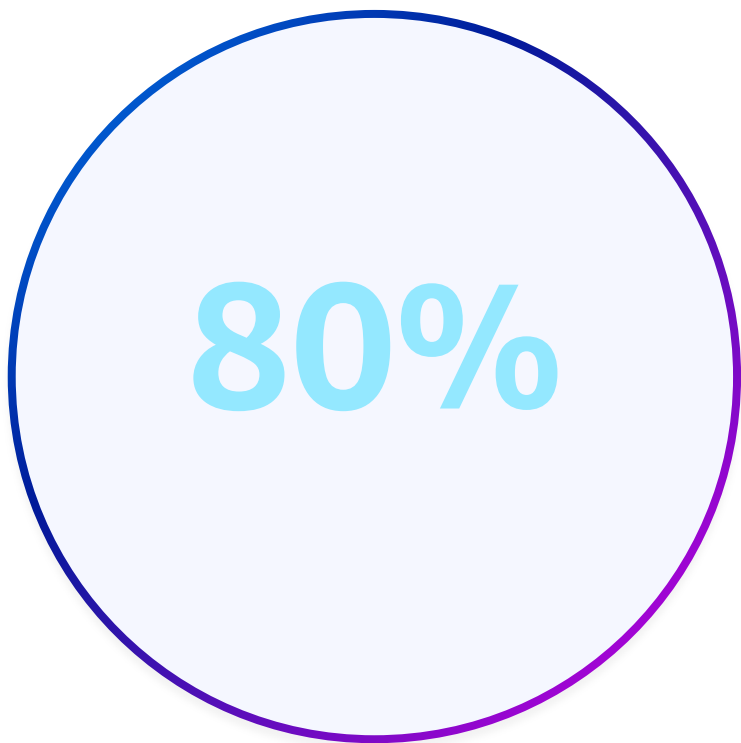# Powering Public Sector Innovation Using the AWS Cloud

Hiren Deliwala

Solutions Architecture Leader
AWS
hdaws@amazon.com

aws Learning Days
State, Local, and Education

80%

Time spent on the operations and maintenance of applications

20%

Time spent on innovation

Powering Public Sector Innovation Using the AWS Cloud
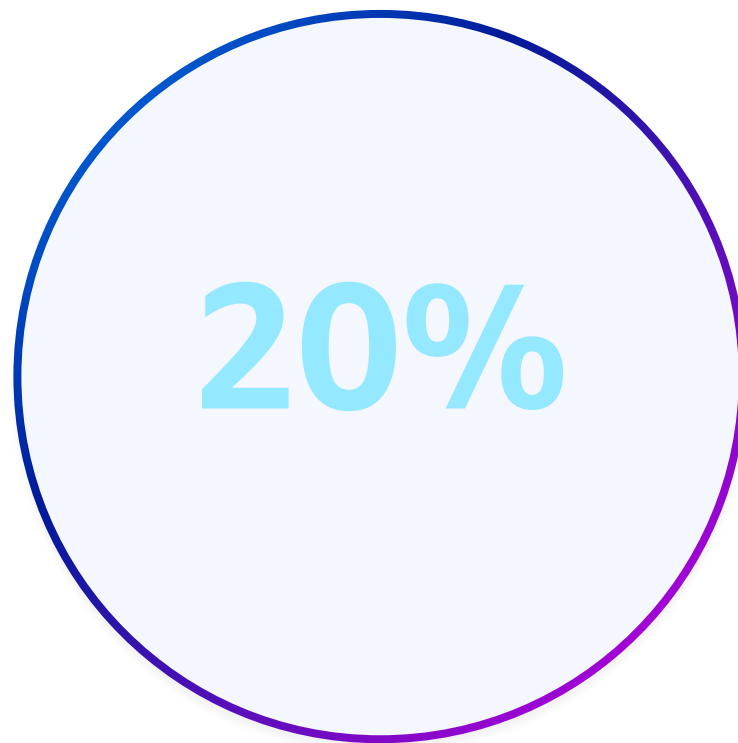
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Public sector work has never been more important

- Homelessness / Affordable Housing
- Equitable and Inclusive Programs and Services
- Increasing Crime Rates, Jail Populations, Recidivism
- Rising Healthcare costs, Access to Healthcare
- Cost of Education, Declining Enrollments, Student Debt
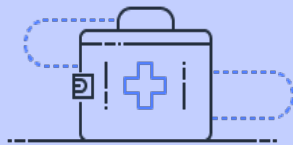
PUBLIC SECTOR INNOVATION CHALLENGES

GOVERNMENT

EDUCATION

NON-PROFIT

HEALTHCARE

- FREQUENT OPERATIONAL BUDGET REDUCTIONS

- GOVERNANCE / POLICY DEVELOPMENT

- AGING INFRASTRUCTURE ASSETS

- SILVER TSUNAMI / DECLINING SKILLS

- PERSISTENT CYBERSECURITY RISKS

Driving innovation in public sector in three ways

Improving Constituent/Student Experience	Reducing Risk	Increasing Organizational Efficiency
Modernizing Digital Services and Platforms	Enhancing Cybersecurity, Compliance Posture. Improving Resilience	Increasing Productivity, Reducing repetitive and menial tasks

Average realized benefits

20%
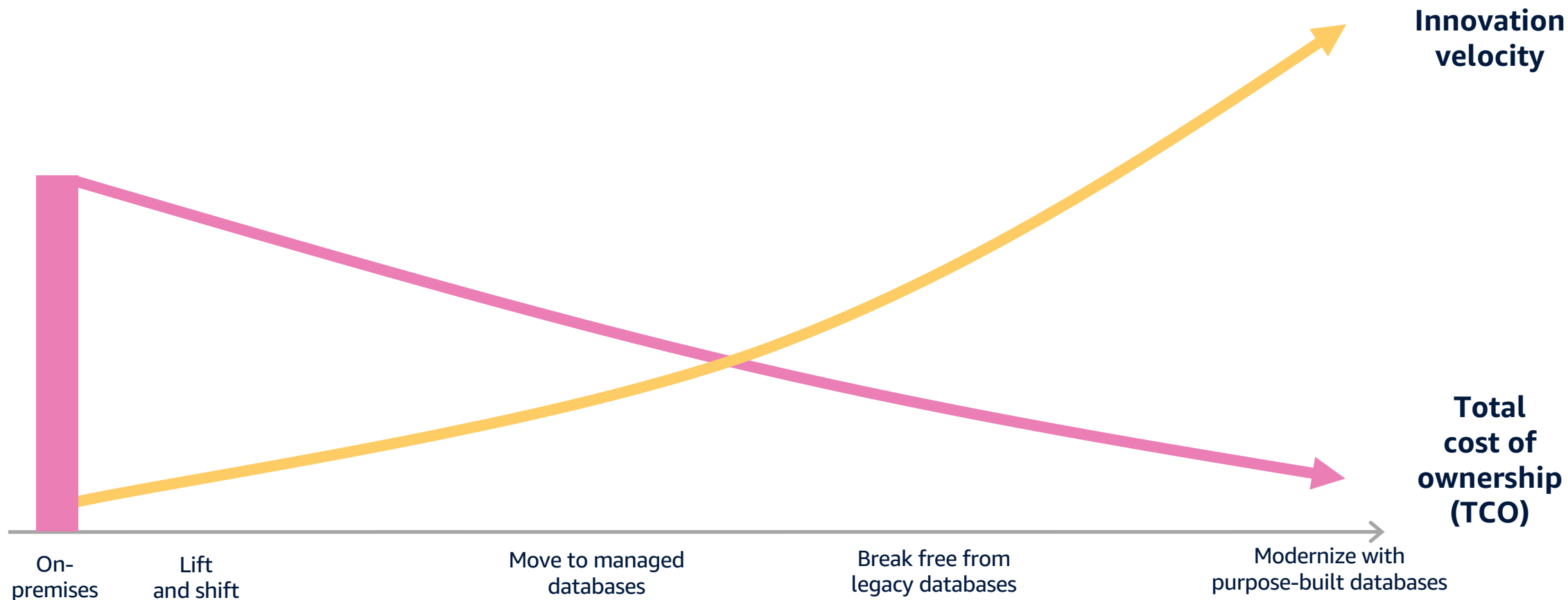**Infrastructure cost reduction** per year, over six years

29%
Staff productivity improvement

43%
Agility increase delivering new features

Source: The Hackett Group (2022), Supercharge Financial Performance with Amazon Web Services

Modernizing leads to maximum innovation velocity and optimal total cost of ownership

Innovation velocity

Total cost of ownership (TCO)

On-premises

Lift and shift

Move to managed databases

Break free from legacy databases

Modernize with purpose-built databases

Common challenges we hear

CUSTOMERS

AGENTS

SUPERVISORS

ADMINISTRATORS

How happy are you with your customer experience?

Amazon Connect

One application. One seamless experience.

TENS OF THOUSANDS OF CUSTOMERS

MORE THAN 10 MILLION CONTACT CENTER INTERACTIONS A DAY

USED BY +100,000 AMAZON CUSTOMER SERVICE ASSOCIATES

CUSTOMER
OMNICHANNEL CUSTOMER EXPERIENCE

High quality voice

Conversational IVR and chatbots

Chat, SMS, and messaging

In-app/web calling and video

Outbound campaigns

Voice authentication

Task management

AMAZON CONNECT

AI at the heart of every interaction

✓ Understand what the customer wants

✓ Analyze and authenticate customers' using their voice

From 15 minutes to 30 seconds

TEXAS
The University of Texas at Austin

"Student wait time also dropped to less than 30 seconds to talk to an agent at similar staffing levels, compared to average wait times of greater than 15 minutes before the implementation."

—Antonino Cummings
Principal Project Manager, UT Austin

CA DMV implements a faster, customer-centric Contact Center

"We understand our customers' time is valuable, and we want to shorten their interaction with us."
Sonia Huestis, Deputy Director, DMV's Customer Service Division

Challenge:

- Increased call volumes due to REAL ID requirements

- Long wait times (up to 2 hours) during COVID-19 office closures

- Agents' concerns about remote work tools/systems

Solution:

- Implemented Amazon Connect cloud contact center

- Deployed chatbot "Miles" using natural language processing

- Whisper feature briefs agents on call topic before connecting

- Real-time chat and data analytics to discern caller intent

55% of calls answered within 30 mins   **50%** of callers use self-service chatbot

Non-emergency call diversion Chatbot

Amazon Connect

Jefferson County 911

- ○ **9-1-1 staffing shortages**
  - ▪ Can range from 10% to over 30%
  - ▪ Non-emergency calls placed to 9-1-1 create extended wait times for actual emergencies

- ○ **Non-emergency lines** (10 digit lines)
  - ▪ 2:1 ratio of 9-1-1 to non emergency calls)
  - ▪ Some centers have wait times over 10 minutes
  - ▪ Some centers not answering 10 digit lines at all

If needed, Non-emergency calls (10 digit lines) can still be automatically routed to 9-1-1 Automate the answering of non-emergency calls placed to 10 digit lines

Q&A Chatbot

Text Generation

Audio Analysis

Amazon Connect has tens of thousands of customers supporting more than 10 million contact center interactions a day

Cloud Enables Organizations to…

Reduce Risk

REPORTED RANSOMEWARE INCIDENTS NATIONWIDE IN 2023

State/Local Government Agency — **95**

Post Secondary — **72**

K12 School Districts — **108**

![aws]

SURVEY OF IT LEADERS FOLLOWING RANSOMWARE ATTACKS

97% of the attacks attempted to infect backup repositories

53% had their data encrypted during the attack

34% of organizations who paid the ransom still could not recover their data

Cyberattack forces Georgia county to sever connection to state voter registration system

Illinois county government, local college affected by ransomware attacks

An Illinois county on the border with Iowa is the latest local government in the U.S. to fall victim to a ransomware attack.

Service Delivery Outages and Cyber Events are Now Front Page News

Wichita, Kansas, shuts down network after ransomware attack

Officials in Wichita, Kansas, shut down some network services to contain a ransomware attack over the weekend.

BY SOPHIA FOX-SOWELL • MAY 6, 2024
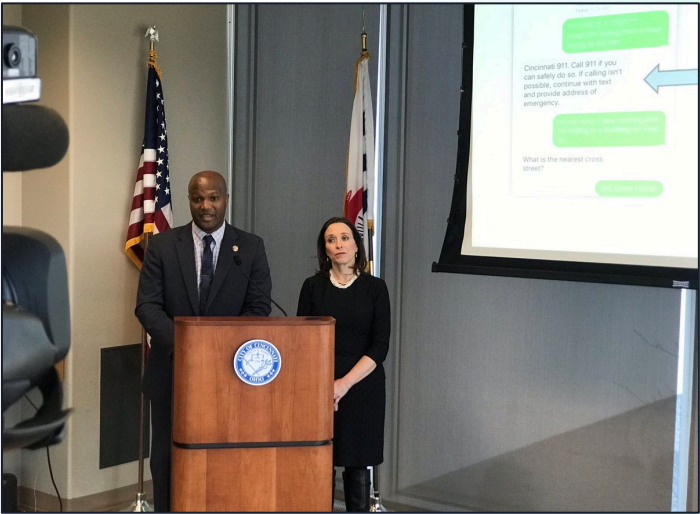
Categories of failure

Code deployments and configuration
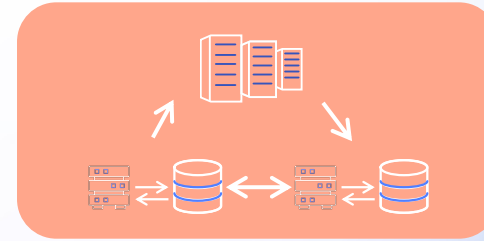e.g. bad deployment, cred expiration

Core infrastructure
e.g. datacenter failure, host failure

Data and state
e.g. data corruption

Dependencies
e.g. infrastructure, external APIs

Highly unlikely scenarios
e.g. All of internet failure, environmental disasters,

More data is being generated than ever before

87%
of enterprise data will be stored in cloud environment by 2025

3x
Growth of enterprise data stored by organizations by 2025

Resilience

Ability of a workload to recover from infrastructure or service disruptions

The mental model

Resistance to common failures through design and operational mechanisms at a primary site

Core services, design goals to meet availability goals

Disaster recovery

Returning to normal operation within specific targets at a recovery site for failures that cannot be handled by HA

Backup and recovery, data bunkering, managed recovery objectives

Continuous improvement

CI/CD, observability, moving beyond pre-deployment testing towards chaos engineering patterns

aws ELASTIC DISASTER RECOVERY SERVICE

EDR Orchestration Recovery

Flexible

- Any source
- Wide range of OS
- Cloud/on-premises

Reliable

- Non-disruptive
- Recover in minutes
- Business Continuity

Highly Automated

- Easy to use
- No impact testing
- Lower TCO

01. Fast recovery ✔

02. Flexible, hourly billing ✔

03. Simple and reliable ✔

04. Minimizes complexity ✔

05. Easy failover ✔

06. Orchestrated failback ✔

A Highly Performant, Efficient DR Solution for Tyler

"We are confident in our recoverability. Using AWS Elastic Disaster Recovery helps us to sleep better at night."

Christopher Armstrong,
Director of Information Security,
Tyler Technology

- Provider of integrated software and technology services to the public sector, Tyler Technologies (Tyler) required a disaster recovery (DR) solution that could quickly restore large, complex systems involving thousands of servers.

Solution:

- Implemented AWS Elastic Disaster Recovery with help from AWS Professional Services

- 12x Faster Recovery Time

- Achieved 20 minute recovery time vs 4 hour SLA

20 minute recovery time   **12x** faster recovery compared to legacy DR

Mississippi Department of Employment Security

"The risk factor is considerably less because all the data is encrypted in the cloud and no personally identifiable information is stored on premises."

- Mohammed Jalaluddin, Chief Technology Officer, Mississippi Department of Employment Security

Migrated multistate unemployment insurance system to AWS in less than 8 hours, cutting costs by 72% and scaling up 4,000%

Implemented AWS Elastic Disaster Recovery as security solution to minimize downtime and data loss in case of a ransomware attack

Gained reliable, non-disruptive testing and real-time visibility into health of servers

Enabled fast and reliable recovery of physical, virtual, and cloud-based servers in case of an outage

Cloud Enables Organizations to...

Increase Organizational Efficiency

Using AI to improve case management

- The Los Angeles County Public Defender's office implemented an AI-powered client case management system.

- The AI tool helped reduce manual data entry from documents 85%.

- Eliminated the need for the public defender staff to manually scan in thousands of paper files received daily.

- 160 million records stored in 23 different legacy systems were consolidated in one cloud based application.

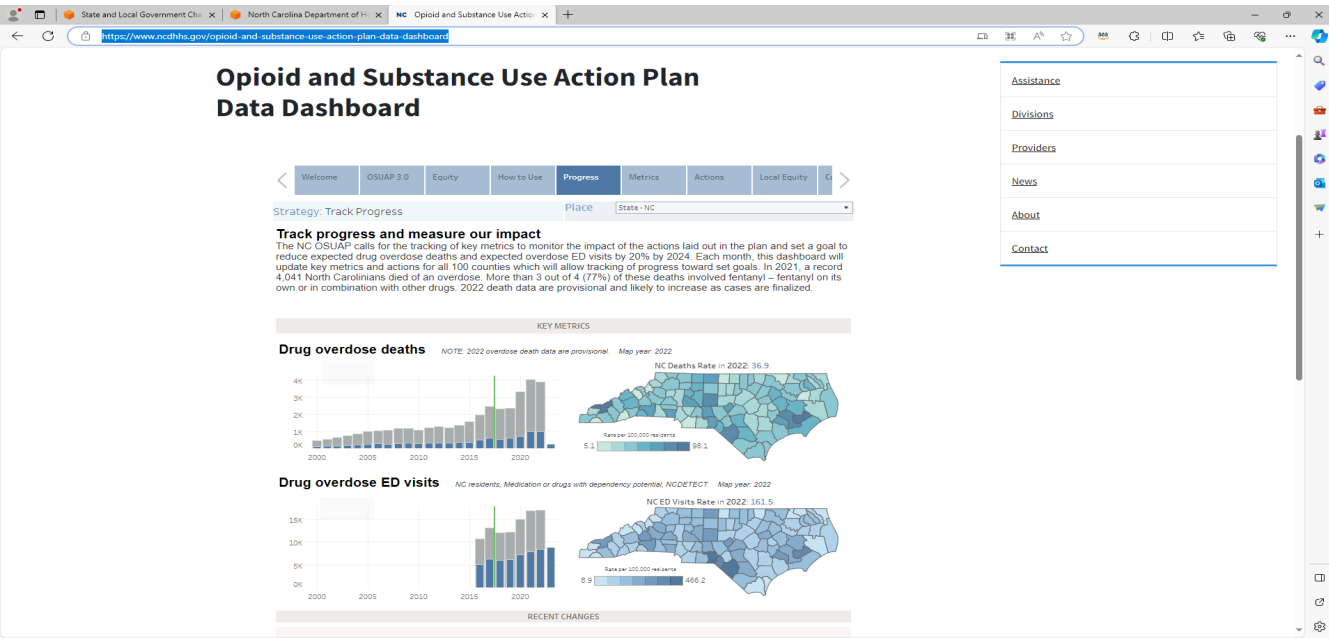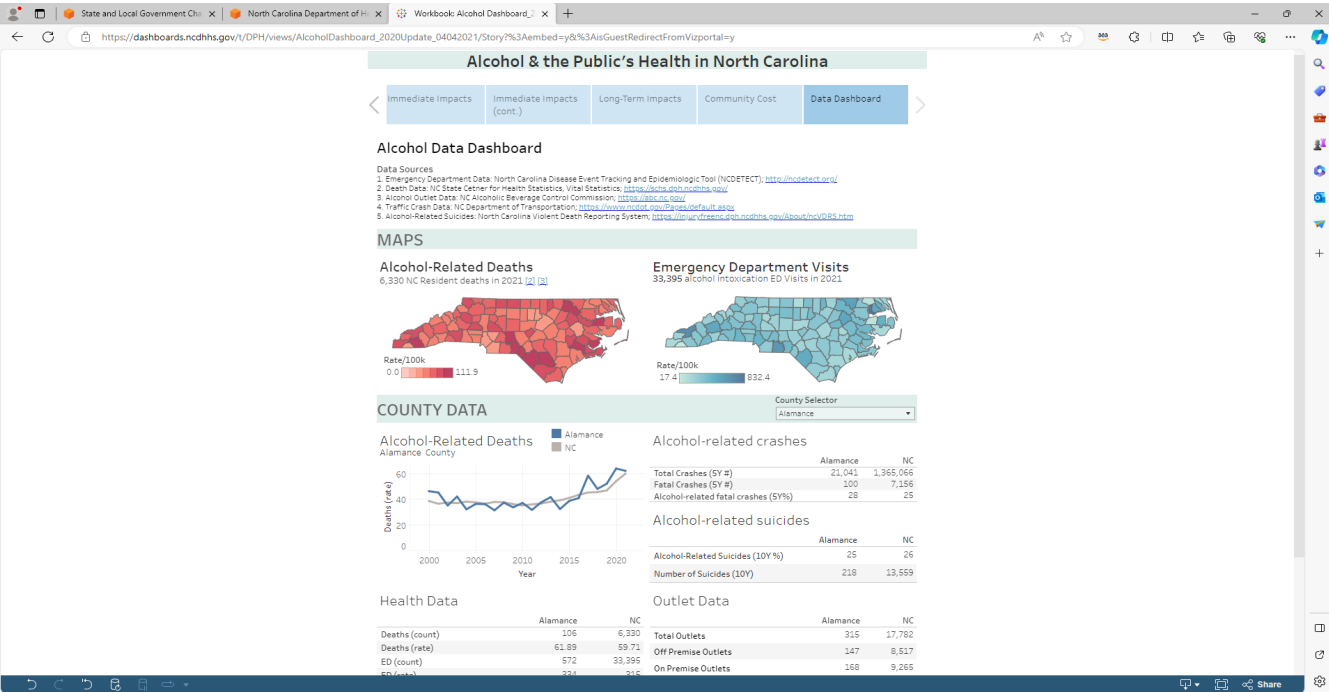Text generation

Text extraction

Text summarization

NCDHHS manages health and human service delivery for all state citizens

Data was spread out among numerous systems across the state. ETL processes were manual and data was not always up to date

During COVID stood up a new Business Intelligence Data Platform in 48 hours, enabled real-time data sharing, analytics, and reporting
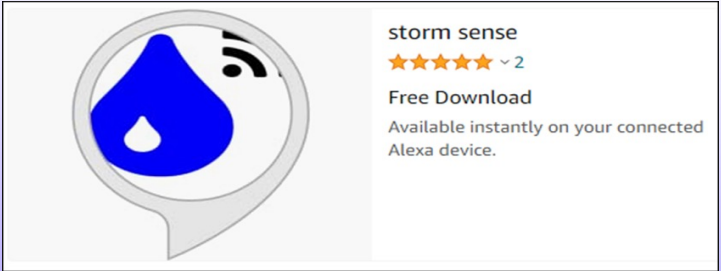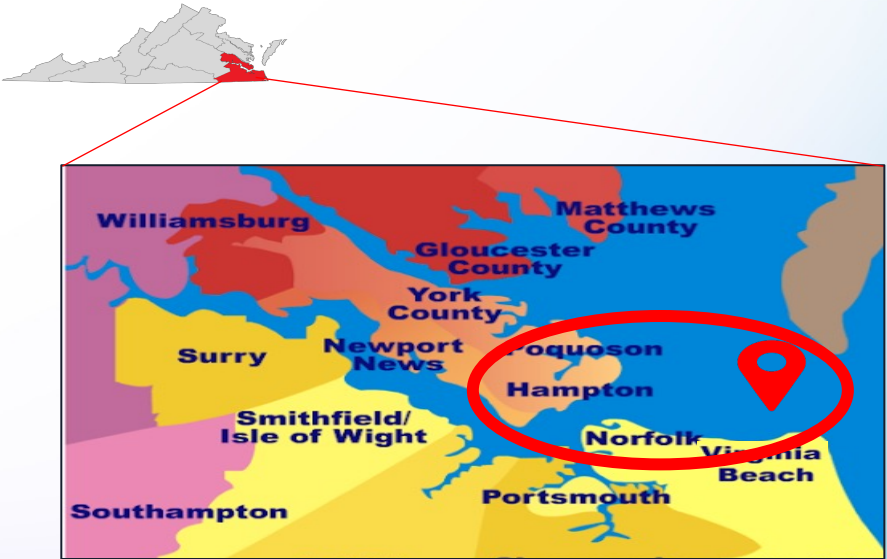
Using AI to alert citizens

Coastal communities are impacted by changing weather patterns, flooding from storm surges, rain, wind, and rising tides

Virginia Beach
StormSense

Stormsense uses **cloud, IoT and AI to** streamline and combines **data from multiple agencies** to **proactively** address impending flooding issues.

Uses autonomous water level sensors and **Alexa** to provide water levels in real-time to the community.

Text generation

storm sense
★★★★★ ⌄ 2
Free Download
Available instantly on your connected Alexa device.

Cloud Enables Predictable Infrastructure Utilization

Plan

Plan & Evaluate

TCO Calculator
Migration Evaluator
AWS Pricing Calculator
AWS Budgets

Run

Manage & Control

AWS IAM
Billing Console
AWS Purchase Order
Management
AWS Budget Actions

See

Organize & Report

AWS Cost Explorer
AWS Cost & Usage Reports
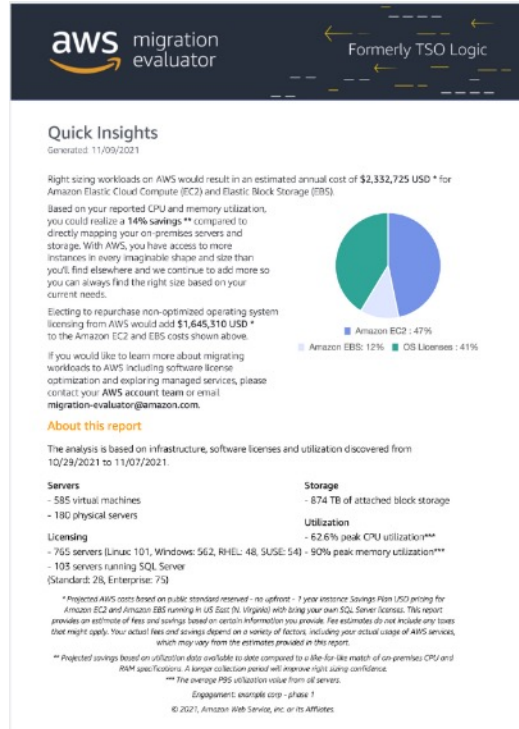AWS Cost Categories
AWS Cost Anomaly Detection

Save

Optimize & Save

Savings Plans
Reserved Instances
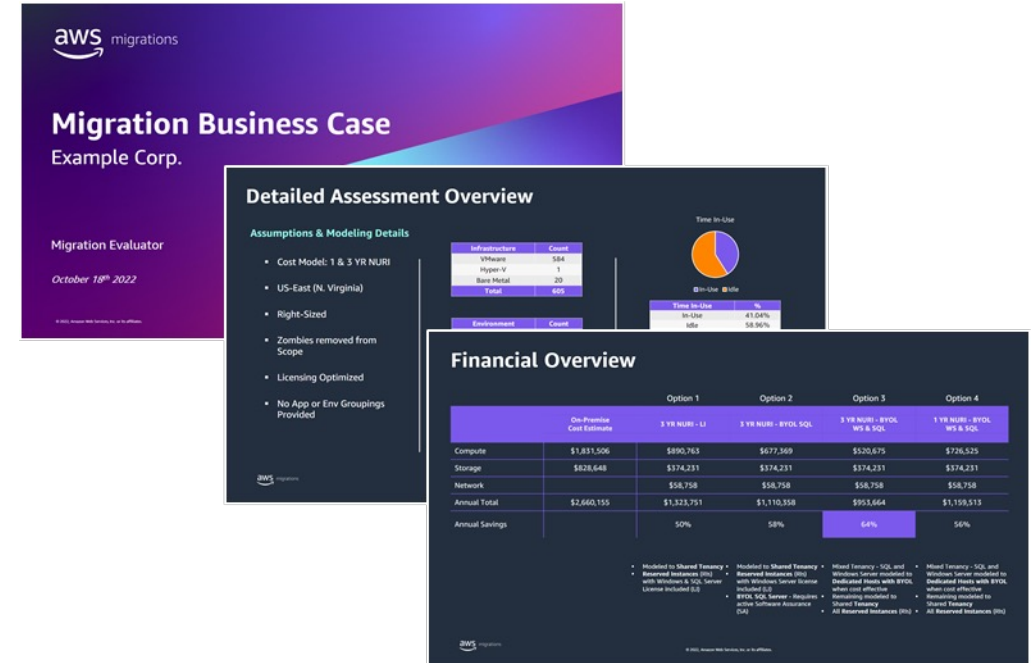Recommendations

Business case with Migration Evaluator

Quick Insights report

Directional business case

Automated PDF & Excel export
Available within **48 hours** of
data collection

Available **5 days** after data
collection ends (upon request)

Determine the right Migration Pattern

Current IT snapshot

Asset inventories

App configuration data

Performance Information

CMDB

SLA/OLA

Architecture

Institutional knowledge

Discover & organize data

Applications

Infrastructure

Performance

7Rs

- Refactor
- Replatform
- Repurchase
- Rehost
- Relocate
- Retain
- Retire

Level of effort
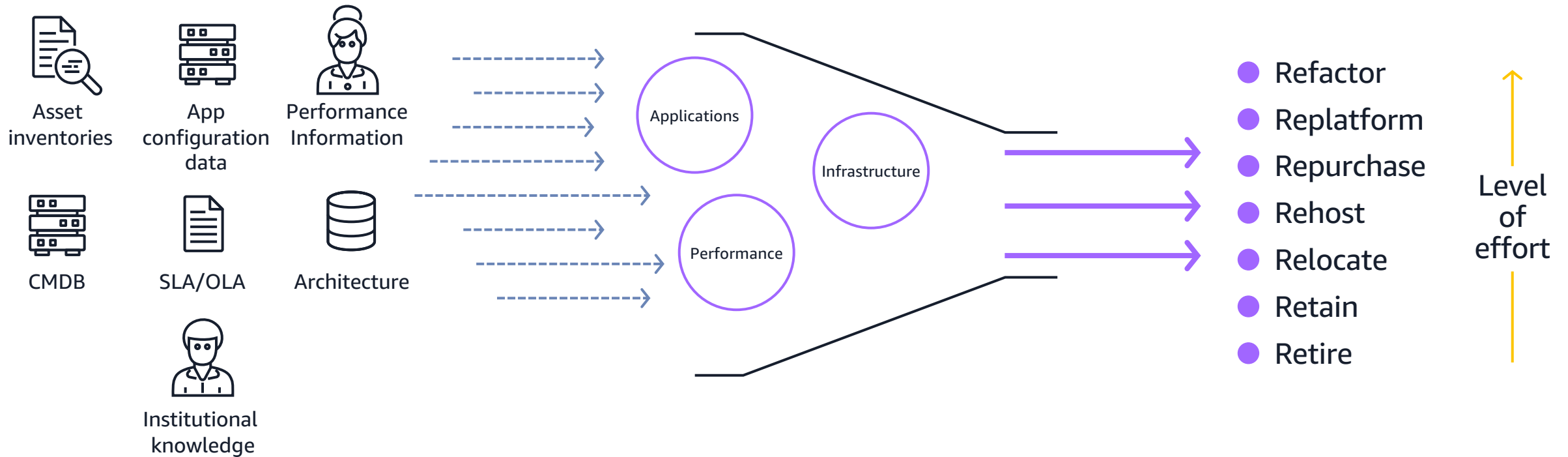
Strategy decision criteria should be based on both business and technical needs

Strategies for each workload (7Rs)

Reduce the size of your estate*

- Retire
- Repurchase (SaaS)

Move to AWS

- Rehost Lift and shift
- Relocate

Modernize on AWS

- Refactor
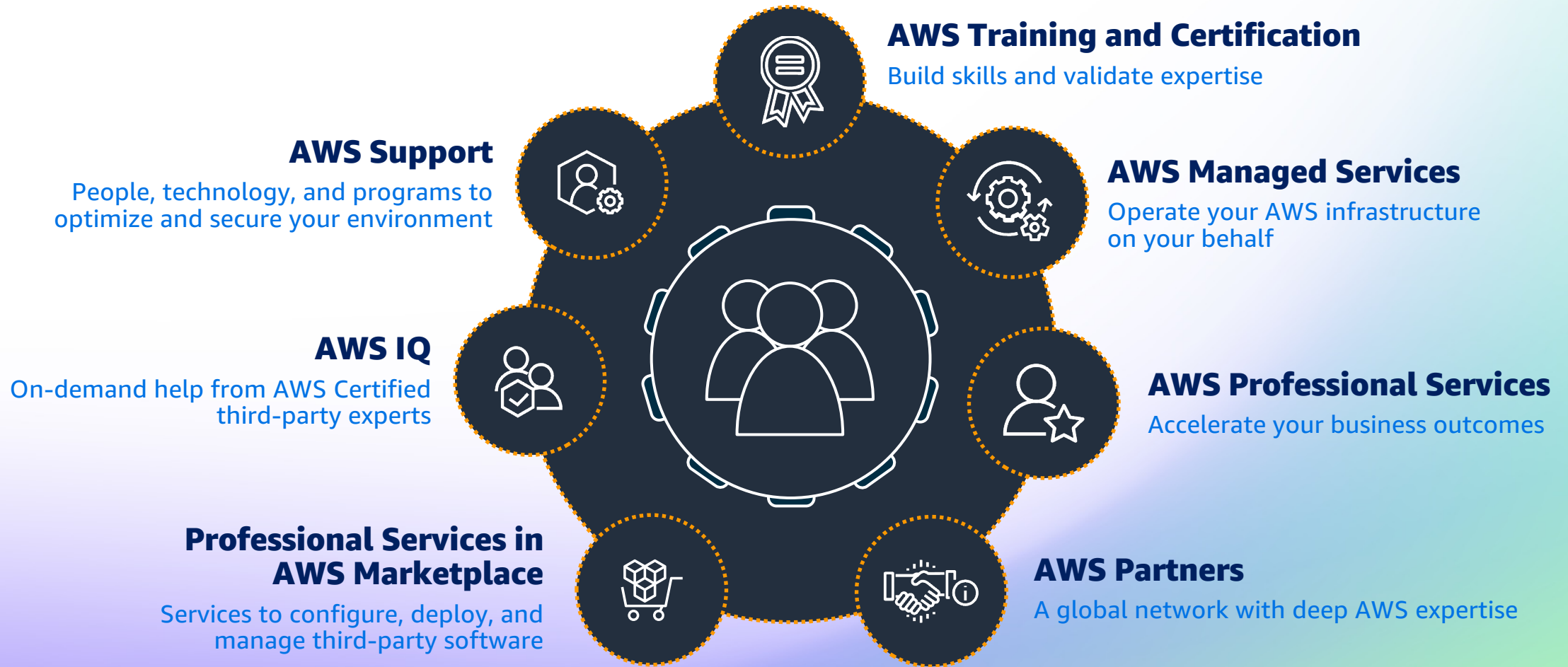- Re-platform

AWS customer skills enablement

Migrate and build faster in the cloud

AWS Training and Certification
Build skills and validate expertise

AWS Managed Services
Operate your AWS infrastructure on your behalf

AWS Support
People, technology, and programs to optimize and secure your environment

AWS Professional Services
Accelerate your business outcomes

AWS IQ
On-demand help from AWS Certified third-party experts

Professional Services in AWS Marketplace
Services to configure, deploy, and manage third-party software

AWS Partners
A global network with deep AWS expertise

![aws]

**Please complete the survey
for this session**

Thank you!

Hiren Deliwala

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Executive track

Powering public
sector
innovation using
the AWS Cloud

aws **Learning Days**
State, Local, and Education