

Amazon's Culture of Innovation | “Facilitate the sharing of innovative perspectives and practices that respond to government priorities for replication and mainstreaming”

Lionel Khoza (he/ him/ his)

Executive Head of Government

AWS South Africa



Our mission:

to be Earth's most  
customer-centric  
company

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Where innovation begins:

start with the  
customer and work  
backwards

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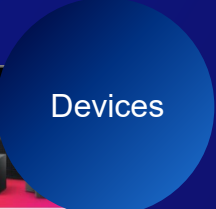
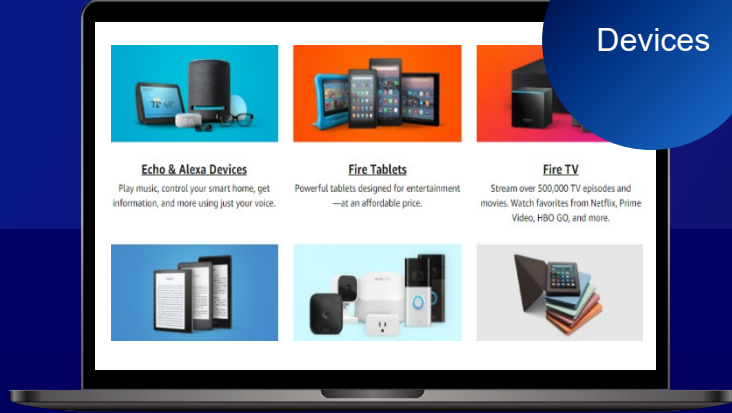
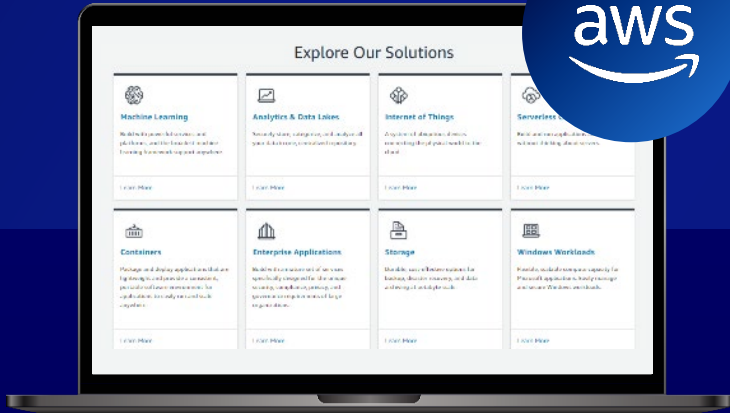
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“There are many advantages to a customer -centric approach, but here’s the big one: **Customers are always beautifully, wonderfully dissatisfied**, even when they report being happy and business is great. Even when they don’t yet know it, customers want something better, and your desire to delight customers will drive you to invent on their behalf.”

- Jeff Bezos, Founder and Executive Chair, Amazon.com, Inc.
- 2016 letter to shareholders



E-commerce



# What is public sector?



GOVERNMENT



NONPROFITS



AEROSPACE &  
SATELLITE



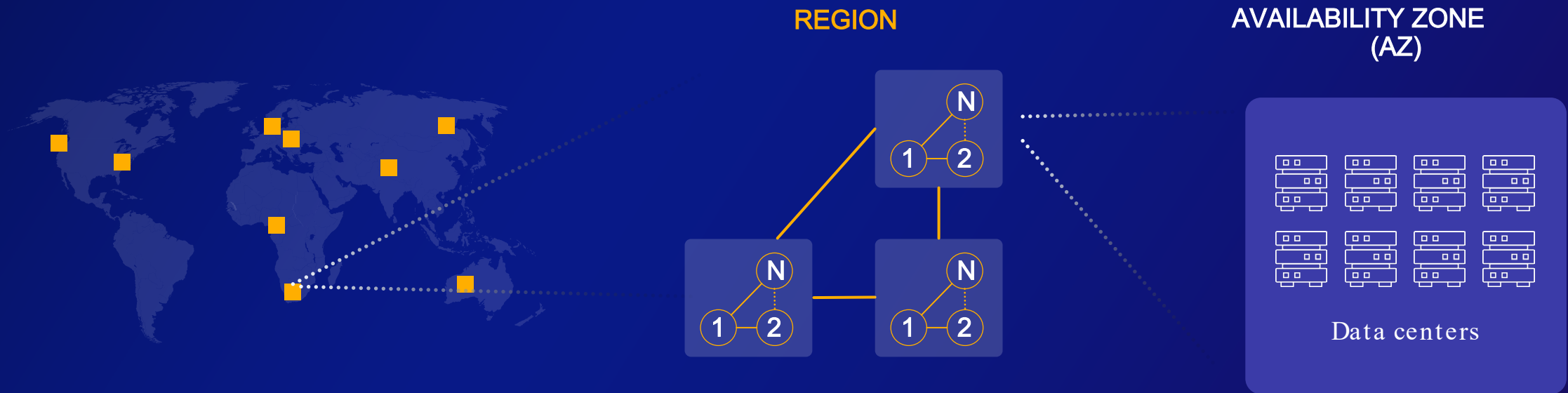
HEALTHCARE



EDUCATION

# AWS Africa (Cape Town) Region

AWS Regions are comprised of multiple AZs for **high availability**, **high scalability**, and **high fault tolerance**. Applications and data are replicated in real time and consistent in the different AZs.



# How do we organize for Innovation?

## Culture

Customer obsession, hire builders, support them with a belief system



## Architecture

Technical structure and tools that support rapid growth and change



## Mechanisms

Encoded behaviors that facilitate innovative thinking



## Organization

Small, empowered teams that own what they create





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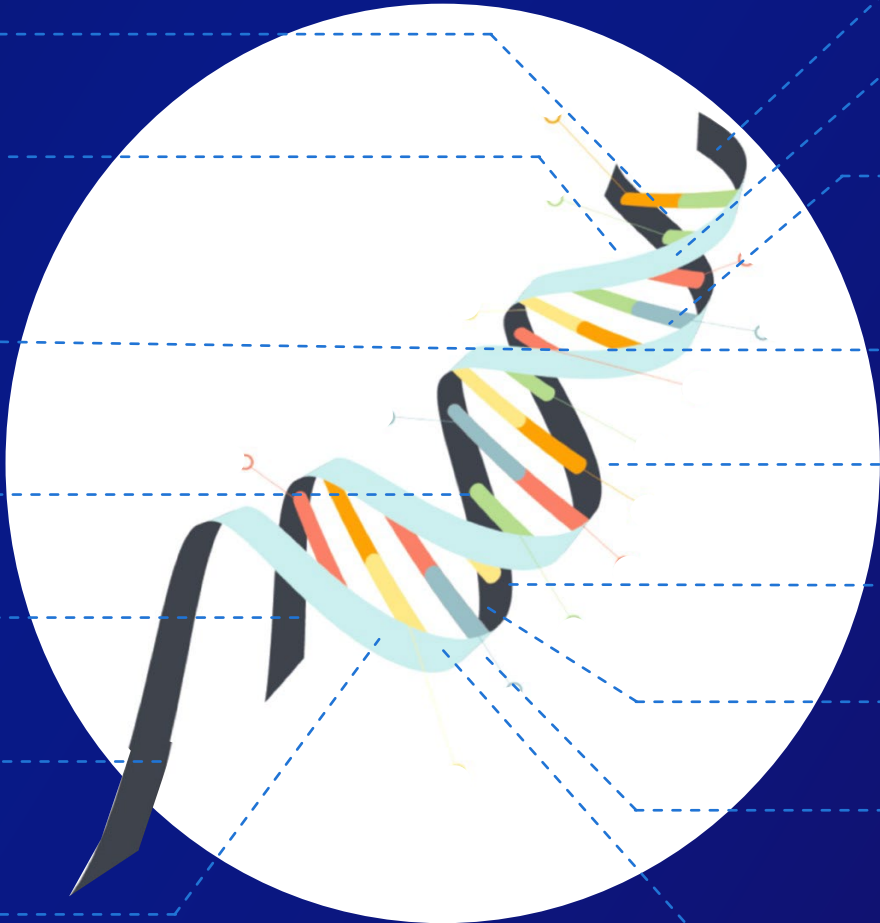
Small, empowered teams that own what they create



# Our Leadership Principles

... unless you know better ones. Please be a leader.

- Customer Obsession
- Invent and Simplify
- Learn and Be Curious
- Insist on the Highest Standards
- Bias for Action
- Strive to be Earth's Best Employer
- Success and Scale  
Bring Broad Responsibility



- Ownership
- Are Right, A Lot
- Hire and Develop the Best
- Think Big
- Frugality
- Earn Trust
- Dive Deep
- Deliver Results
- Have Backbone; Disagree and Commit



# 129

Price Reductions (since '06)



# 200+

Fully featured services



# Millions of

Active Customers Every Month





# Breadth and Depth of Services: 200+ fully featured services



## Analytics

Analytics  
Data Exchange  
Data Lake  
Data Pipelines  
Data Warehouse  
Elasticsearch

Streaming  
ETL  
Hadoop / Spark  
Interactive SQL Queries  
Visualizations



## Business Applications

Contact Center  
Sharing & Collaboration  
Online Meetings & Chat  
Voice-Enabled Workplace

Unified Communications  
Mobile & Web Apps Without  
Programming



## Blockchain

Blockchain Templates  
Ledger Database

Managed Blockchain



## Security, Identity, and Compliance

Access Control  
Assessment & Reporting  
Configuration Compliance  
Data Protection  
DDOS Protection  
Identity Management

Key Management & Storage  
Monitoring & Logging  
Resource Management  
Threat Detection  
Web Application Firewall



## Storage

Archive Storage  
Backup & Restore  
Block Storage  
Data Transfer  
Edge Processing & Computing  
File Storage

High-Performance File System  
Hybrid Cloud Storage  
Object Storage  
Unified Communications  
Windows File System



## Database

Aurora, a high-performance, relational database Built for the Cloud  
Document Database  
Graph Database  
In-Memory Caching  
Key-Value Store Database  
Ledger Database  
Time Series Database

Managed SQL Server  
Managed MariaDB  
Managed MySQL  
Managed Oracle  
Managed PostgreSQL



## Development Tools

Analyze and Debug  
Application Lifecycle  
Management  
Authoring  
Build & Test  
Containers

DevOps Resource  
Management  
One-Click App Development  
Patching  
Pipeline Orchestration  
Resource Templates  
Triggers



## Compute

Compute  
Auto-Scaling  
Batch Jobs  
Event-Driven Serverless  
Computing  
Instance Types  
Managed Virtual Private Servers  
Managed Repository for  
Serverless Apps

Run & Manage Web Apps  
Serverless Compute  
Virtual Servers  
Containers  
Container Service  
Managed Kubernetes  
Store & Retrieve Docker Images



## Media Services

Live Video Transport  
Media Storage  
Transcoding  
Video Origination & Packaging

Video Personalization &  
Monetization  
Video Processing & Delivery  
Video Streaming Analysis



## Hybrid Architecture

AWS Services on Premises  
Data Integration  
Integrated Devices & Edge  
Systems  
Integrated Identity & Access

Integrated Networking  
Integrated Resource &  
Deployment Management  
VMWare Cloud on AWS  
Integrated SG



## Internet of Things (IoT)

Rules Engine  
Device Analytics  
Device Gateway  
Device SDK  
Device Shadows  
Event Detection & Response  
Local Compute

Local Data Collection  
Management & Security  
Microcontroller Operating  
System  
Registry  
Visual Applications  
Development



## Machine Learning (ML)

ML Frameworks  
Deep Learning AMIs &  
Containers  
Hardware Acceleration  
ML at the Edge  
TensorFlow, PyTorch, MXNet  
Sagemaker  
Automatic Model Tuning  
Data Labeling  
Hosted Notebooks  
ML Marketplace  
Model Hosting  
Model Optimization  
Model Training  
Pre-Built Algorithms  
Topic Modeling  
Deep Learning Models  
Reinforcement Learning  
Spot Instances  
Batch Predictions  
Real-Time Predictions

AI Services  
Chatbots  
Entity Extraction  
Face Analytics  
Face Search Forecasting  
Image Labeling  
Natural Language Processing  
Personalization &  
Recommendation  
Sentiment Analysis  
Speech Translation  
Text & Data Extraction  
Text to Speech Translation  
Video & Image Analysis  
Content Moderation



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Small, empowered teams that own what they create



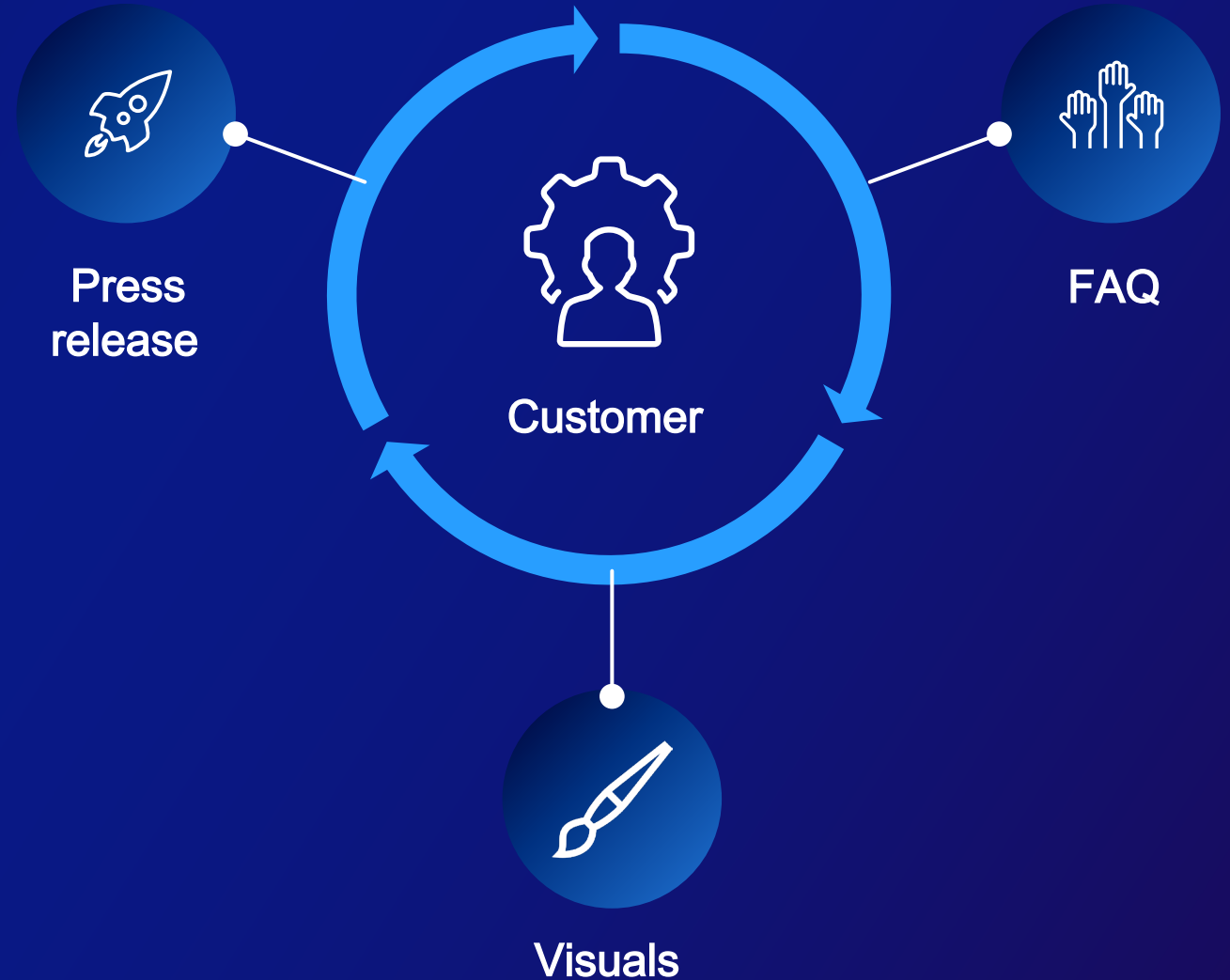
A **mechanism** is a complete process



# Working backwards: A mechanism for innovation

Use it to get clarity, not to document  
what you've already decided to do

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# 5 Customer Questions

Who is the customer, and what insights do we have about them?

What is the prevailing customer problem or opportunity?

What is the solution and the most important customer benefit?

How do we describe the solution and experience to customers?

How do we test the solution with customers and measure success?



# Working Backwards artifacts



## Press Release

### AWS Announces General Availability of Amazon Location Service

*New service makes it easier for customers to add location functionality to their applications without compromising on privacy or security at as low as 1/10<sup>th</sup> the cost of the most common location-based service (LBS) provider*

SEATTLE--(BUSINESS WIRE)--Jun. 1, 2021-- Today, Amazon Web Services, Inc. (AWS), an [Amazon.com](https://www.amazon.com) company (NASDAQ: AMZN), announced the general availability of Amazon Location Service, a new service that makes it easier and more cost-effective for customers to add location functionality to their applications without compromising on user privacy or data security. With Amazon Location Service, customers can embed location functionality in their applications using data from location-based service (LBS) providers Esri and HERE Technologies to provide maps, points of interest, geocoding (converting location information to a point on a map), route planning, geofencing (creating virtual perimeters), or asset tracking. Amazon Location Service is as low as 1/10<sup>th</sup> the cost of the most common LBS providers, and customers pay only for the number of user requests, assets tracked, or devices managed. To get started, visit: <https://aws.amazon.com/location/>

Location data is vital for companies of all sizes and across every industry to support a range of use cases (e.g. asset tracking, route planning, and location-based marketing experiences) that rely on the explosion of connected devices in the world today. However, due to privacy and security compromises, cost-prohibitive pricing, and a difficult integration process, many companies face significant barriers when integrating location functionality into their applications. For example, some LBS providers impose licensing terms that give the LBS provider the rights to access, use, and commercialize a customer's location data (e.g. the position of users, facilities, or vehicles). Additionally, the pricing from LBS providers often makes it too expensive for customers to use location functionality in all of the ways a customer may want to use it. Even when the licensing terms and price are less prohibitive, onboarding an LBS provider requires customers to invest significant resources integrating data and building supporting tools before using the provider's location data in an application. For more advanced use cases like asset tracking or geofencing, a customer may need to build the solution from scratch, which can add months of development time. Furthermore, some customers may want to use an



## FAQs

### FAQ – Customer

#### 1. What is Amazon Location Service?

Amazon Location Service is a fully managed service that 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, user privacy, data quality, or cost.

#### 2. Why should I use location data in my applications?

Location functionality is increasingly used in business and consumer applications. You can use location services to solve problems such as displaying data on top of a map to provide geographic context, determining travel time and distance, looking up points of interest, and constraining actions to specific locations. The use of location functionality enables capabilities such as map-based visualizations, asset tracking, location-based customer engagement, and delivery or ride-sharing applications. Visit the [Amazon Location Services Customers](#) page for real world examples.

#### 3. What can I do with Amazon Location Service?

With Amazon Location Service, you have access to cost-effective location-based services (LBS) using high-quality data from global, trusted providers Esri and HERE, and you can easily integrate maps, points of interest, geocoding, routing, tracking, and geofencing in to your applications. Amazon Location Service enables you to bring sophisticated location-enabled applications to production quickly, without the high cost of custom development. Its affordable data, including tracking and geofencing capabilities, and built-in metrics for health monitoring reduce your costs and development time. Additionally, Amazon Location Service integrates with several AWS services to further speed application development. For more information on AWS integrations see Q: How does Amazon Location Service integrate with other AWS services? Also, visit the features page to learn more about each of the [Amazon Location Service Features](#).

#### 4. Where is Amazon Location Service available?

Amazon Location Service is available today in US East (N. Virginia), US East (Ohio), US West (Oregon), Europe (Frankfurt), Europe (Ireland), Europe (Stockholm), Asia Pacific (Singapore), Asia Pacific (Sydney) Region, and Asia Pacific (Tokyo) regions. Amazon Location Service provides global location data from multiple data providers. Please visit our [data providers' page](#) to learn more.



## Visuals





knowing that Amazon will send them the right sized diaper at the right time.

*Customer Benefit?*

~~Babies need an average of about 3,800 disposable diapers across seven sizes in three years, and remain in a size anywhere between a few weeks to several months. A baby might need just one box of size 1 diapers but need as many as eight boxes of size 4 diapers. To complicate matters, weight – and not age – is the best predictor of a baby's diaper size.~~

With Amazon's Subscribe & Save program, customers previously created diaper subscriptions in a specific size which was replenished until the customer decided it was time to move up a size. This meant that parents needed to anticipate the change in diaper size and either cancel their existing subscription to create a new one, or go to the Manage Your Subscriptions page to update the existing diaper subscription with the new size. This caused endless frustration for parents, added to the stress of having a new baby, and the experience ran counter to the concept of a subscription that should run smoothly with minimal touch points.

*Not a good name for this*

With the introduction of the new **auto-sizing feature**, customers who subscribe to diapers will be asked to provide their child's weight, in addition to the existing child info. They will then be able to set up a single subscription that will take them through the various sizes at the right time. Customers will be notified before the next box of diapers is due to ship that it has automatically sized up – if it's too soon, there will be a simple one-click process to keep the current size.

*World & customer really say this?*

"I love using Subscribe & Save. But for my older child, I have had to return boxes that were one size too small, which actually increased my work load," says Mara Steiner, who has used Subscribe & Save for her baby needs for several years. "As I expect my second child, I am very excited at the thought of having the right size diapers show up at my door each month. New parents have enough to do without having to keep calculating which size of diapers they should be buying for their baby."

~~"We want parents to always have the right sized diaper for their child at the right time,"~~ said Greg, director of Subscribe & Save. "This single subscription experience for diapers will ensure that customers can depend upon Subscribe & Save to do the work for them, and never have to worry about changing size as their children grow."

Amazon's Subscribe & Save ships thousands of items to their customers on a regular basis with additional discounts. With the diaper subscription service, the program has simplified the experience for new parents.

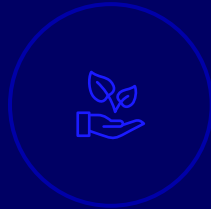
To learn more about Subscribe & Save's diaper subscriptions auto-sizing, go to [www.amazon.com/subscribe](http://www.amazon.com/subscribe)

*What about mobile?*

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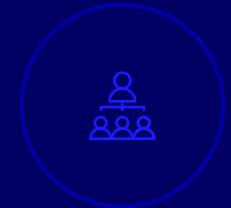
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Small, empowered teams that own what they create



# A shift to microservices



Decoupled  
architecture of  
single-purpose  
services



Business logic  
and data only  
accessible  
through  
hardened APIs



Increased  
speed, agility,  
and innovation

# Accelerate the pace of innovation

## Our technical architecture:

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Allows for instant  
experimentation

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Lowers the cost  
of failure

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Enables rapid scale  
and iteration

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Amazon hires **builders**  
and lets them build



# Two-pizza teams are fast and agile, fostering **ownership** and **autonomy**

Small, decentralized, nimble teams

Own and run what you build





# Single-threaded leaders



Logically grouped to maintain ownership

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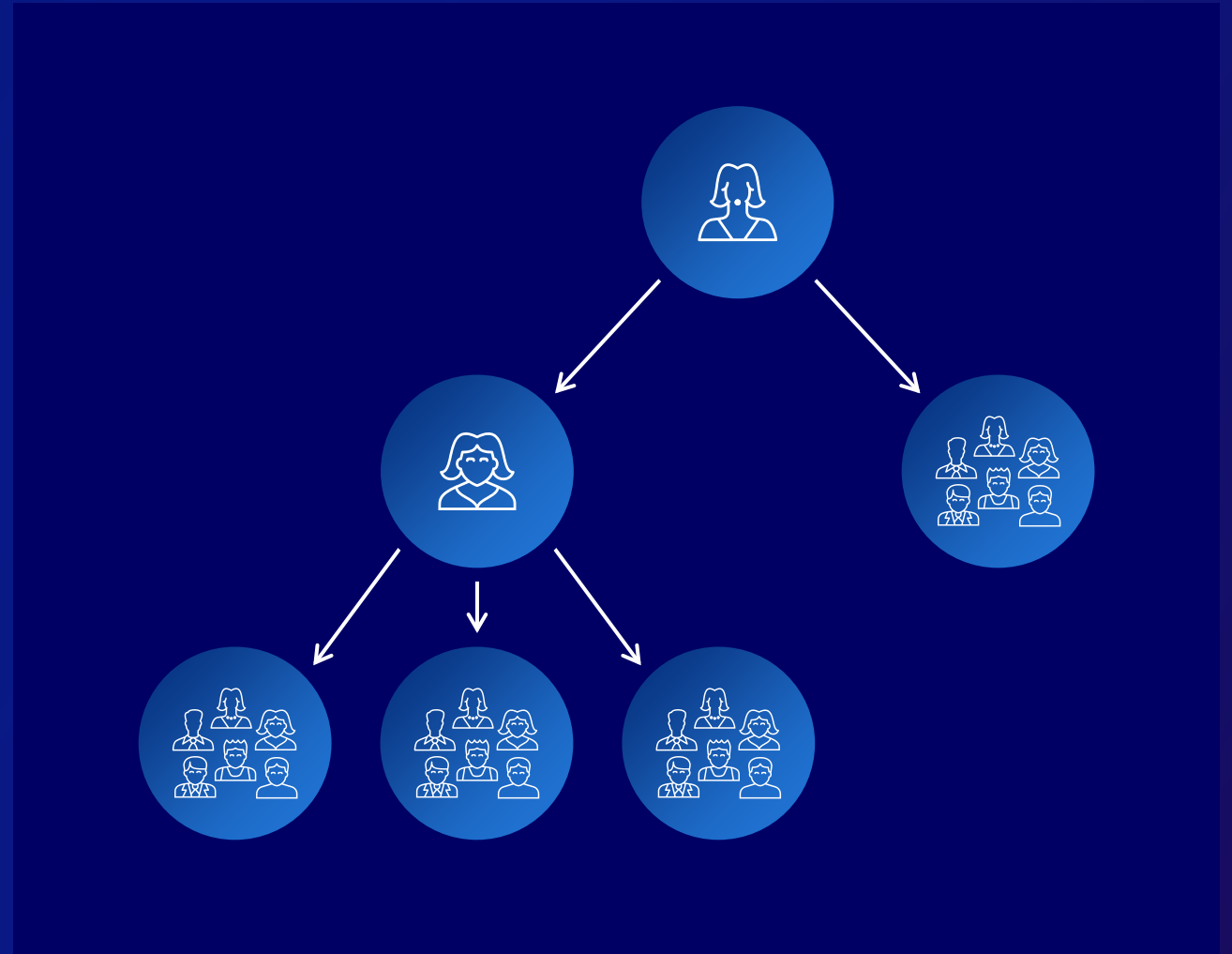


Keeps two-pizza teams focused on their customers

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Brings business-level accountability and helps with prioritization and resourcing





To our shareowners (2015)

This year, Amazon became the fastest company ever to reach \$100 billion annual sales. Also this year, Amazon Web Services is reaching \$10 billion in annual sales.

One area where I think we are especially distinctive is failure. I believe we are the best place in the world to fail (we have plenty of practice!), and failure and invention are inseparable twins. To invent you have to experiment, and if you know in advance that it's going to work, it's not an experiment. Most large organizations embrace the idea of invention, but are not willing to suffer the string of failed experiments necessary to get there. Outsized returns often come from betting against conventional wisdom, and conventional wisdom is usually right. Given a ten percent chance of a 100 times payoff, you should take that bet every time. But you're still going to be wrong nine times out of ten. We all know that if you swing for the fences, you're going to strike out a lot, but you're also going to hit some home runs. The difference between baseball and business, however, is that baseball has a truncated outcome distribution. When you swing, no matter how well you connect with the ball, the most runs you can get is four. In business, every once in a while, when you step up to the plate, you can score 1,000 runs. This long-tailed distribution of returns is why it's important to be bold. Big winners pay for so many experiments.



“...failure and invention are inseparable twins.

To invent you have to experiment, and if you know in advance that it's going to work, it's not an experiment.”

Jeff Bezos, Founder and CEO,  
Amazon.com, Inc.

2015 letter to shareholders

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# There are many ways to innovate on AWS

## Innovate

## Organize

## Transform

## Connect

- Working Backwards Engagement
- Learning from Amazon
- Innovation Pulse Check
- MLP Workshop (Scope, Prototype, Launch)

- ProServe DevOps
- Skills/Center of Excellence
- AWS Training & Certification
- Data-driven Everything (D2E)

- Innovation Strategy
- Product Operating Model
- Enterprise Visioning

- Enterprise Strategy
- EBC Engagements
- Summits, Executive Roundtables, Events





# Thank you!

Lionel Khoza

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