amazon | project kuiper

JANUARY 28, 2025

OUR MISSION

Project Kuiper is Amazon's low Earth orbit (LEO) satellite broadband network.

Our mission is to deliver fast, affordable broadband connectivity to unserved and underserved communities around the world.

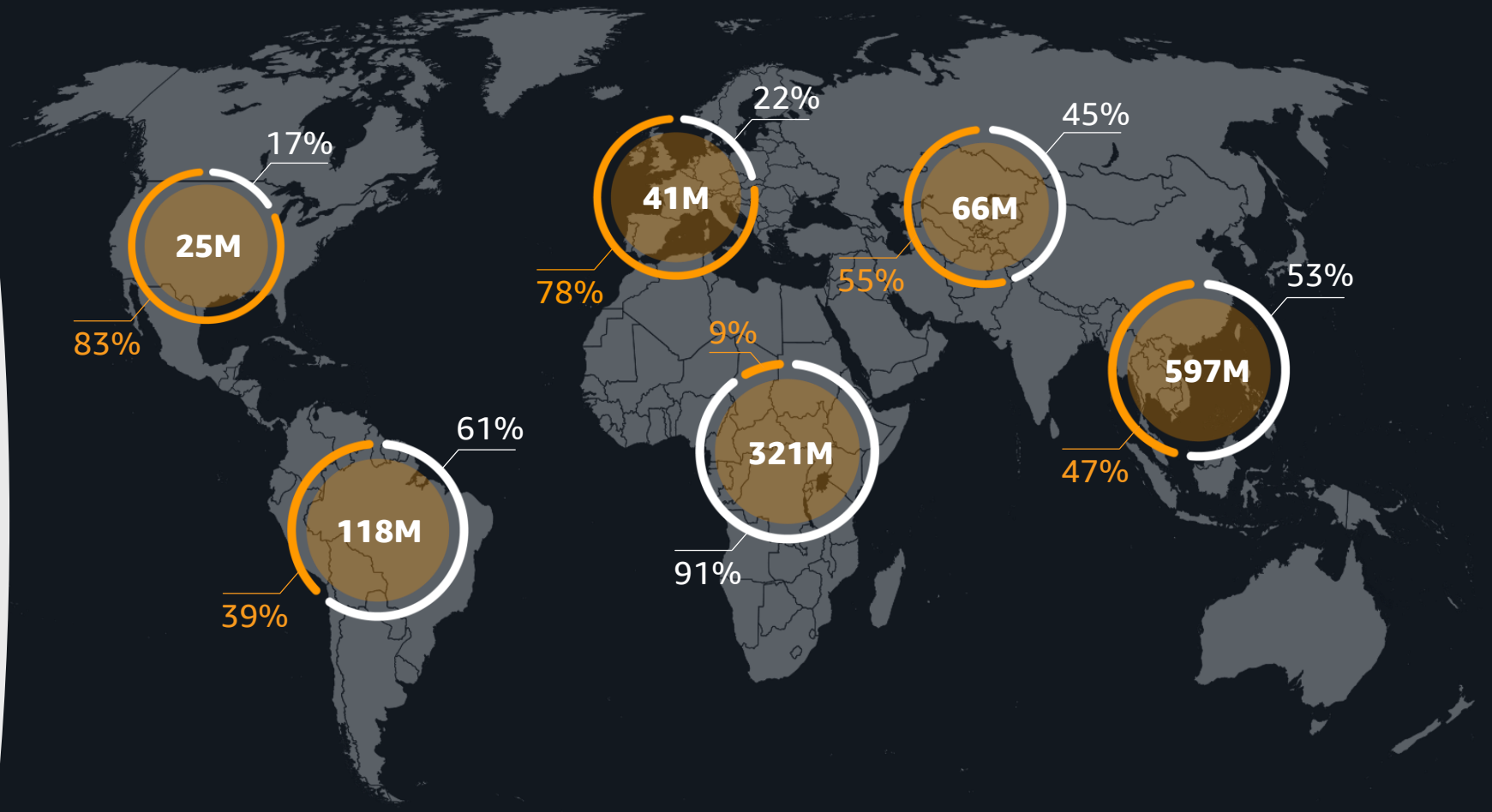
BRIDGING THE DIGITAL DIVIDE

There are billions of people on Earth without reliable broadband access. Project Kuiper will help bridge the gap in places where service is unreliable or too expensive, or where it doesn't exist at all.

1 billion
unserved households across the globe have no fixed broadband access today (50% of the global population)

300 million
underserved households are on legacy DSL technologies

100 million
business, enterprise, and public sector endpoints lack reliable connectivity



Source: S&P Market Intelligence

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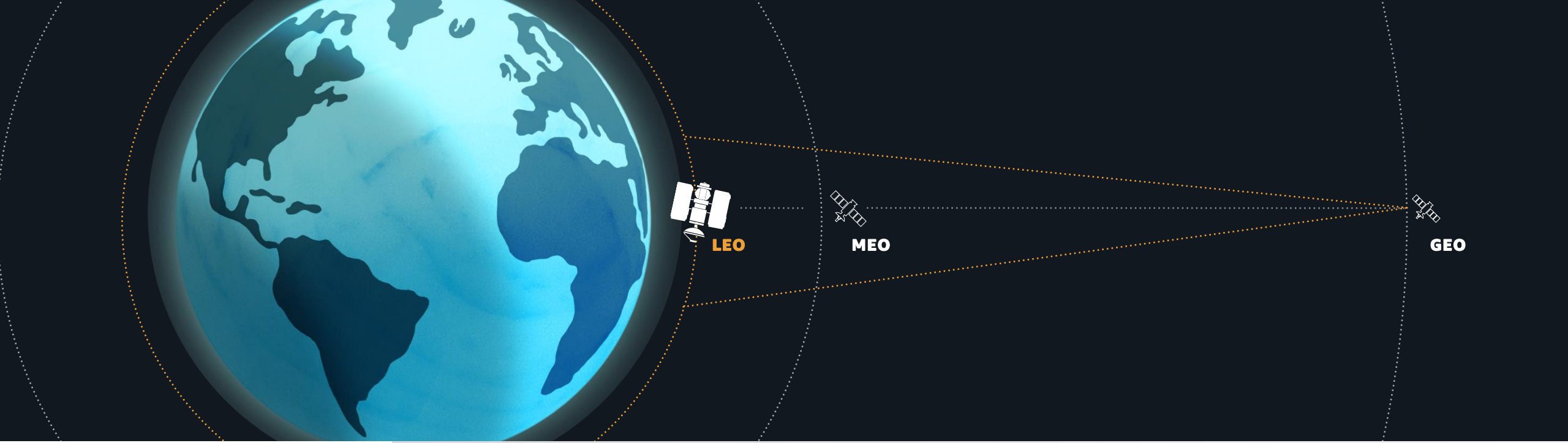
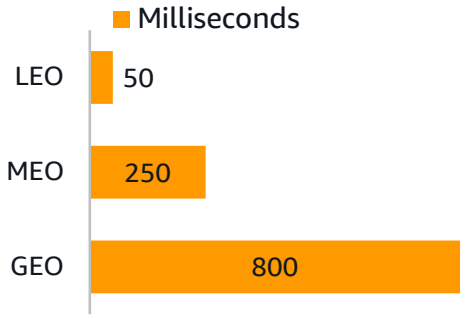


Latency



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160-1,999 km

Low Earth orbit (LEO)

- 30–50 ms roundtrip latency
- Continuous, near-global coverage
- Steerable, flexible, shapeable beams
- Small spot beam and higher signal strength
- Resilient and persistent

2,000-35,785 km

Medium Earth orbit (MEO)

- 150-250 ms roundtrip latency
- Flexible, shapeable beams
- Higher throughput versus geosynchronous orbit

35,786 km

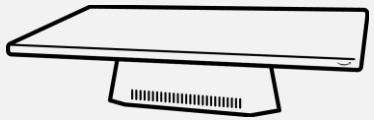
Geosynchronous orbit (GEO)

- 600–800 ms roundtrip latency
- Few satellites
- Large coverage areas (85,000 km^2)
- Equatorial position
- No polar coverage possible

The Kuiper System

SPACE

EARTH

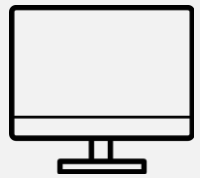


CUSTOMER TERMINAL (CUSTOMER LOCATION)

KUIPER GROUND STATION

KUIPER NETWORK CORE

PUBLIC



INTERNET

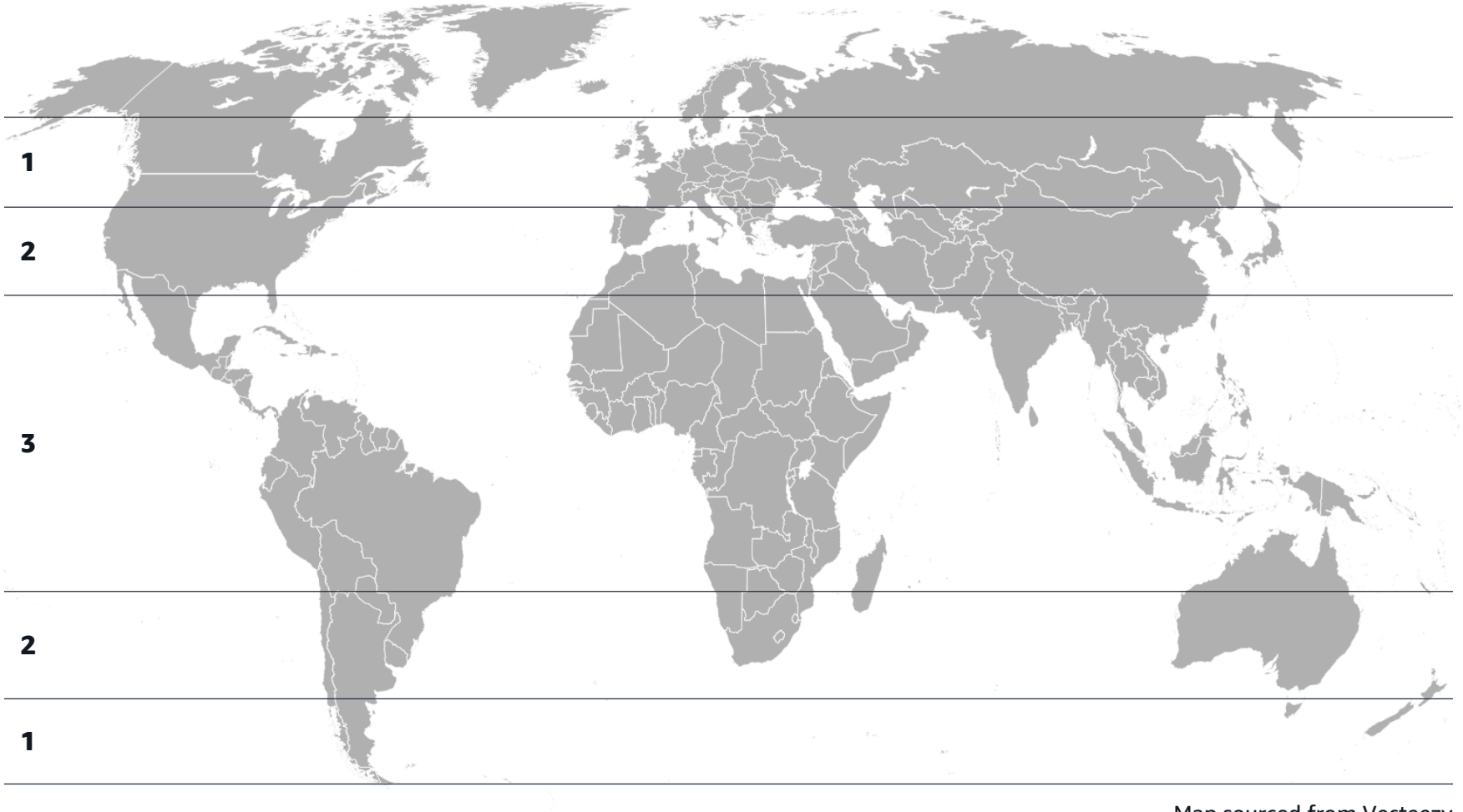
PRIVATE

AWS CLOUD SERVICES (AI / ML)

BUILT ON aws

GLOBAL COVERAGE

Initial satellite constellation will cover the world's most populated regions.



Map sourced from Vecteezy

KUIPER CUSTOMER TERMINALS

7” x 7” 18cm x 18 cm

- Ultra - small form factor
- 100 Mbps downlink
- Half duplex

11” x 11” 28cm x 28cm

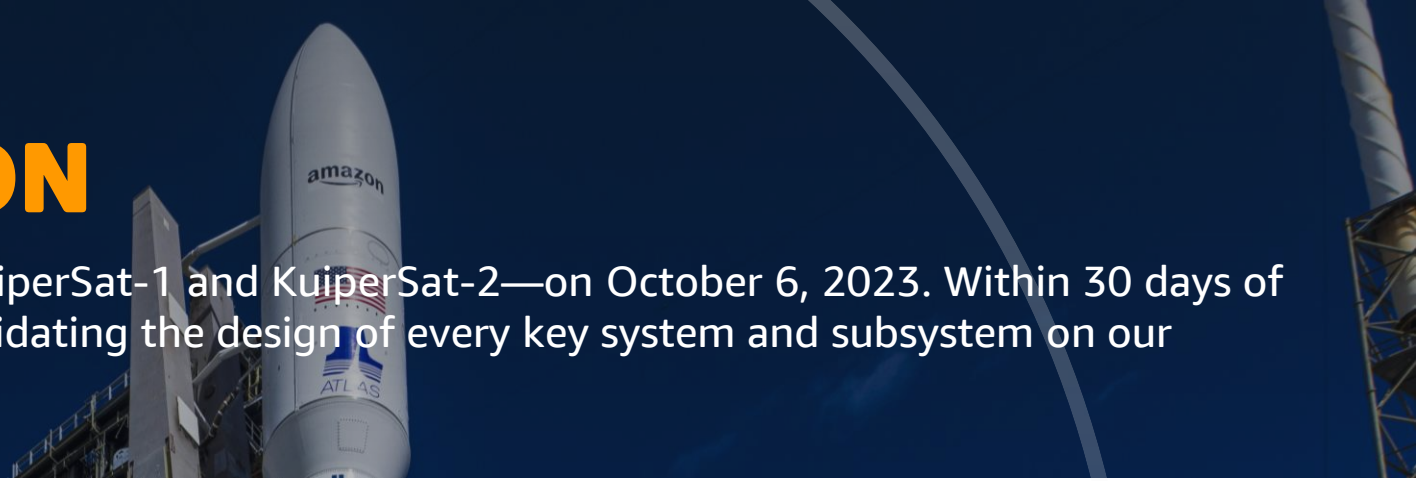
- Built for scale
- 400 Mbps downlink
- Half duplex

30” x 20“ 76cm x 51cm

- Enterprise focused
- 1000 Mbps downlink
- Full duplex

PROTOFLIGHT MISSION

Project Kuiper launched two prototype satellites—KuiperSat-1 and KuiperSat-2—on October 6, 2023. Within 30 days of launch, we achieved a 100% mission success rate, validating the design of every key system and subsystem on our satellites and across our network



Satellite Technology

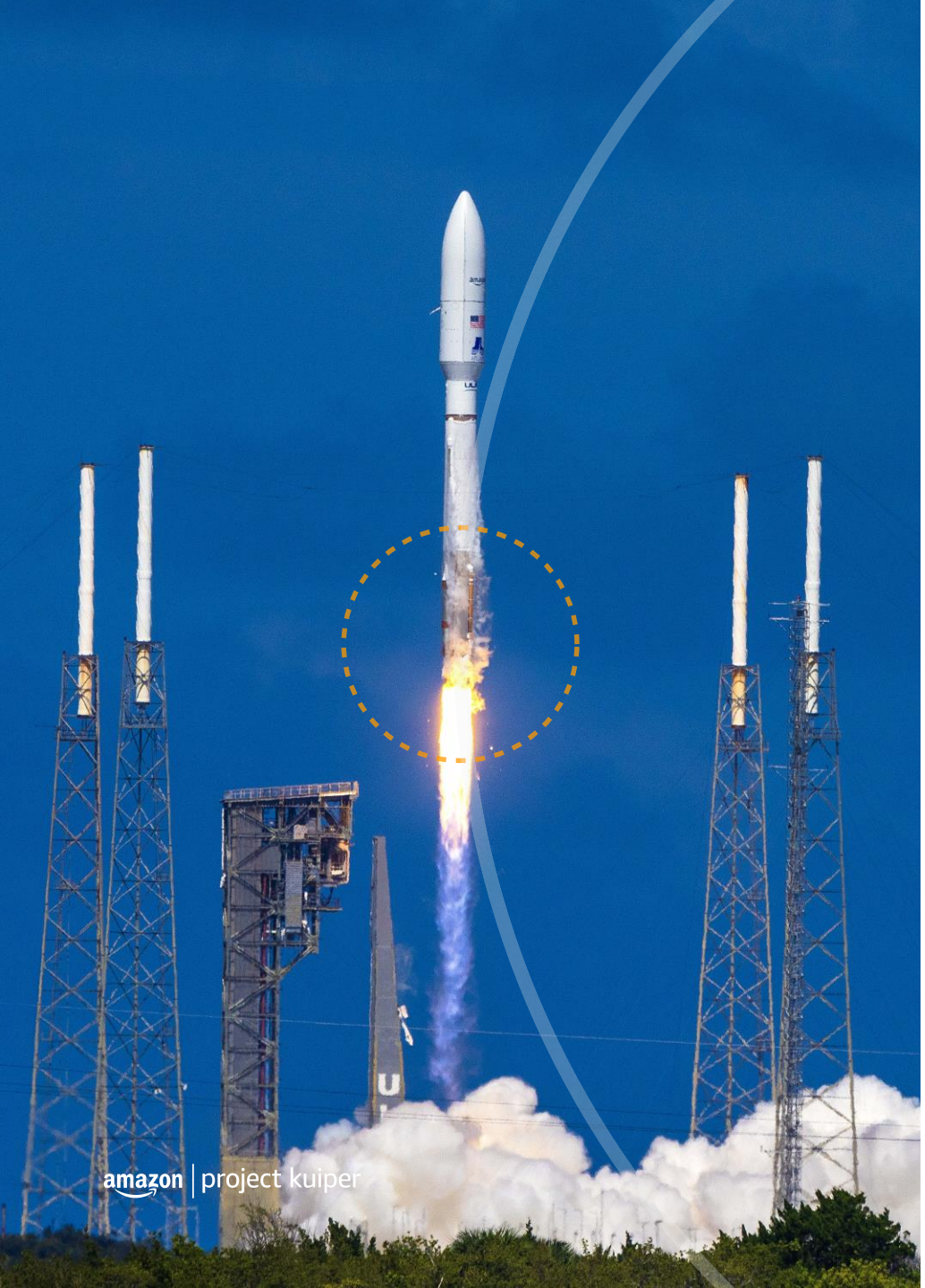
- Prototypes include production-ready technology and sub-systems, including phased array and parabolic antennas, power and propulsion systems, and custom-designed modems

Network performance & optical links

- The mission validated our network technology connecting satellites, customer terminals, ground gateways, and links to the internet and AWS, and allowed us to demonstrate 4K video streaming, two-way video calls, and online shopping
- We demonstrated 100 Gbps optical links between our prototype satellites

Safety & sustainability

- On-orbit testing demonstrated our custom electric propulsion system can safely maneuver the satellites to maintain their assigned orbits, avoid debris and other spacecraft, and actively deorbit at the end of their missions
- One of the satellites includes reflectivity mitigation technology to evaluate ways to reduce impact on optical astronomy



PRODUCTION DEPLOYMENT

Amazon has secured at least 80 launches to support its deployment plan for Project Kuiper. Manufacturing of our production satellites is underway, and launches will begin in 2025.

PROJECT KUIPER LAUNCH LINEUP

- Launches with Arianespace, Blue Origin, SpaceX, and United Launch Alliance (ULA) provide enough capacity to deploy vast majority of our 3,232-satellite constellation
  - Secured three additional launches with SpaceX for more capacity to support deployment schedule
- Amazon invested billions of dollars across three agreements, making it the single largest commercial procurement of launch vehicles in history

INDUSTRY IMPACT

- Contracts support thousands of suppliers and highly skilled jobs in 49 states in the U.S. and 13 countries across Europe
- Partnership with ULA includes investments in launch infrastructure and service upgrades at Cape Canaveral Space Force Station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ULA