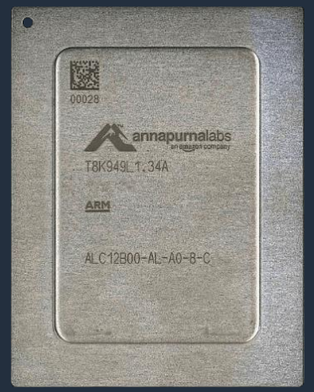
Designing for Trust in a Zero-Trust World

Perspectives from the Cloud

EDPS

November 4 2021

David Pellerin
Head of Business Development, Semiconductor Industry
Amazon Web Services



Working backwards from customers leads to rapid innovation

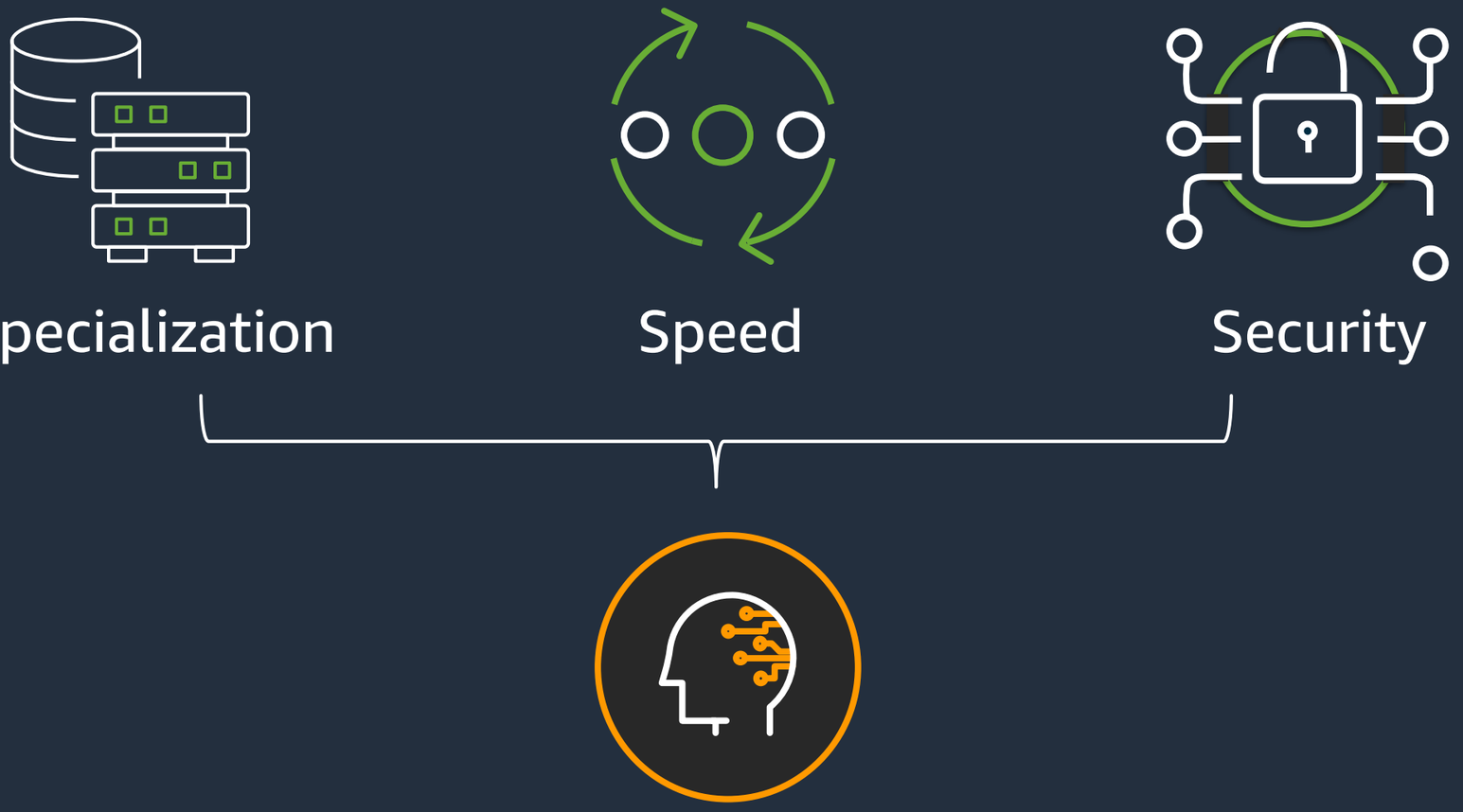
This includes semiconductor technologies

Amazon develops and uses semiconductor devices for:

- AWS data center infrastructure
- Amazon fulfillment centers
- Consumer devices
- Robotics and AI
- Space/satellite infrastructure
- Autonomous vehicles
- And more

We value our semiconductor, EDA, and IP industry partnerships

Why build our own chips?



aws

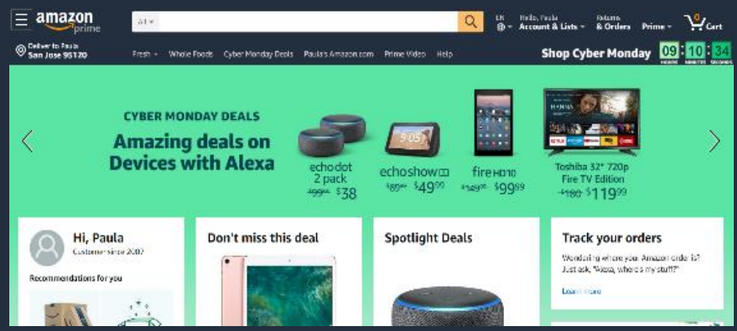
Amazon.com – industrial automation at-scale

Globally, we have more than **200 fulfillment centers** and more than **100 sort centers**

We have opened more than **50 robotic fulfillment centers** around the world

Amazon currently uses the help of more than **350,000 robotic drive units** around the world

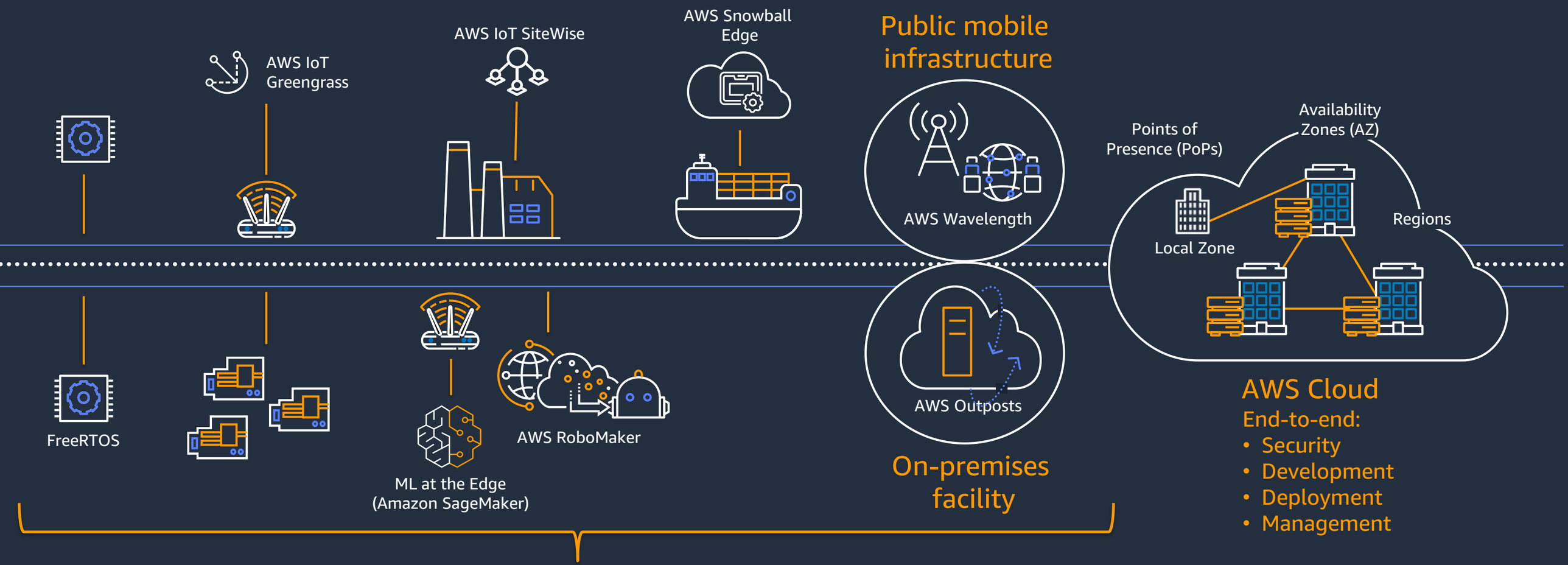
Customers are using **hundreds of millions of Alexa-enabled devices**



You can’t optimize what you can’t measure

You can’t measure what you can’t connect

Edge-to-cloud continuum for industrial IoT and AI

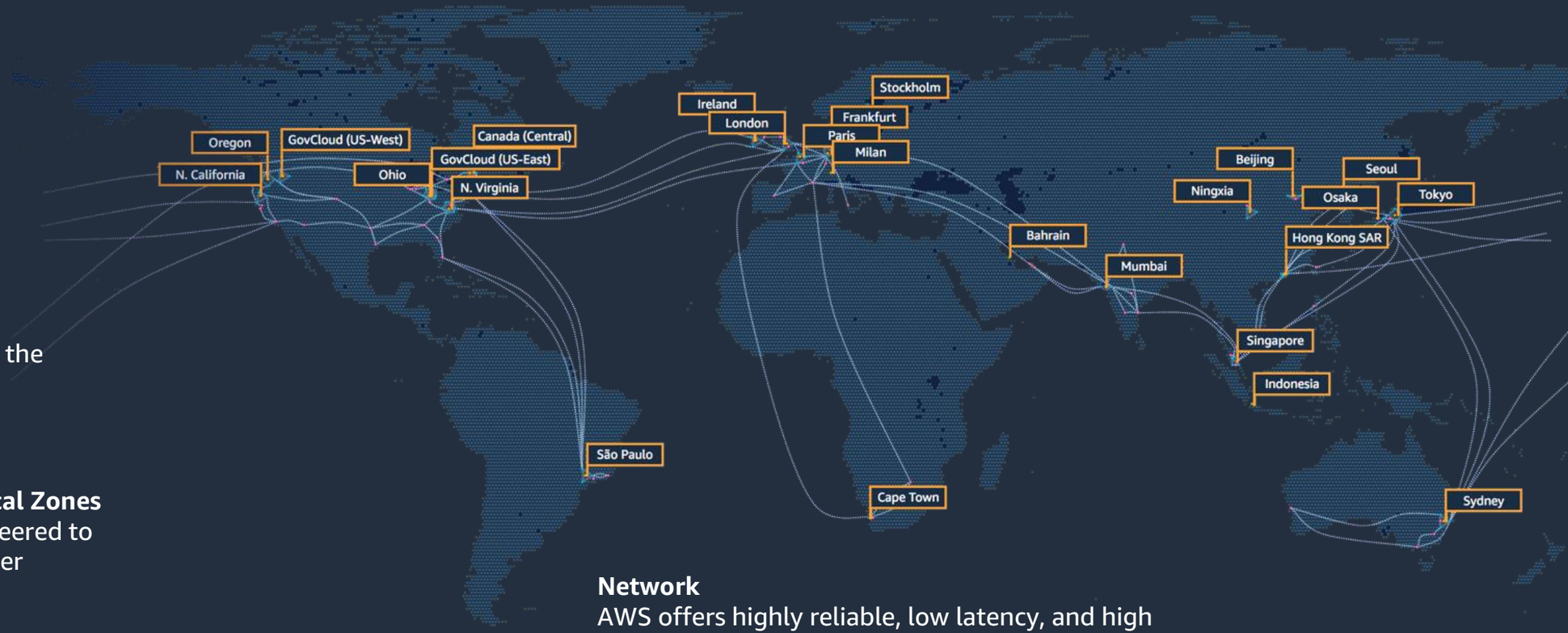


AWS Edge

- ✓ Reduce Latency
- ✓ Integrate with a broad set of cloud services and edge specific capabilities
- ✓ Reduce cost of development with single programming model

Focusing on Cloud – silicon needs for Amazon Web Services

AWS provides highly reliable, scalable, low-cost infrastructure in 25 global regions, powering millions of businesses in over 190 countries around the world. Offering over 200 fully featured services.



25 geographic regions
A region is a physical location in the world where we have multiple Availability Zones

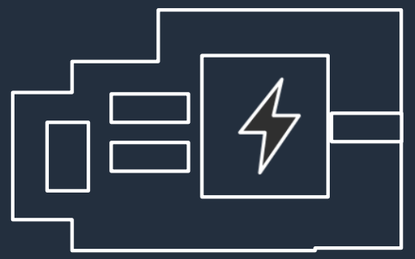
81 Availability Zones and 8 Local Zones
Distinct locations that are engineered to be insulated from failures in other Availability Zones

Network
AWS offers highly reliable, low latency, and high throughput network connectivity. This is achieved with a fully redundant 100 Gbps network that circles the globe.

aws

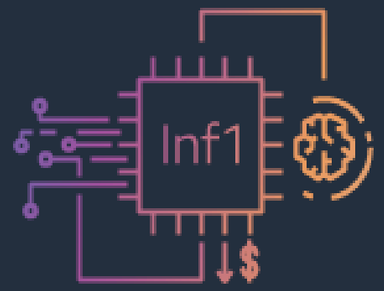
Examples of AWS custom silicon

annapurnalabs
an amazon company



AWS Nitro System

Cloud hypervisor, network, storage, and security



AWS Inferentia
AWS Trainium

Machine learning hardware and software at scale

AWS Graviton2

Powerful and efficient server chip for modern applications

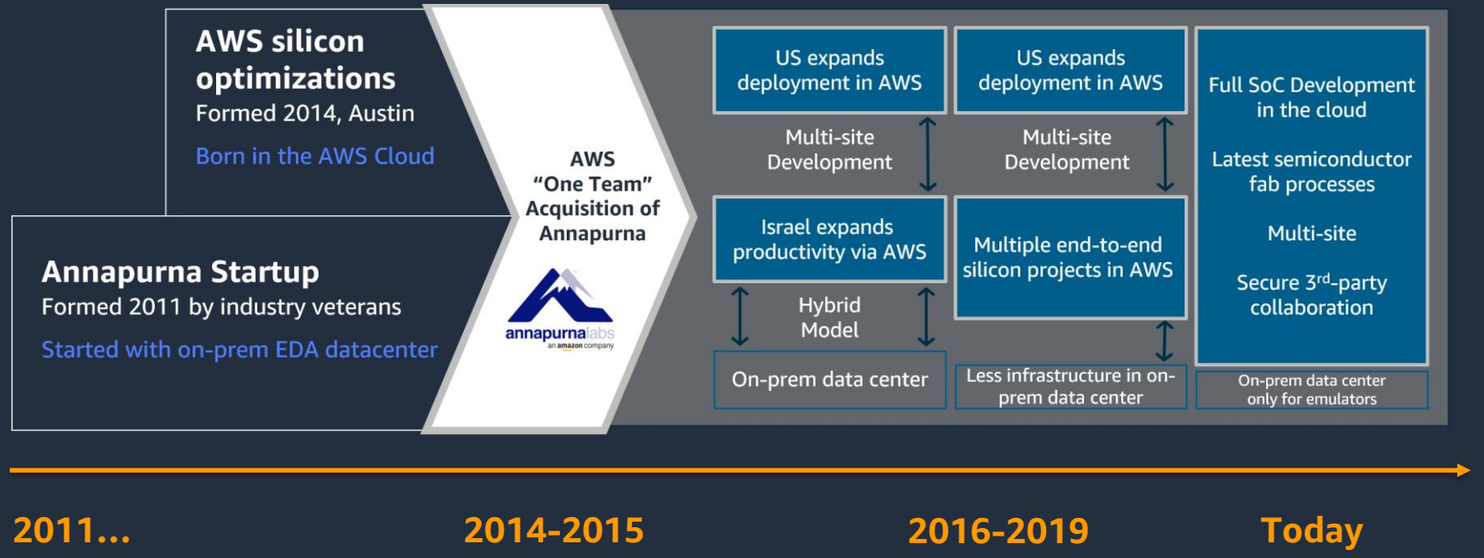
100% Developed in AWS Cloud, for AWS Cloud

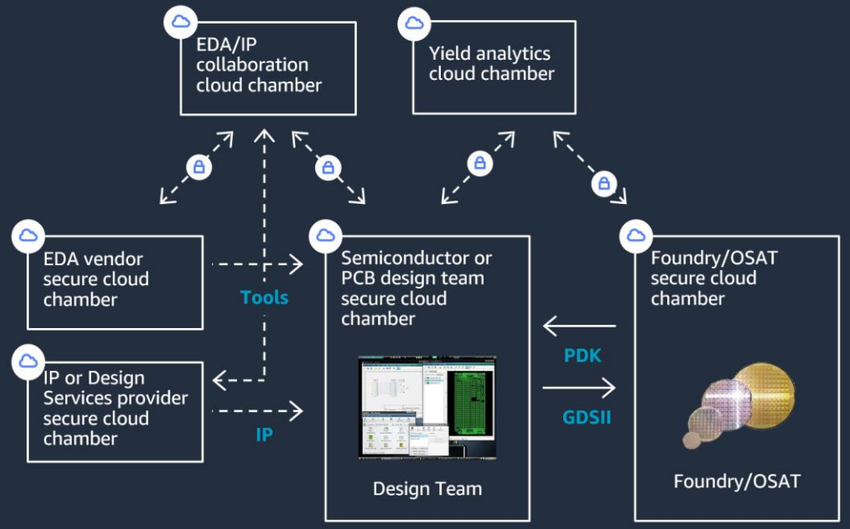
aws

AWS advanced systems-on-chip (SoC) journey

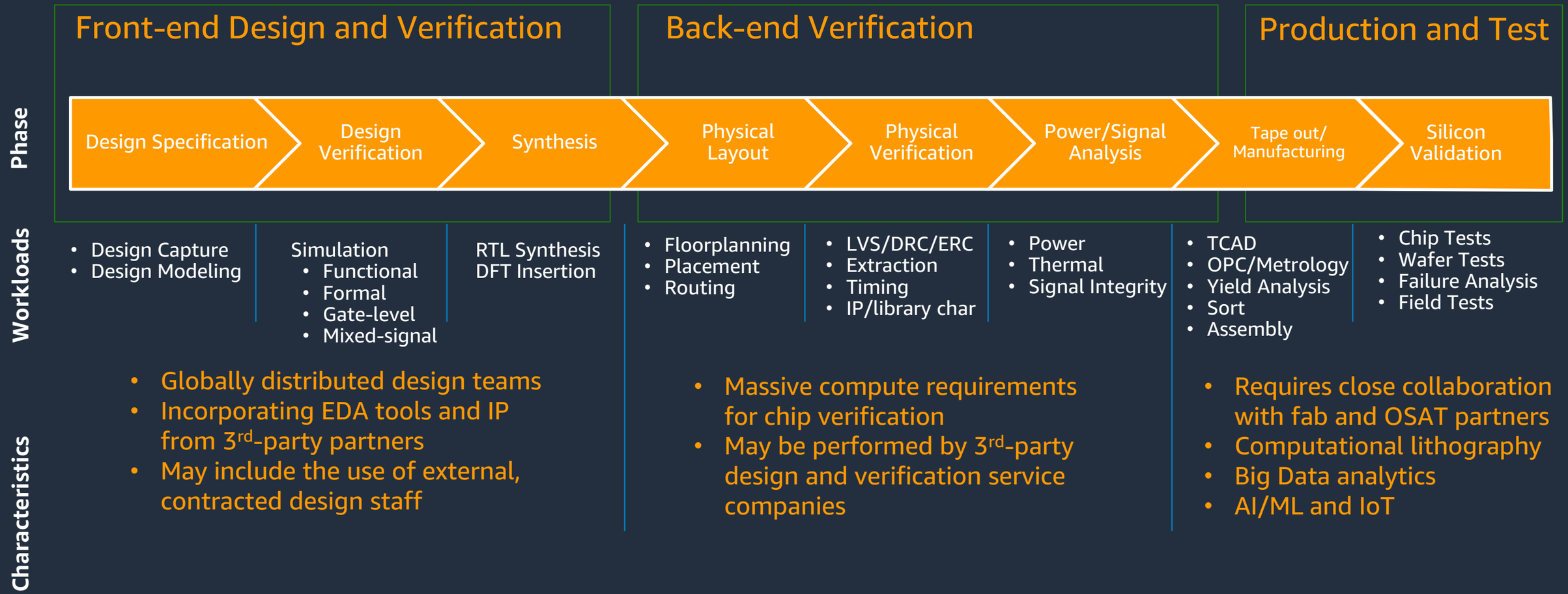
We benefit from secure, cloud-based supply chain collaboration for SoC and system development

Amazon Annapurna Labs example – similar cloud-based methods are used by other Amazon semiconductor teams





SoC development: a data-driven, collaborative approach



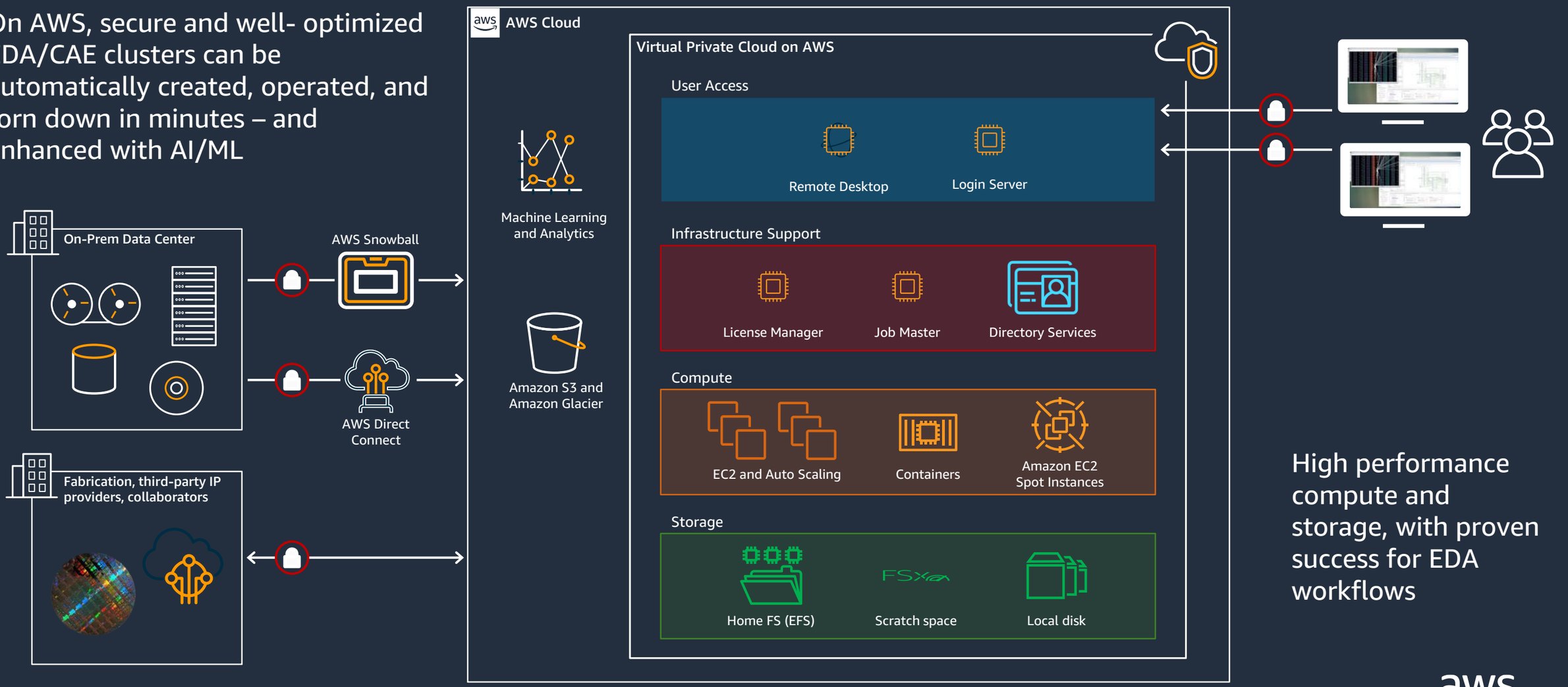
Semiconductor flows require high performance computing and storage, and orchestration of many diverse tasks with complex dependencies

aws

EDA/CAE infrastructure deployed on Cloud

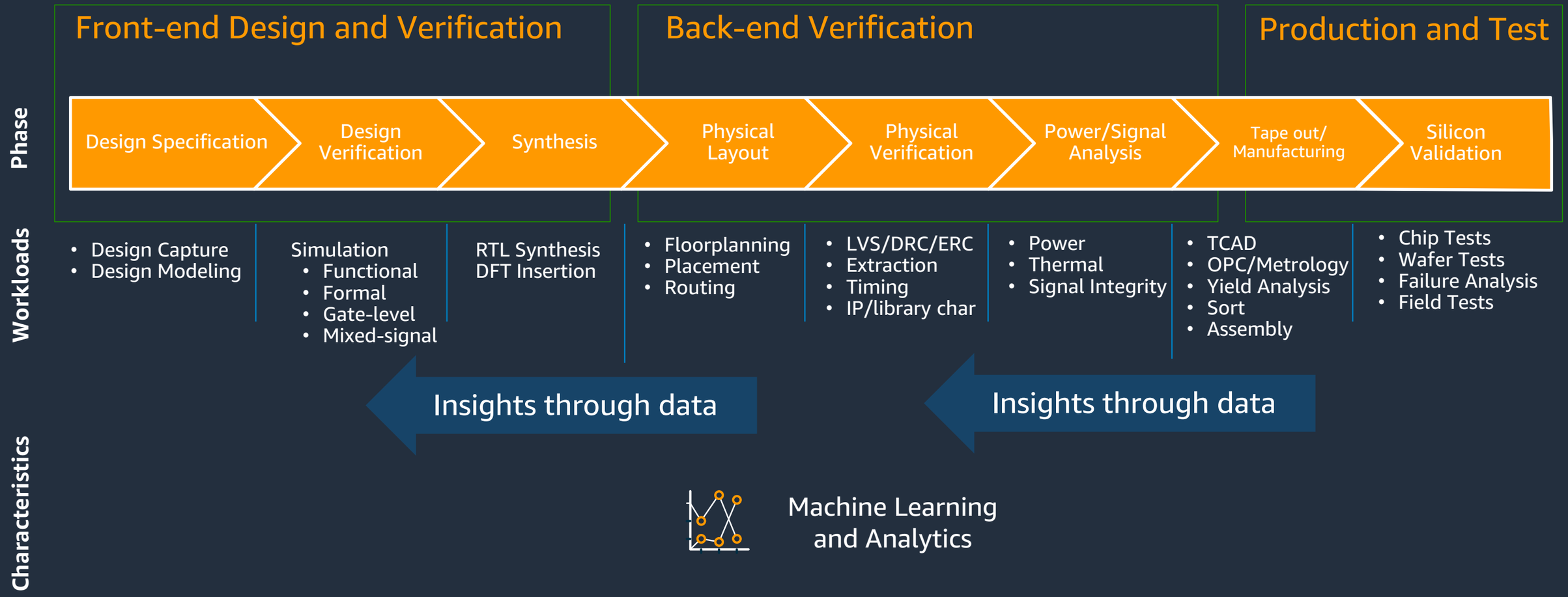
INTELLIGENT AND SCALABLE EDA/CAE IT STACK

On AWS, secure and well- optimized EDA/CAE clusters can be automatically created, operated, and torn down in minutes – and enhanced with AI/ML



High performance compute and storage, with proven success for EDA workflows

IC/SoC development: a data-driven, collaborative approach



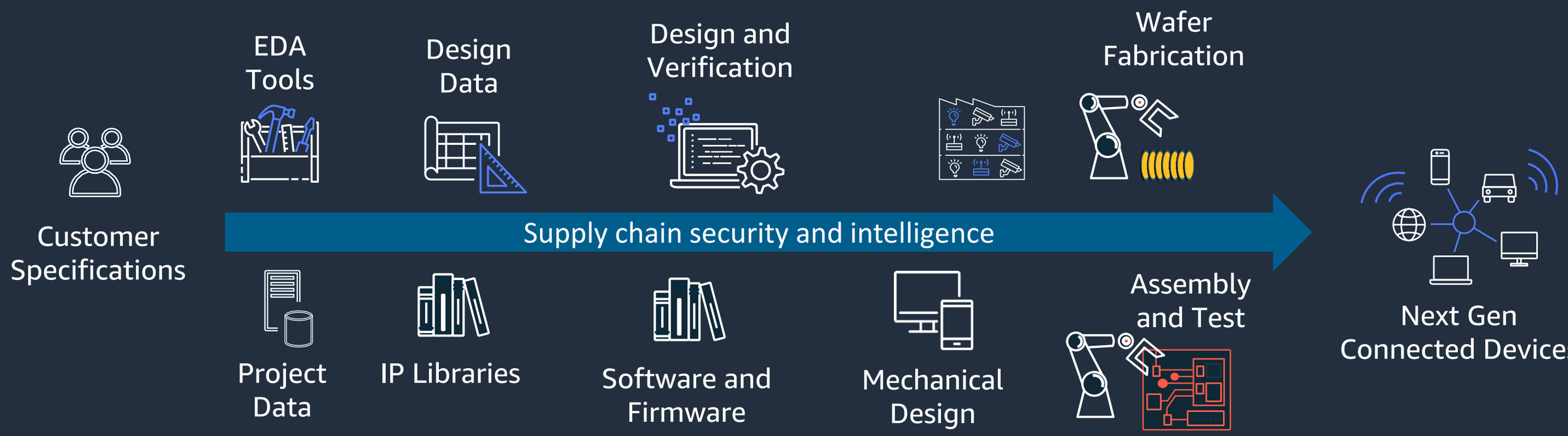
Security – Traceability – Innovation – Resilience

aws

Optimizing the semiconductor supply chain

- Security - Accelerate and secure semiconductor supply chains using state-of-the-art, cloud-native technologies for design, verification, wafer production, advanced packaging, and AI-informed supply chain risk management
- Traceability - Enable quantifiable assurance and traceability with data-driven, state-of-the-art methods already proven in other critical industries, with full lifecycle security
- Innovation - Address the unique needs of the semiconductor industry including both commercial and government goals for security and rapid innovation in advanced node SoC, as well as RF and opto-electronics
- Resilience - Accelerate innovation pipelines by modernizing R&D using secure, well-governed design and verification environments in pursuit of a robust, sustainable industry

Bridging the semiconductor supply chain with data



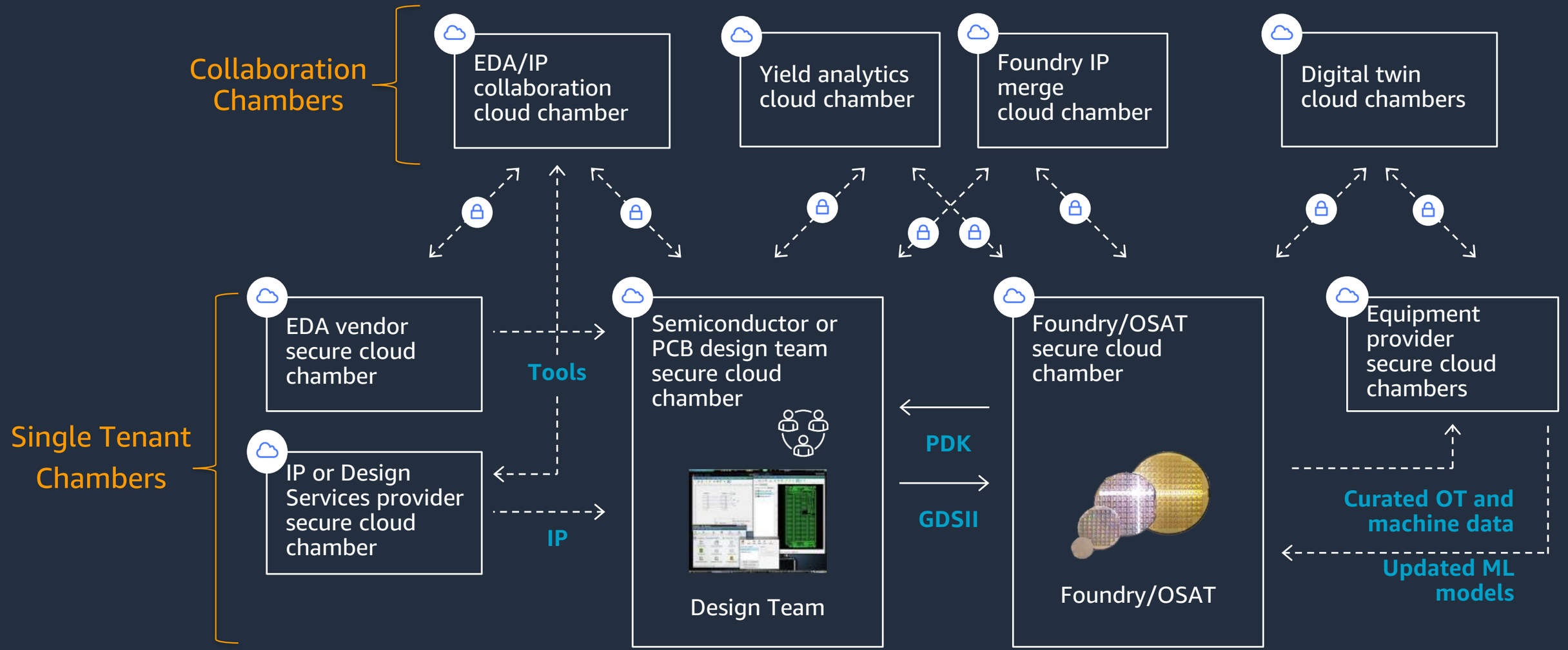
Smart Design Smart Verification Smart Fab Smart Products

Accelerated and secured by cloud

aws

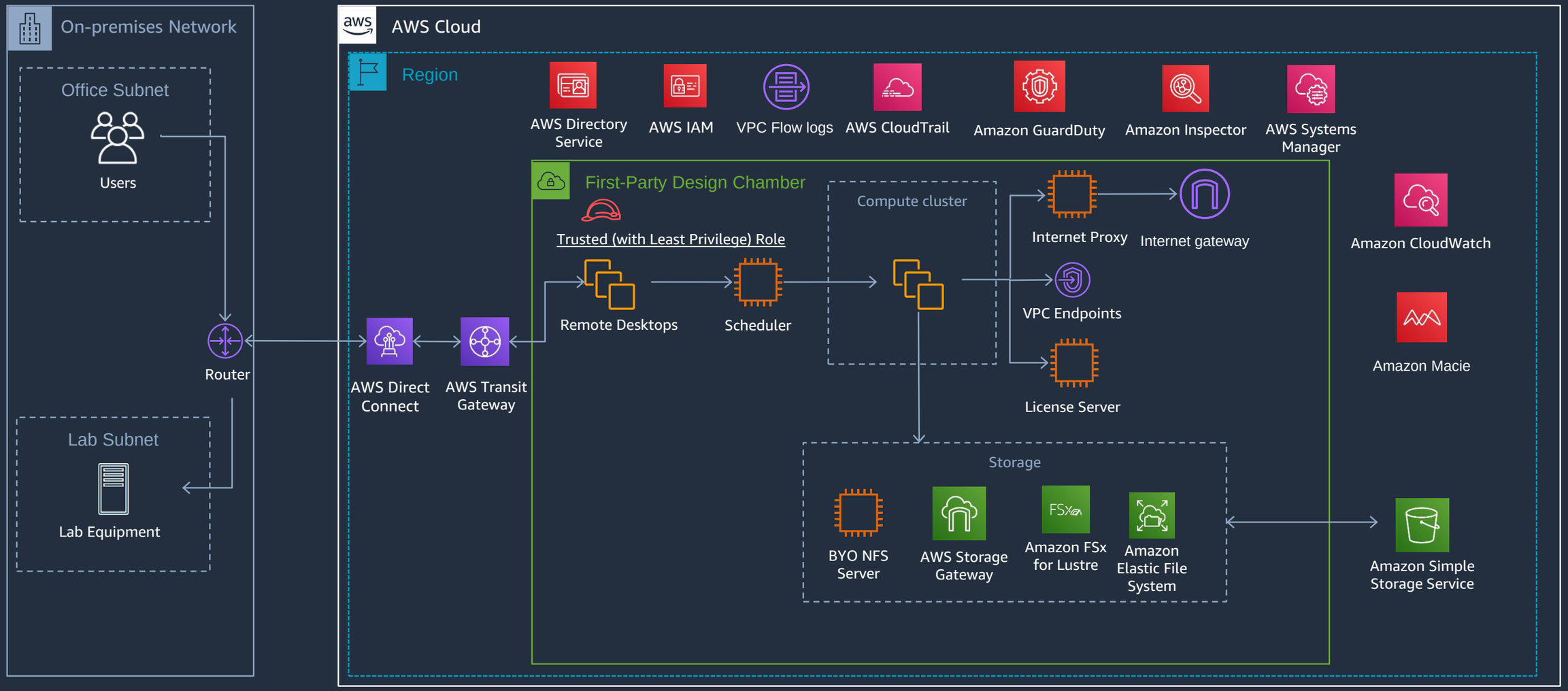
Cloud Enables Secure Collaboration

Use-cases throughout the supply chain



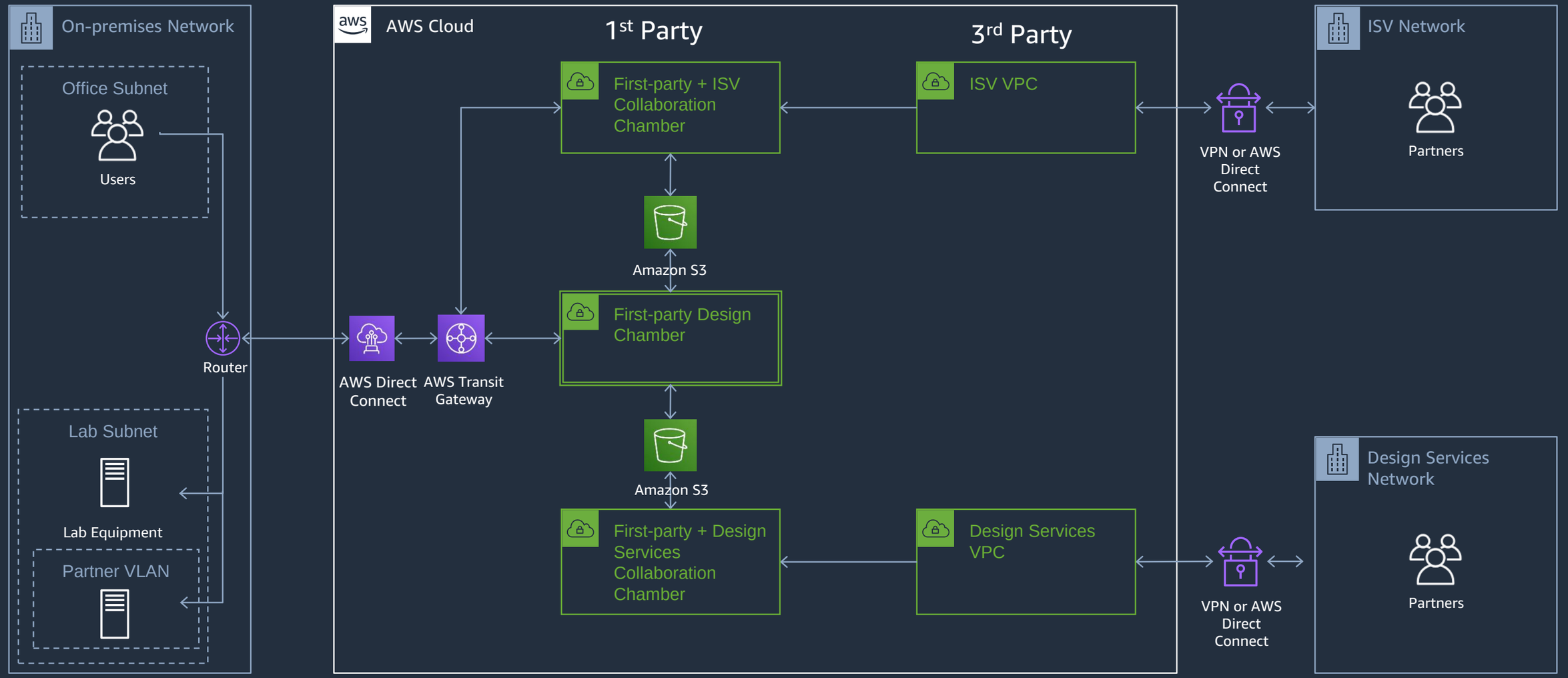
Creating a Secure, “Zero Trust” Design Environment

1st Party



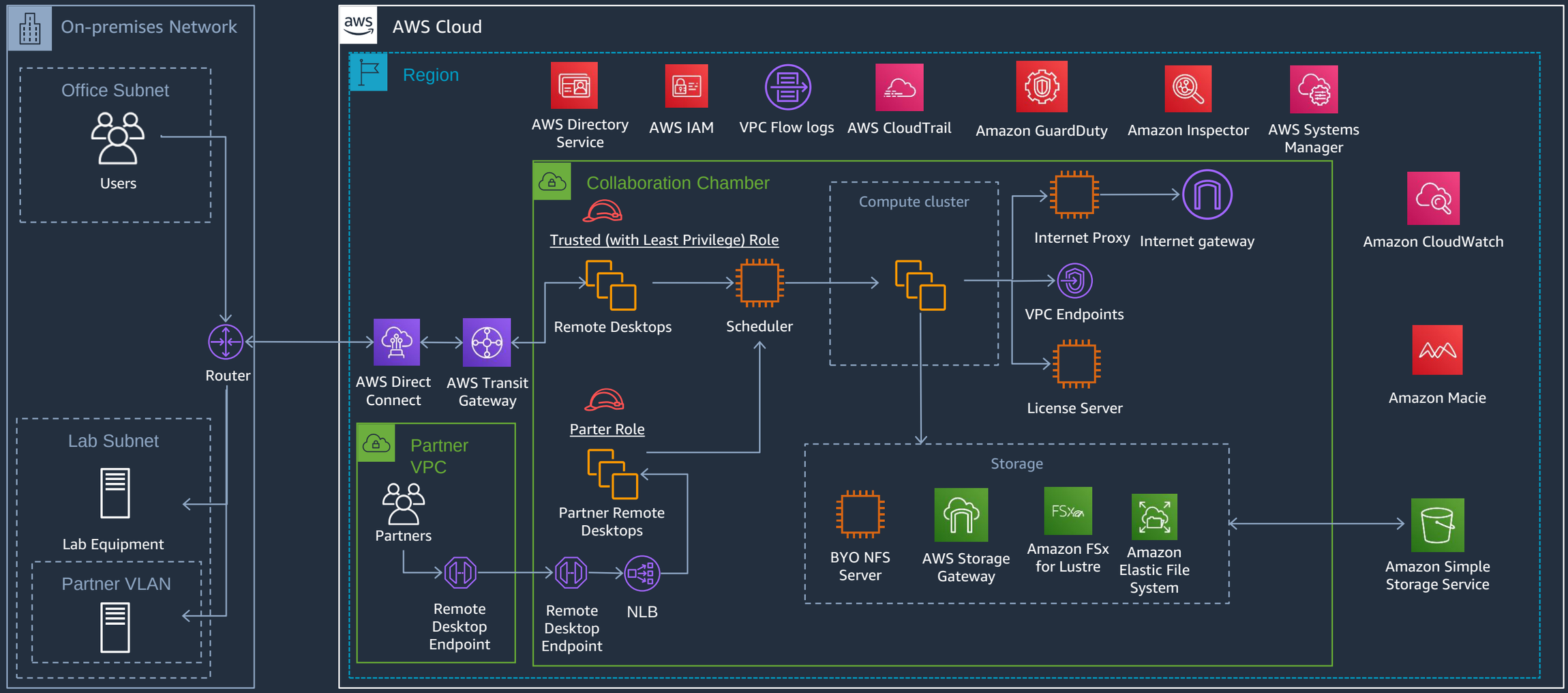
Next step… collaborate…

Secure Collaboration



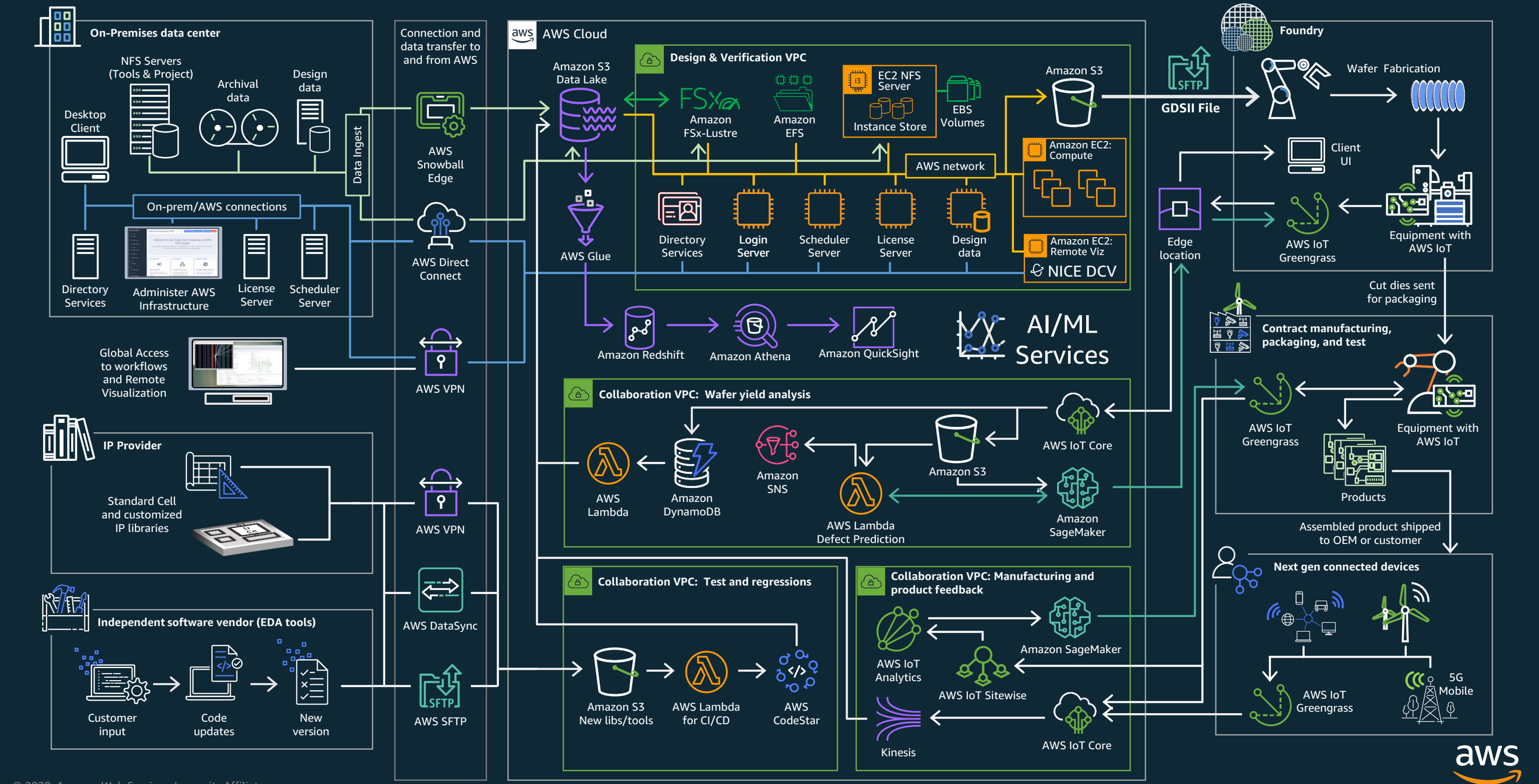
Many use-cases

Collaboration Chamber



Use the full range of security services

Secure Collaboration: enhanced with Data Lake and AI



Why Cloud for the modernized semiconductor lifecycle and supply chain?

Increased collaboration with secure access to compute clusters, IP protection, and data brokering around the world

Data-driven Quantifiable Assurance with advanced analytics (AI/ML), multi-level security, and globally trusted edge locations

Enables standardized traceability solutions across the entire semiconductor ecosystem

Supports innovation at scale for advanced and mature node design and manufacturing

Innovation at Speed of Need

Thank You

https://aws.amazon.com/semiconductor

Under “Resources” link:

- White papers
- Blogs and articles
- Reference architectures

aws