
AWS
re:Invent
NOV. 29 – DEC. 3, 2021 | LAS VEGAS, NV

WPS306

Getting high-resolution satellite data faster with AWS

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Detecting change from space

SATELLOGIC®

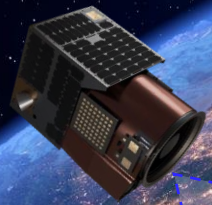
AMPHINICY TECHNOLOGIES

aws



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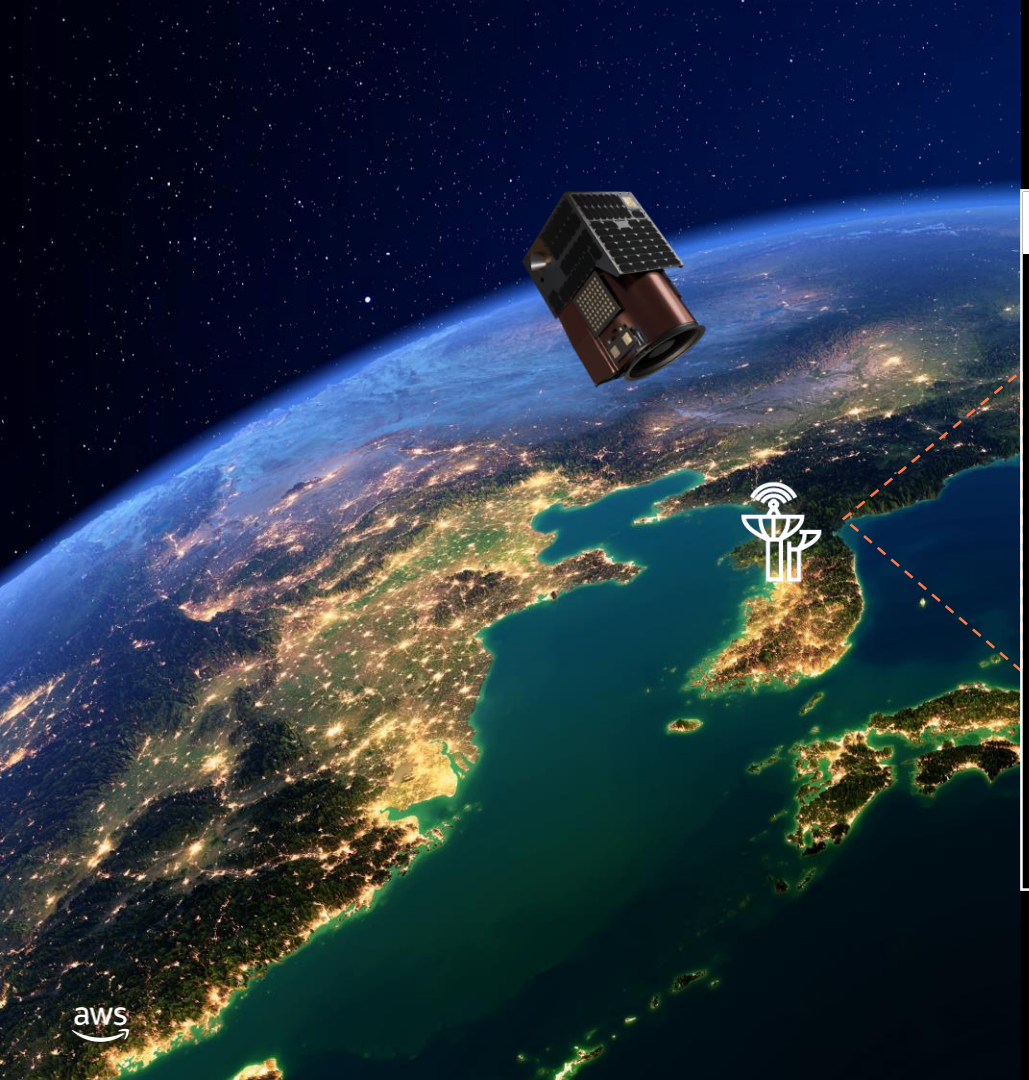
Map the Earth



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AWS Cloud

Blink

Software-defined radio



Product

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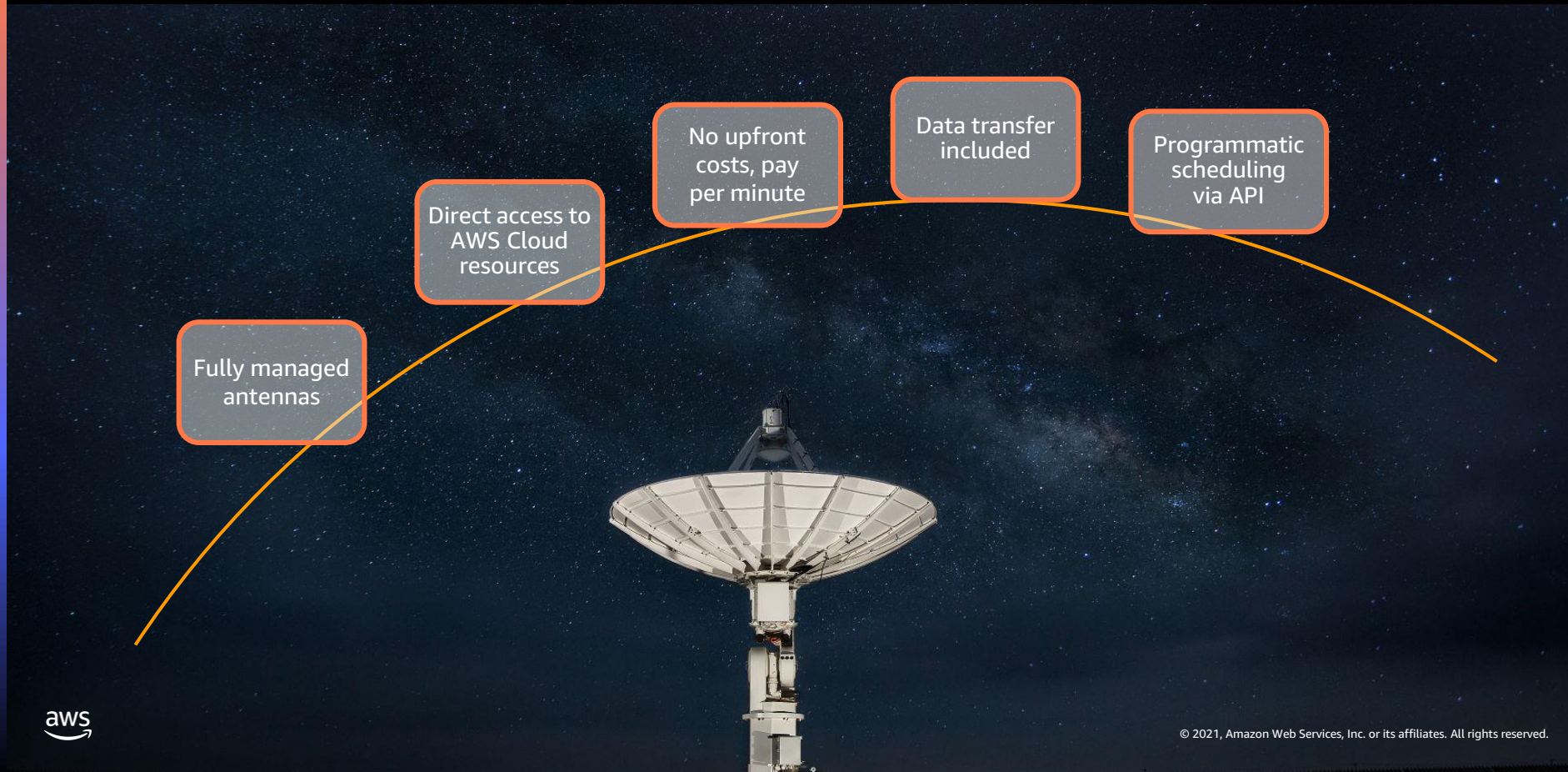


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AWS Ground Station

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What is AWS Ground Station?



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AWS Ground Station locations



Console locations
Antenna locations
Note: current as of 10/15/2021

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AWS Ground Station locations



Console locations

Antenna locations

Note: current as of 10/15/2021

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AWS Ground Station locations



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AWS Ground Station locations



Console locations

Antenna locations

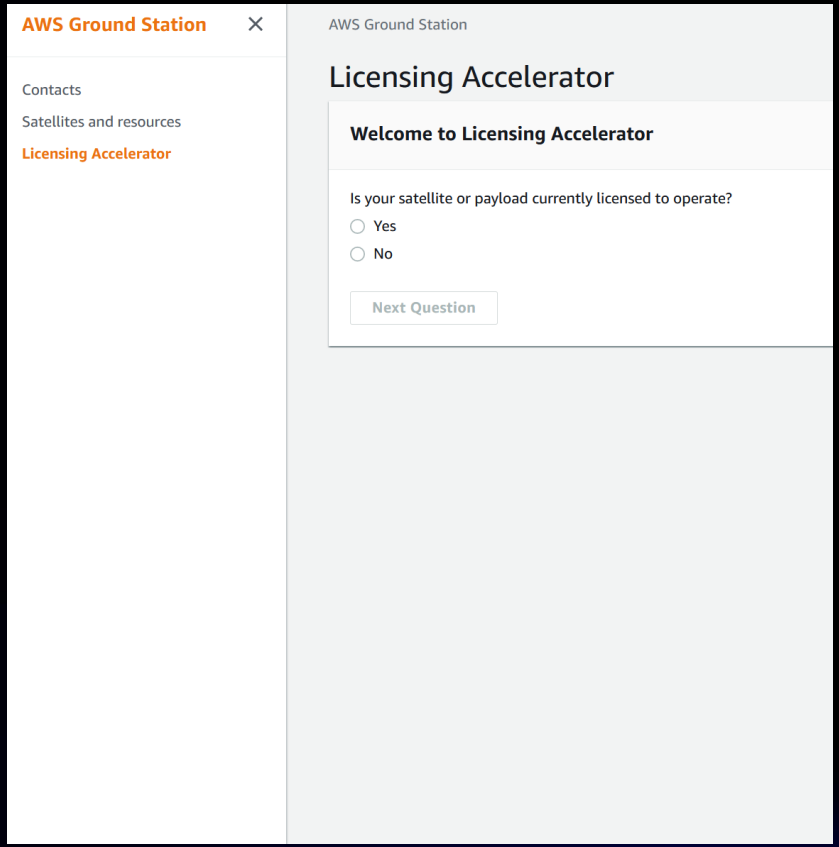
Note: current as of 10/15/2021

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Spectrum licensing

License your satellites with us



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Getting started

- **AWS CloudFormation** template
- Automation
- **Amazon CloudWatch** metrics

```
---
# This template will setup the required resources to allow the
# satellite contact data into an S3 bucket in your account. It
# reserve, execute, and downlink data from three direct broadc

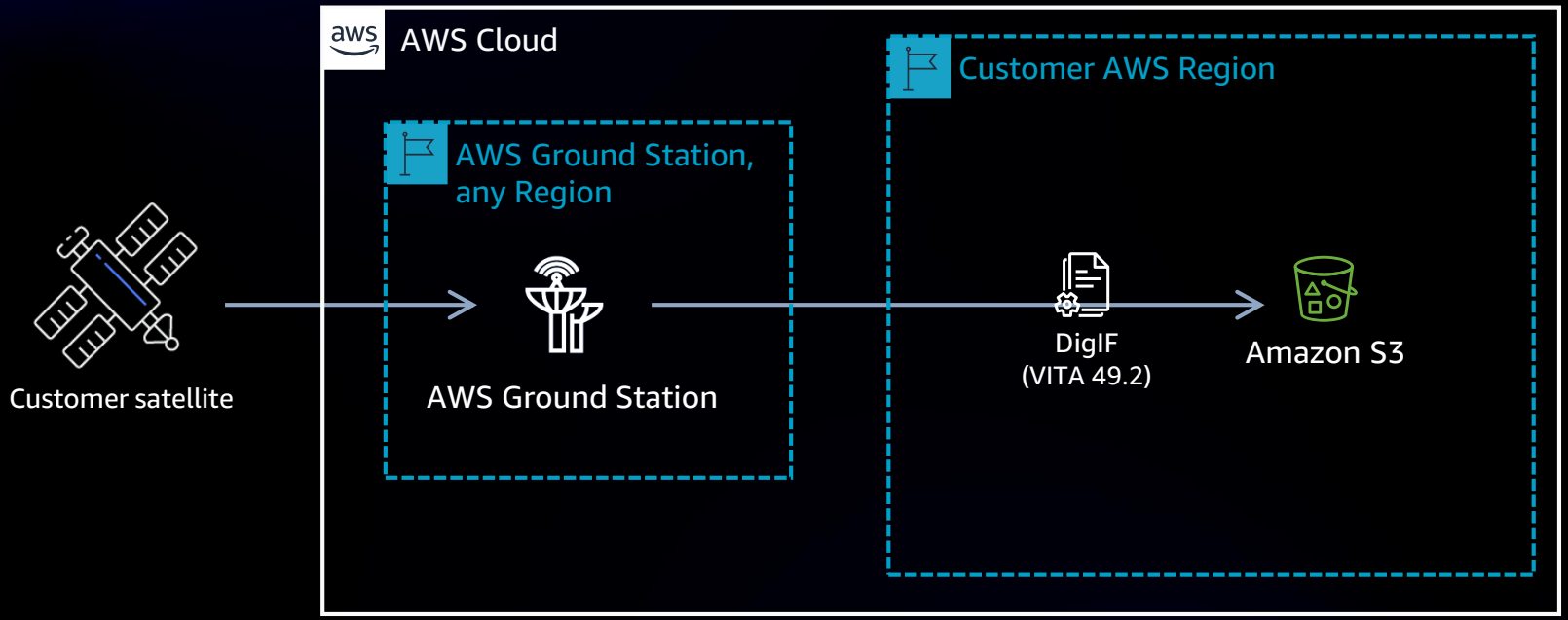
Resources:

  # The S3 bucket where AWS Ground Station will deliver the do
  GroundStationS3DataDeliveryBucket:
    Type: AWS::S3::Bucket
    DeletionPolicy: Retain
    Properties:
      # Results in a bucket name formatted like: aws-groundsta
      BucketName: !Join ["-", ["aws-groundstation-data", !Ref

  # The IAM role that AWS Ground Station will assume to have p
  # data to your S3 bucket.
  GroundStationS3DataDeliveryRole:
    Type: AWS::IAM::Role
    Properties:
      AssumeRolePolicyDocument:
        Statement:
          - Action:
              - 'sts:AssumeRole'
            Effect: Allow
            Principal:
              Service:
                - groundstation.amazonaws.com
```

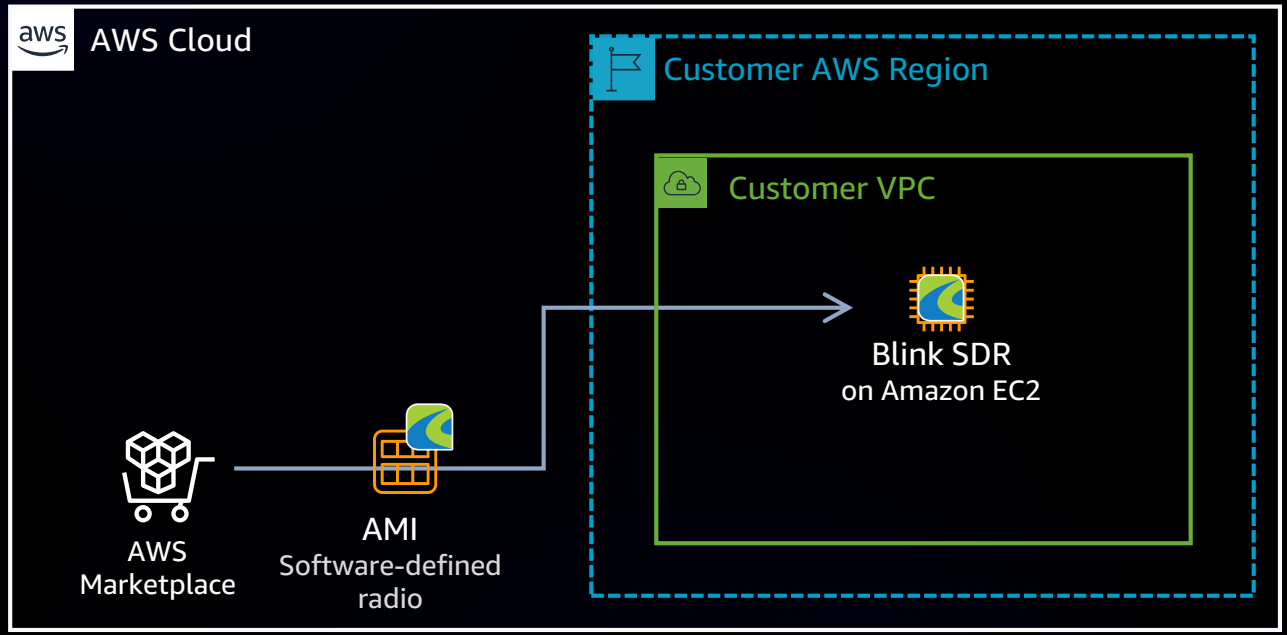
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Delivery to Amazon S3



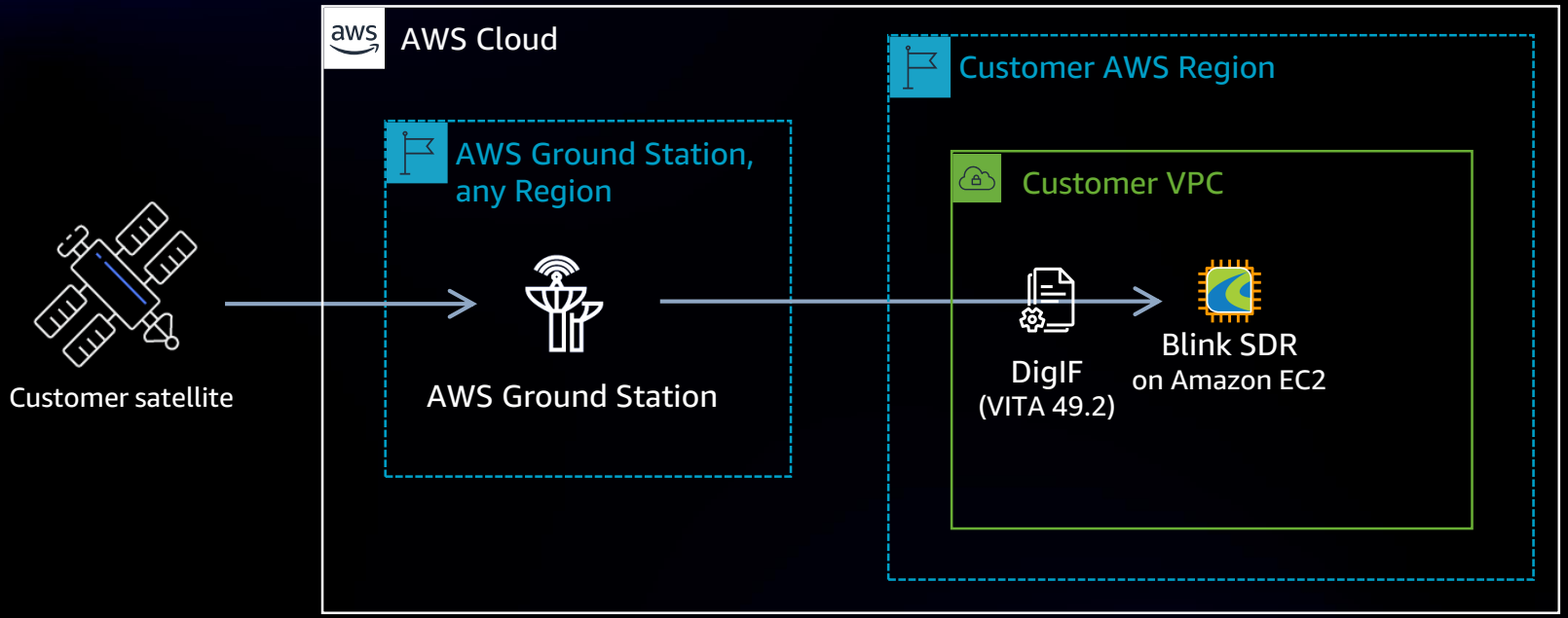
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Selecting a software-defined radio



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Streaming to Amazon EC2



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SATELLOGIC

Satellogic

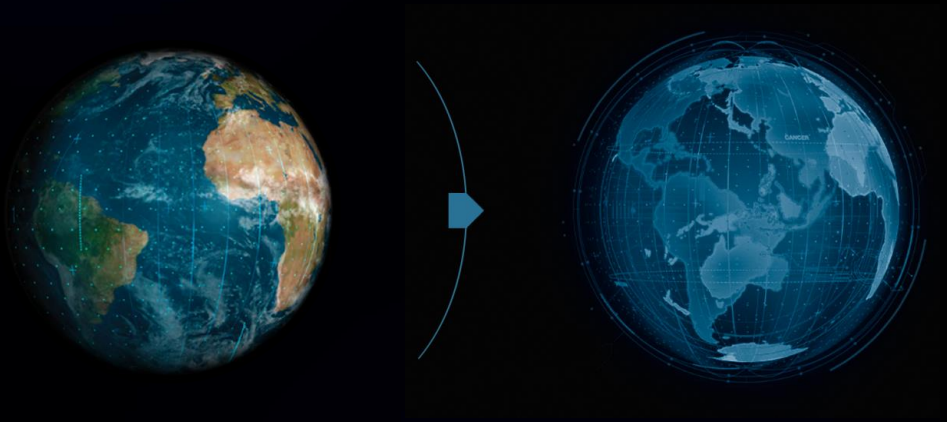
Creating a searchable Earth

aws

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Satellogic is creating a searchable Earth

Global daily remapping of every square mile

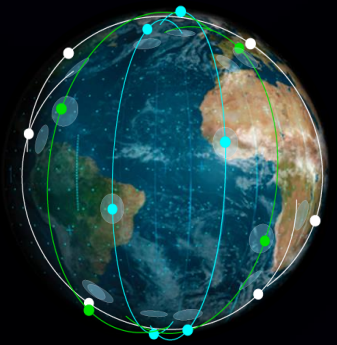


Creating a live catalog of everything on Earth

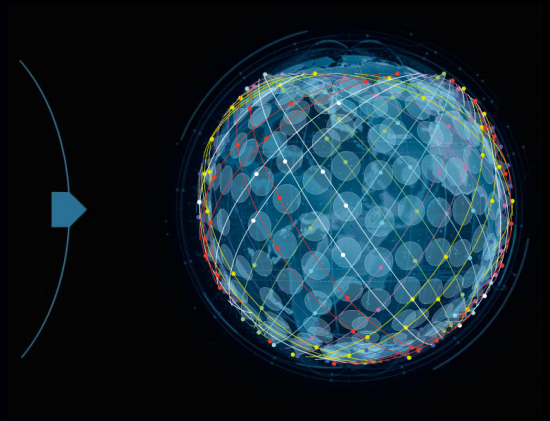
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Satellogic is creating a searchable Earth

TODAY
17 SATELLITES



SUBMETER MULTISPECTRAL
25M HYPERSPECTRAL
1M FULL-MOTION VIDEO



2025
300+ SATELLITES

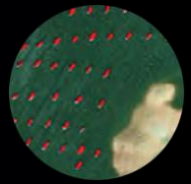
DAILY GLOBAL REMAPS

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Providing additional layers of insight

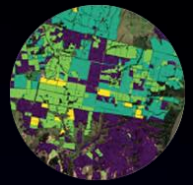
To help decision makers tackle the greatest challenges of our time



Object Identification



Scene Classification



Predictive Models



Change Tracking

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Natural disasters and emergency response



La Palma, Spain
September 30, 2021

La Palma, Spain
September 29, 2021
True-color multispectral image

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Natural disasters and emergency response

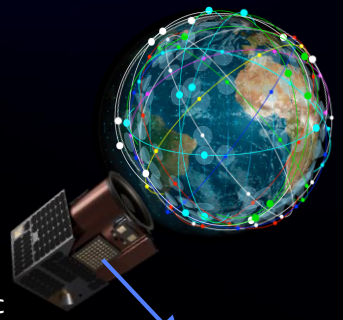


Atami, Japan
July 12, 2021
True-color multispectral image

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Satellogic + AWS Ground Station + Amphinicy



Satellogic NewSat spacecraft

RF

AWS Ground Station antenna

DigIF

Amphinicy receiver

Raw payload data packets

Processing

Products

World mapping catalog



World mapping. Satellogic spacecraft constellation maps the Earth by gathering images from orbit with optical payloads

Downlink. Satellogic takes advantage of the AWS Ground Station global footprint of antennas to achieve the lowest latency for raw payload data RF downlink after each image capture

From DigIF to products. Amphinicy supports the DVB-S2 modulation and encoding scheme on its receivers, enabling Satellogic to convert DigIF to data packets that will be further processed into deliverable imaging products

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Advantages of AWS Ground Station



Seamless integration with customer AWS environments, including AWS GovCloud (US)



Certified vendor, approved processes

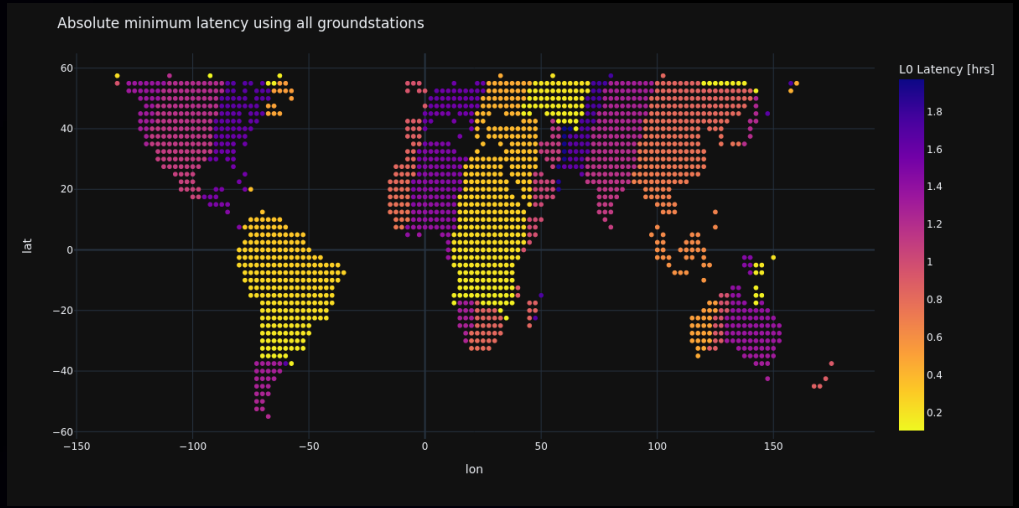


Scalable solution for cost-efficiency

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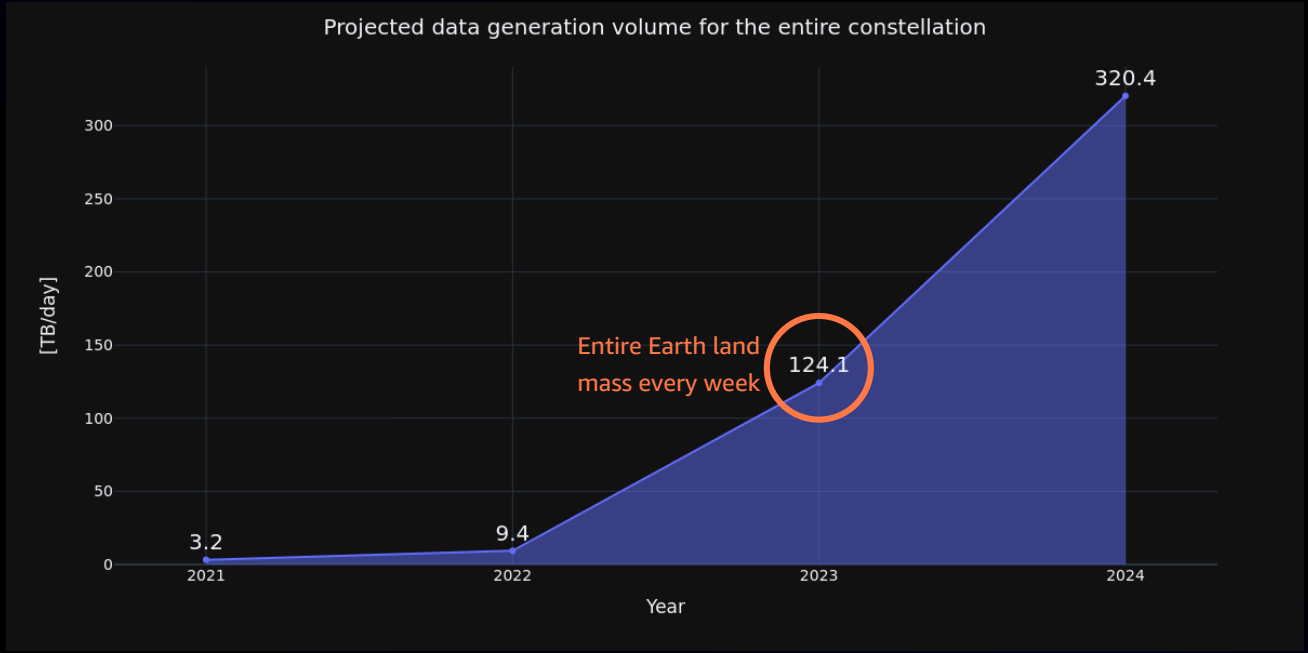
Dynamic tasking with 9 ground stations

- **Faster delivery**
  Low latency and rapid response
- **Customer experience**
  Sovereignty
- **On demand**
  Optimized cost



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Satellogic constellation expansion



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Satellogic is making Earth observation imagery accessible and affordable to drive better global decision making, helping build a world where every organization is prepared for the challenges of tomorrow

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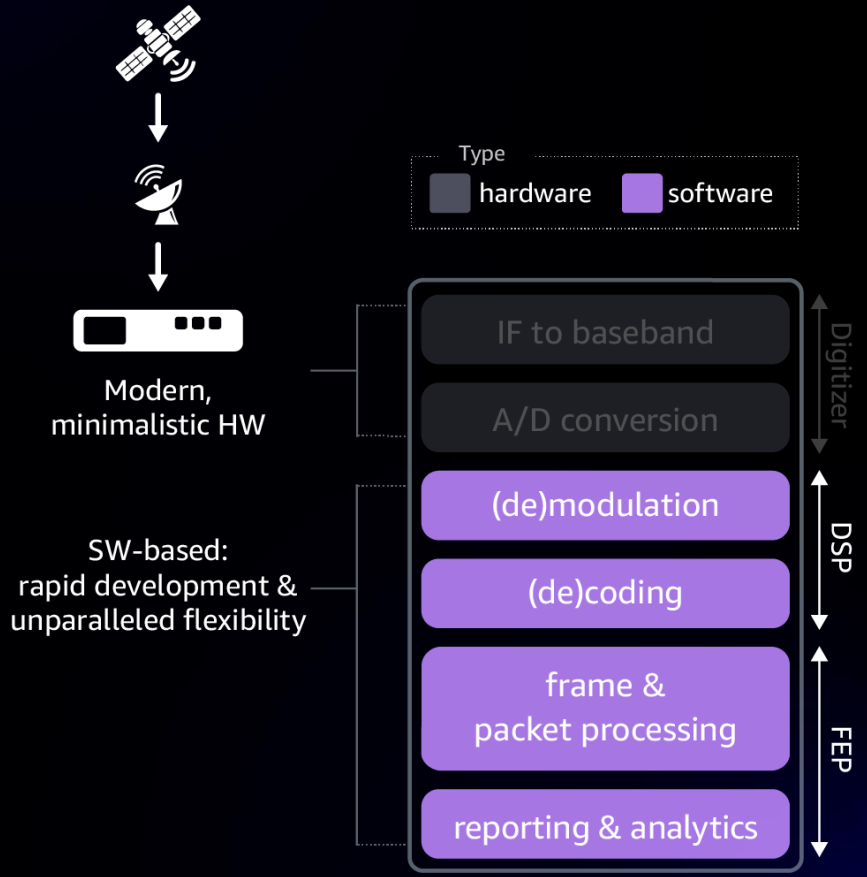
Amphinicy Technologies

Software that understands the satellite industry

aws

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Blink satellite software receiver



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TX & RX

CCSDS / DVB-S2

CCM / VCM / **ACM**

VITA 49.2 / raw I+Q

(O)QPSK / 8PSK / 16APSK / 32APSK

Linux

LDPC / BCH

web UI

Reed-Solomon / Viterbi

equalization

4D-TCM*

AGC

1.2 Gb/s

REST M&C

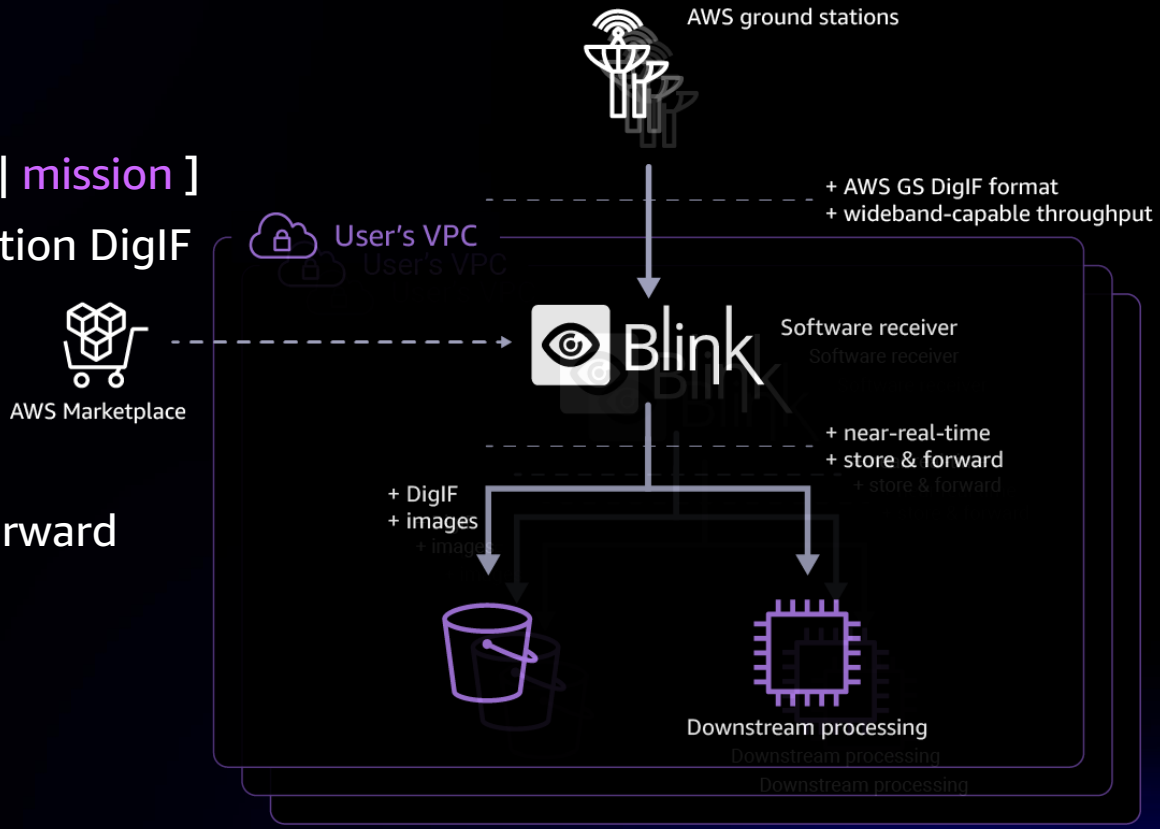
S-band / X-band

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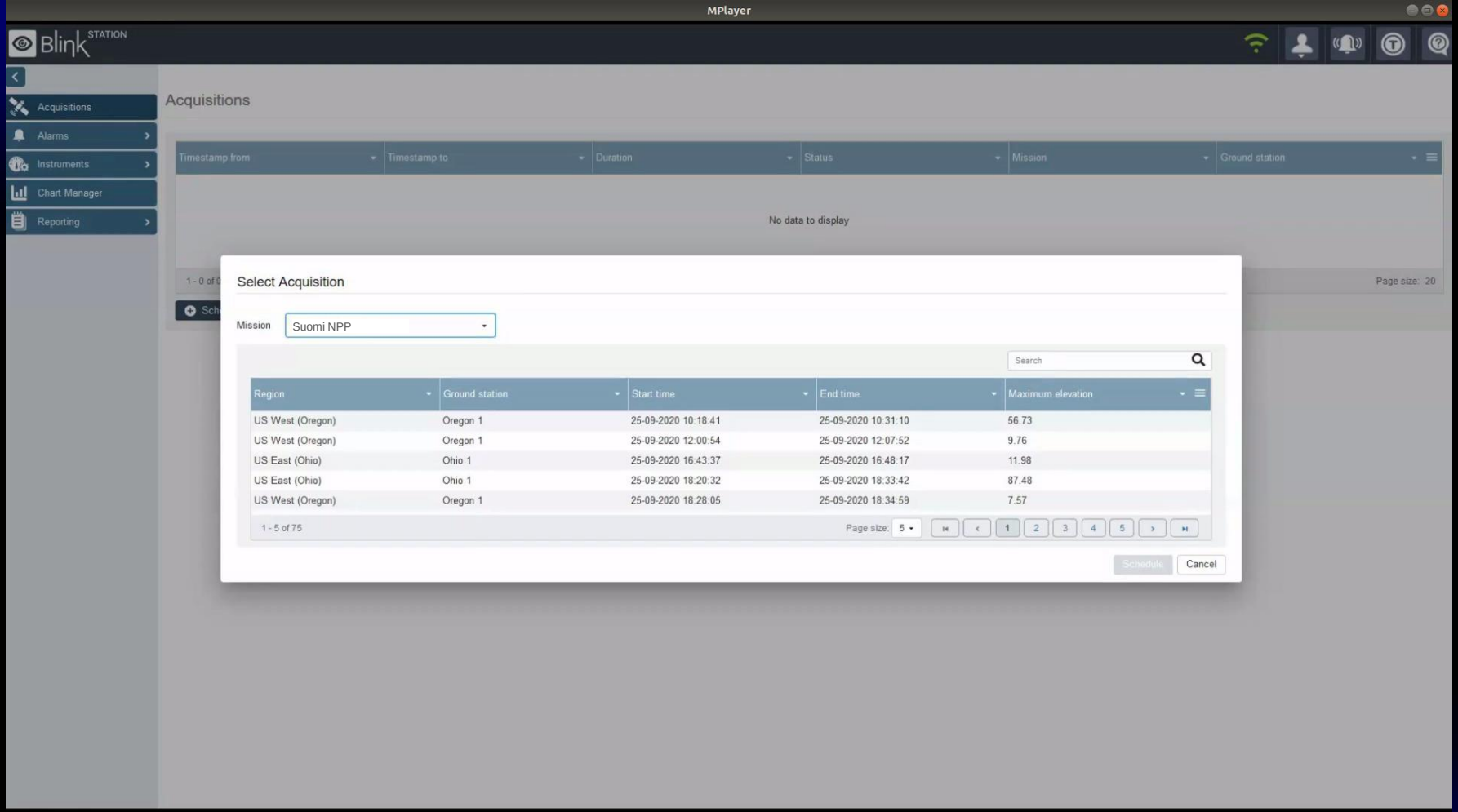
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Blink and AWS

- SDR, not HW
- Multi-[orbit | band | protocol | mission]
- Understands AWS Ground Station DigIF
- AMI in AWS Marketplace
- Your VPC
- Scales with your workload
- Passthrough and store-and-forward
- Neat SaaS package



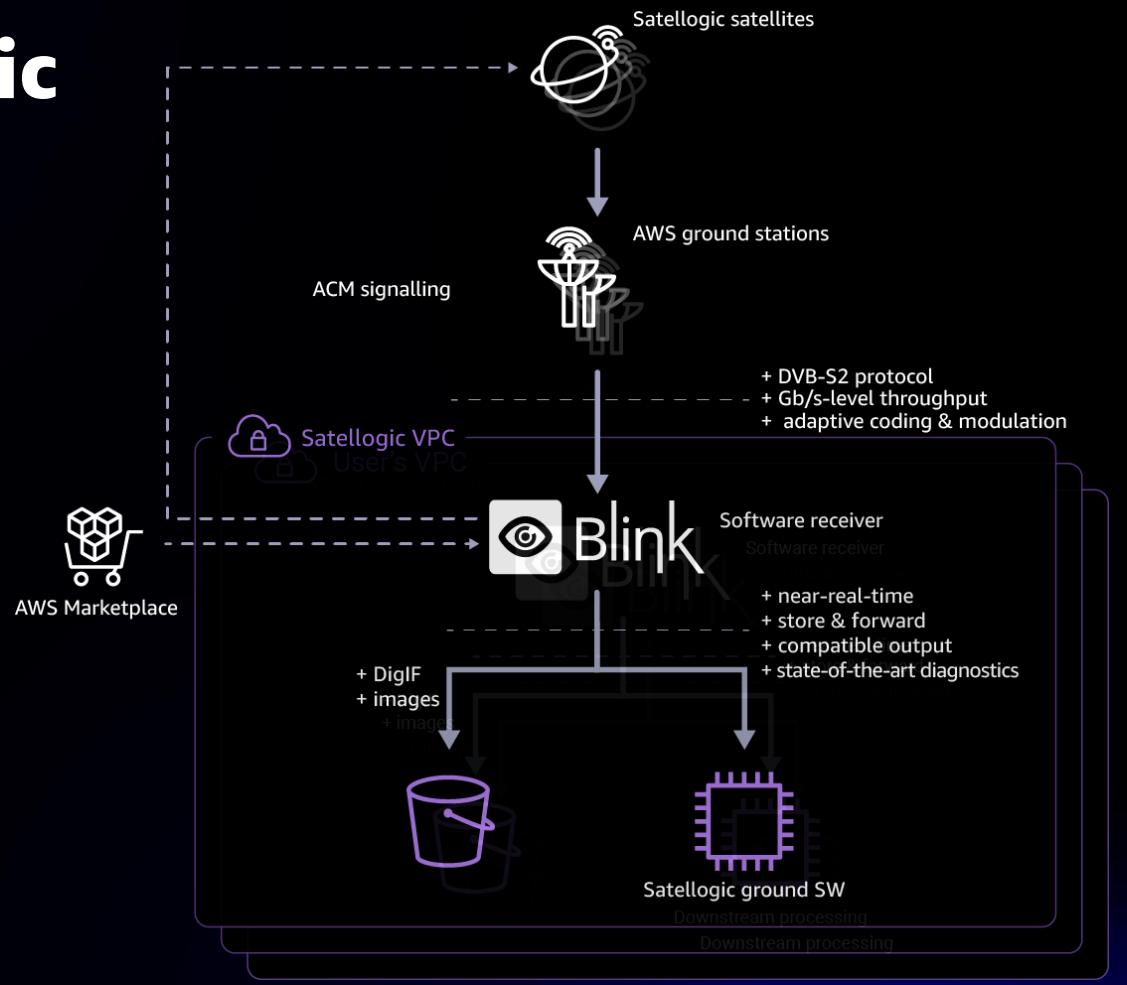
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Blink and Satellogic

- DVB-S2 protocol
- Gigabit-level throughput
- Adaptive coding and modulation
- Runs in Satellogic's VPC
- Near-real-time operation
- State-of-the-art diagnostics
- Compatible output



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How to get AWS Ground Station

- AWS Ground Station available in 9 locations
- Wideband DigIF expansion preview
- Licensing Accelerator
- Amazon S3 data delivery

https://aws.amazon.com/ground-station/

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How to get Blink

AMPHINICY TECHNOLOGIES

AWS Marketplace for Blink software-defined radio



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Try AWS Ground Station

Public broadcast satellites

- Aqua, Terra, SNPP, JPSS

https://aws.amazon.com/blogs/publicsector/automated-earth-observation-aws-ground-station-amazon-s3-data-delivery/

https://aws.amazon.com/blogs/publicsector/earth-observation-using-aws-ground-station/

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Thank you!

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