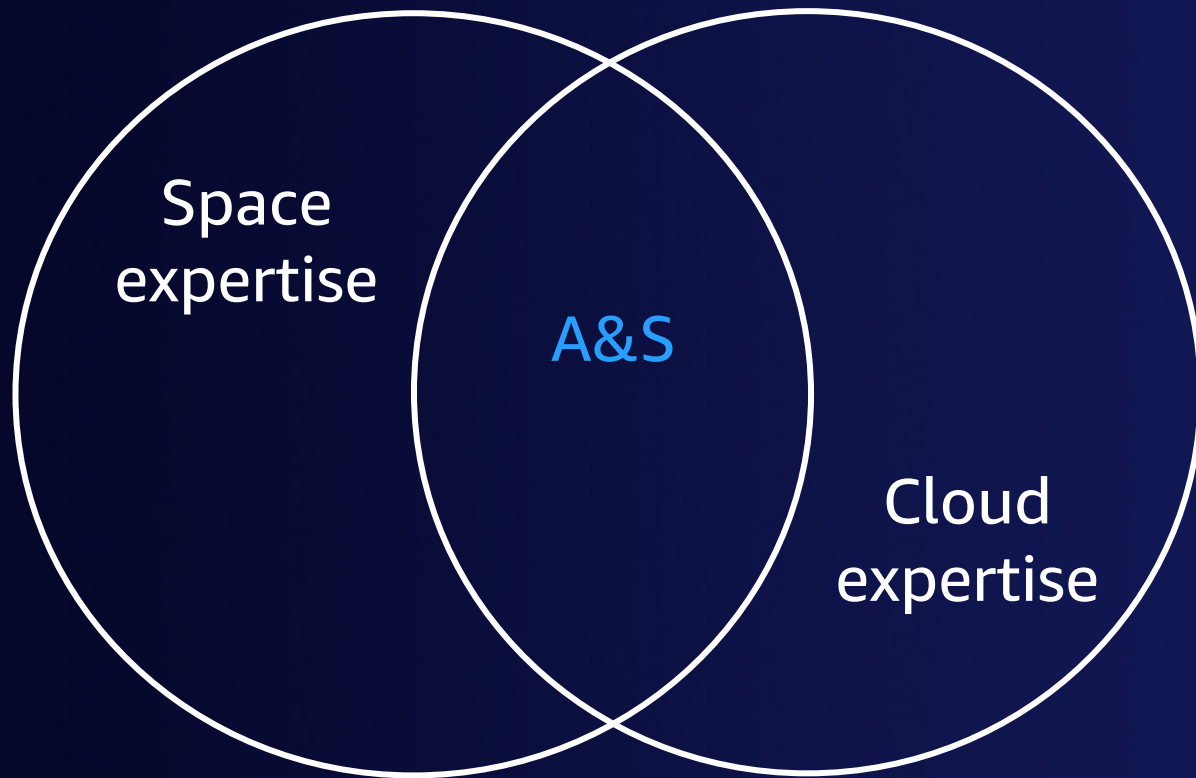
Providing
modernized
infrastructure
and process

Focus on
mission

Global Infrastructure +450 POP



A&S focuses on the challenges and opportunities of space



A&S allows us to deepen our work with customers and partners around the world to:

- Reimagine space system architectures
- Transform space enterprises
- Launch new services that process space data on Earth and in orbit
- Provide cloud solutions to support public sector missions and companies advancing space around the world

Mission Geospatial



Geospatial on AWS Today

Earth on AWS

Build planetary-scale applications in the cloud with open geospatial data.

Geospatial ML with Amazon SageMaker (Preview)

Build, train, and deploy ML models faster using geospatial data

Up to 10 GB of free storage for 30 days with the AWS Free Tier

Get started with Amazon SageMaker geospatial capabilities

- Access readily available geospatial data sources, including satellite imagery, maps, and location data.
- Efficiently process or enrich large-scale geospatial datasets with purpose-built operations such as resampling, mosaicking, and reverse geocoding.
- Accelerate model building by using built-in, pretrained deep neural network models such as land cover segmentation and cloud masking.
- Analyze geospatial data and explore model predictions on an interactive map using 3D accelerated graphics with built-in visualization tools.

How it works

Amazon Location Service makes it easy for developers to add location functionality, such as maps, points of interest, geocoding, routing, tracking, and geofencing, to their applications without sacrificing data security and user privacy.

```
graph LR; A[Amazon Location Service] --> B[Explore]; B --> C[Build]; C --> D[Deploy and monitor];
```

Swisstopo Case Study

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

“ Our Federal Spatial Data Infrastructure platform serves one million users per month. Running it on AWS has significantly shortened the time needed to allocate new servers, which helps us better serve our customers.”

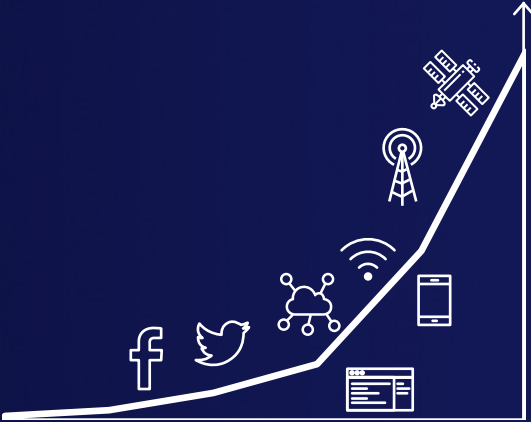
Hanspeter Christ
Deputy Head of Geoinformatics



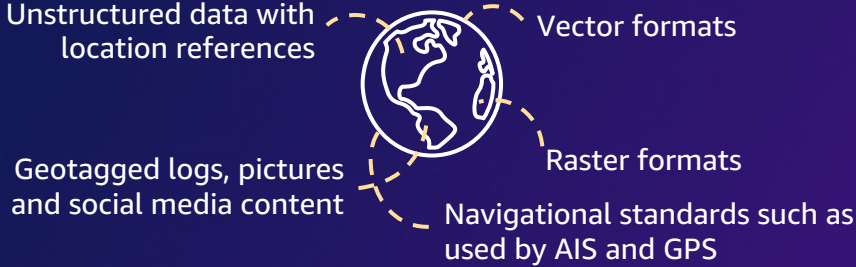
The new realities of geospatial data



Demand for faster decision-making

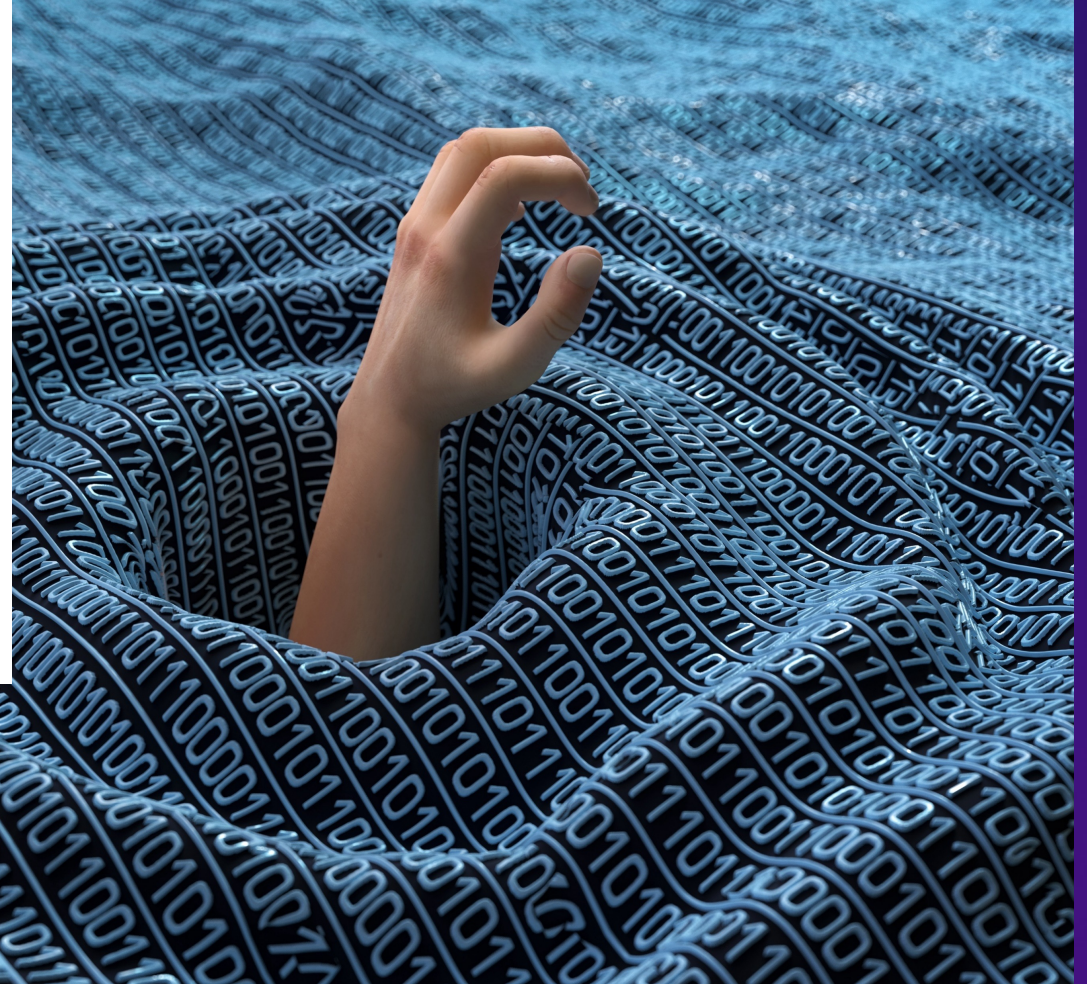
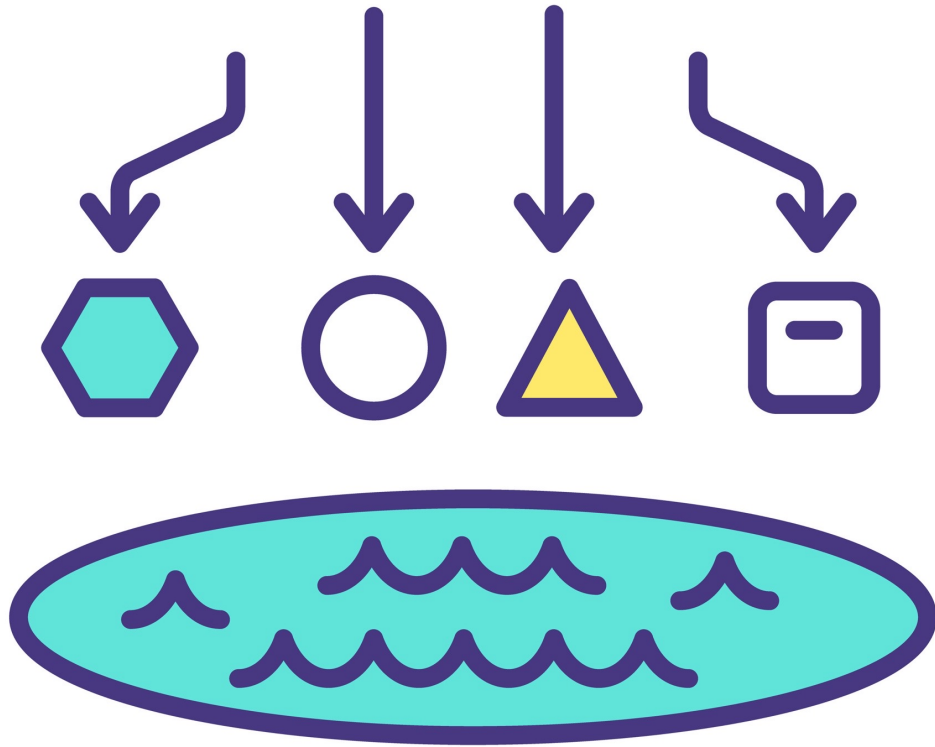


Explosion of data

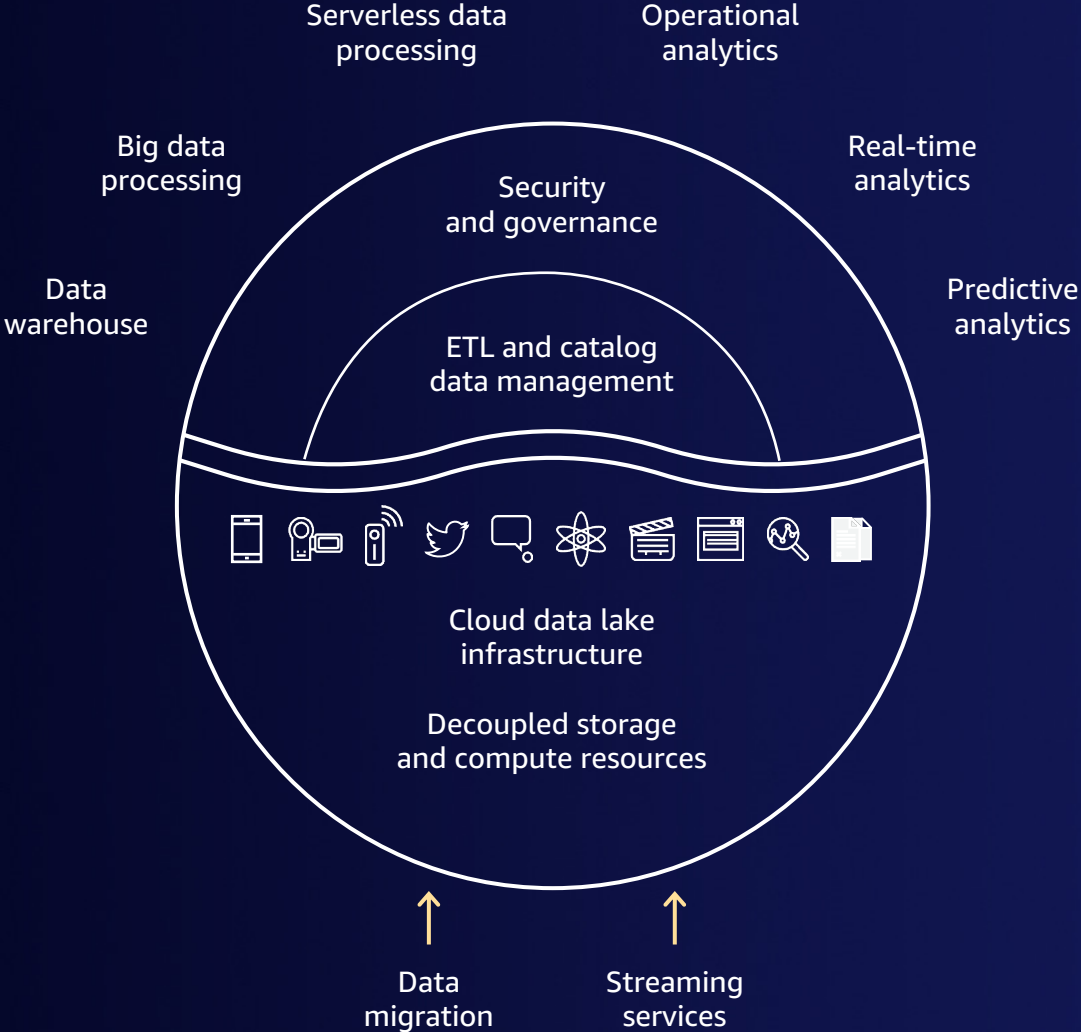


Explosion of geospatial data standards

Data Swamps



Supporting geospatial data with cloud data lakes



Customers want:

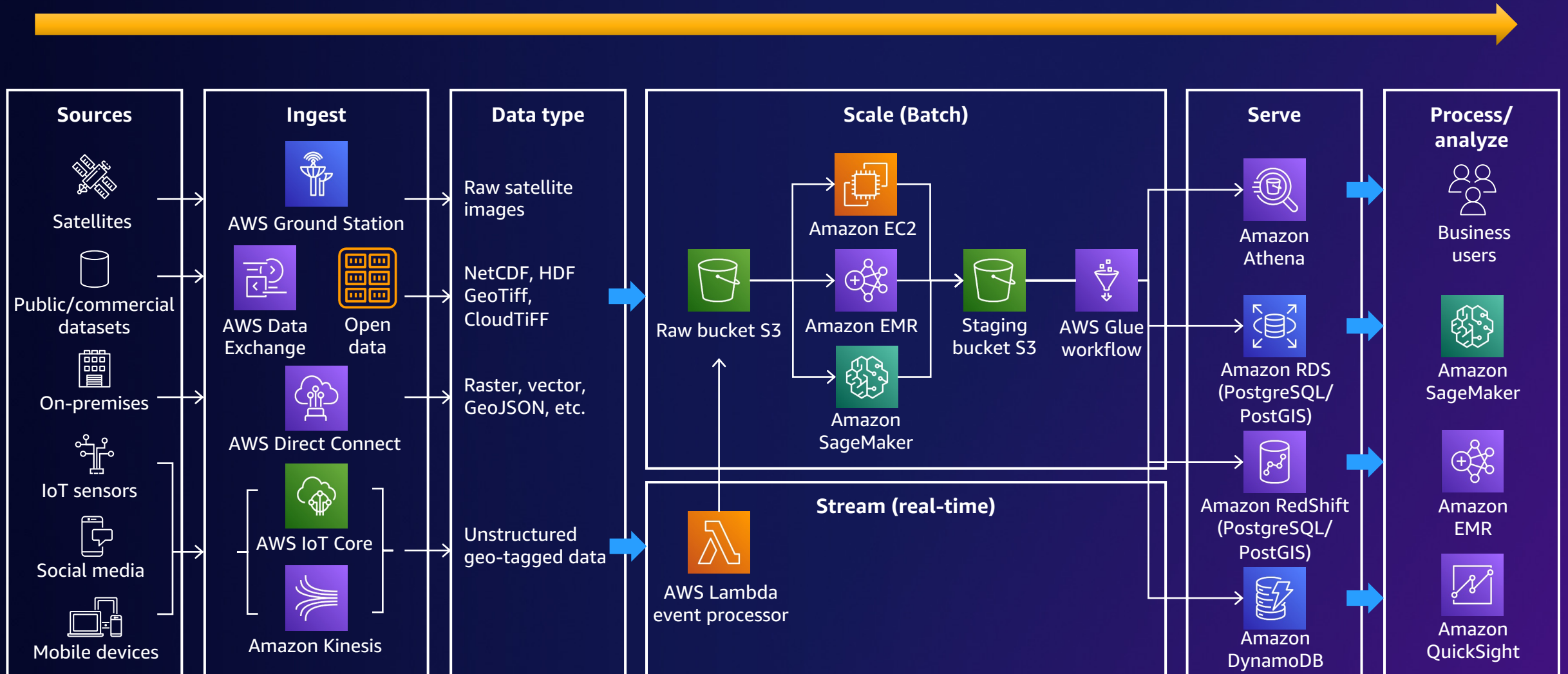
A single data store that is scalable and cost-effective

To use the standards-based data format of their choice

To analyze their data in a variety of ways



Data lifecycle continuum





Incident Notification

25th August 2017



Incident Notification

4th September 2017

Cloud API

 **170K**
registered users

 **500M**
processed requests

 **50+ PB**
of satellite imagery

 **700 TB**
added every month

4 Sentinel missions

7 Landsat missions, MODIS

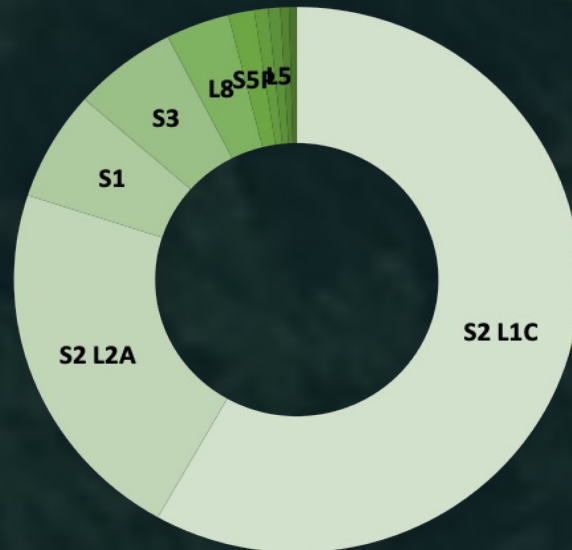
Envisat, Airbus, Maxar, Planet

Copernicus services

EO Browser

 **60K**
monthly visitors

 **60M**
processed requests



Open-source and free to use



Visitors from 200 countries

400 000 requests per second

Requests per hour, 2020-09-24

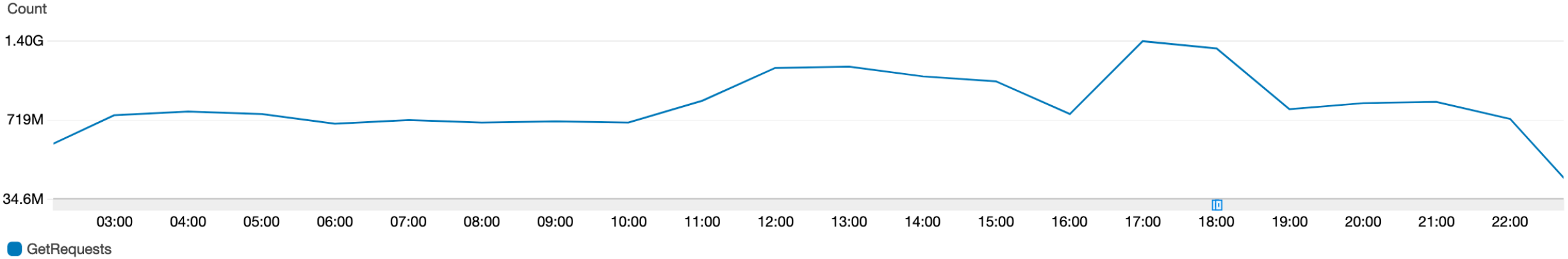
1h 3h 12h 1d 3d 1w custom (15mo)

Line

Actions



Apply time range

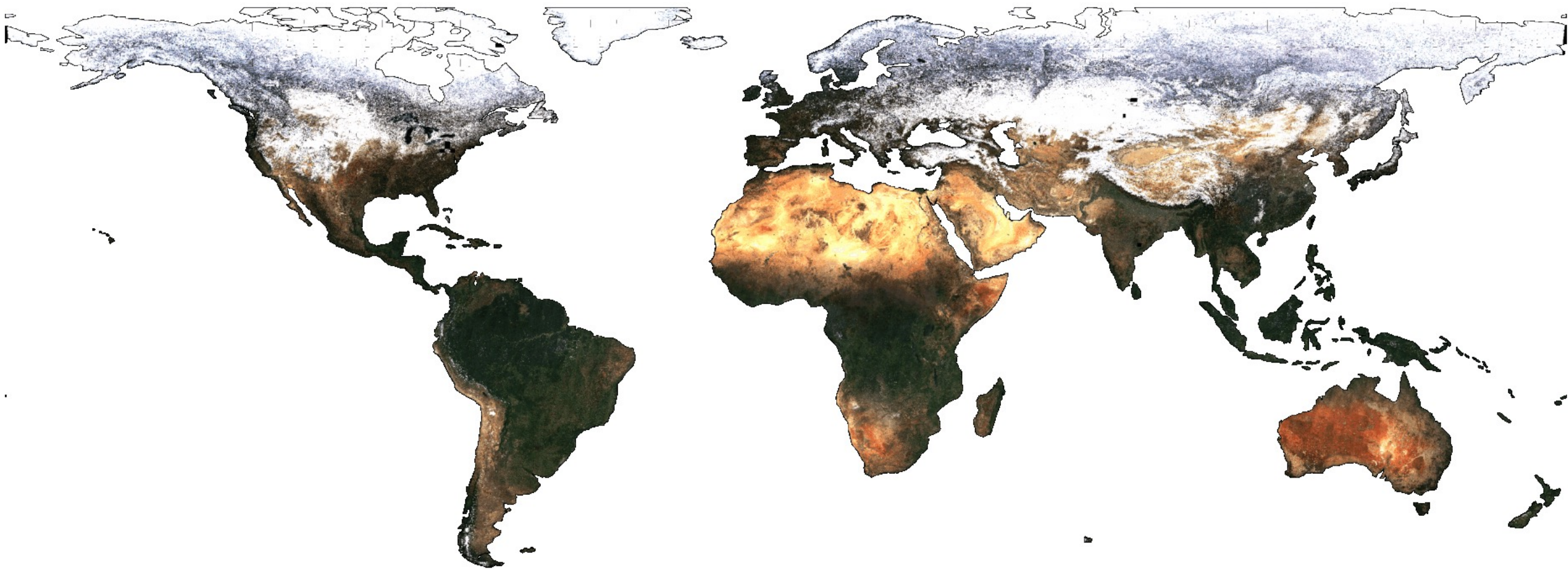


All metrics | Graphed metrics (1) | Graph options | Source

Math expression Dynamic labels Statistic: Sum Period: 1 Hour Remove all

<input checked="" type="checkbox"/>	Label	Details	Statistic	Period	Y Axis	Actions
<input checked="" type="checkbox"/>	GetRequests	S3 • GetRequests • BucketName: sentinel-s2-l1c • FilterId: EntireBucket	Sum	1 Hour		





AWS at the Edge



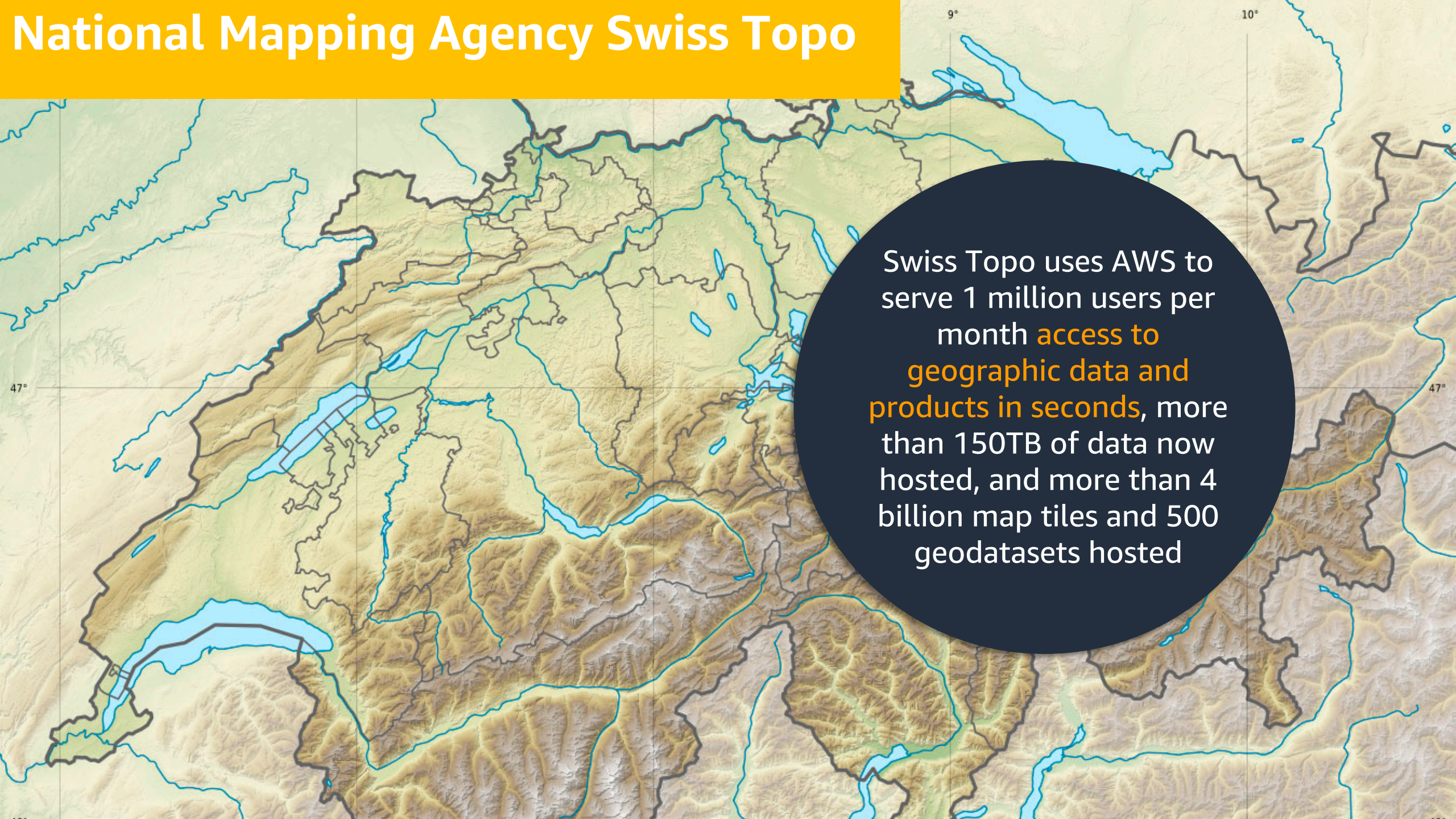
Using space to bring you closer to Earth

A high-resolution satellite image of Earth, showing a dense urban area with a grid of streets and buildings, surrounded by green spaces and a coastline. The image is taken from a high angle, looking down at the city.

Capella Space uses AWS to provide customers with **access to satellite data within minutes of capture**, at a lower cost and far faster than traditional satellite data services, which can take up to 24 hours.

National Mapping Agency Swiss Topo

Swiss Topo uses AWS to serve 1 million users per month **access to geographic data and products in seconds**, more than 150TB of data now hosted, and more than 4 billion map tiles and 500 geodatasets hosted



Enabling insights for better decision-making



Digital Earth Africa uses AWS to **make continental-scale high-resolution satellite data available within minutes of capture, 800% faster than before,** thereby enabling prompt government environmental policy changes.

Learn more

Big data on AWS:

<https://aws.amazon.com/big-data/datalakes-and-analytics/>

Spatial data with Amazon Redshift:

<https://aws.amazon.com/blogs/aws/using-spatial-data-with-amazon-redshift/>

Amazon RDS PostgreSQL and PostGIS support:

<https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/Appendix.PostgreSQL.CommonDBATasks.PostGIS.html>

Registry of Open Data on AWS:

<https://aws.amazon.com/earth/>



Thank you!

Phil Cooper

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[https://www.linkedin.com/
in/cooperrow/](https://www.linkedin.com/in/cooperrow/)

