

# **Generative AI/ML and AI governance** for the public sector

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# Al/Machine learning (ML) is at an inflection point Key drivers: Compute capacity increase | Data growth | Model sophistication



# AI, ML, deep learning?



### Artificial Intelligence (AI)

Any technique that allows computers to mimic human intelligence using logic, if-then statements, and machine learning



Machine learning (ML) A subset of AI that uses machines to search for patterns in data to build logic models automatically



### Deep learning (DL)

A subset of ML composed of deeply multi-layered neural networks that perform tasks like speech and image recognition



### Generative Al

Powered by large models that are pretrained on vast corpuses of data and commonly referred to as foundation models (FMs)



# Challenges we are hearing from public sector customers

#### **Demand for government services is rising** while resources and capacity to deliver them aren't keeping pace



Citizens increasingly expect the government to provide modern digital experiences for conducting online transactions

Aging infrastructure for data capture, storage, and management creates friction for leveraging data for analytics and machine learning

**Complex security, privacy, and compliance requirements** create barriers to change and block adoption of many SaaS solutions



**Risk averse culture** and institutional inertia slow innovation



# Machine learning is going mainstream in public sector







Grants and benefits administration, workforce development, corporate relations, land clearance/redevelopment

# **Top AI/ML use cases for state and local government**



SampleOutput.pdf (1 page)

#### Employment Application

This is a sample employment application form. and answer all questions.

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Jane Doe				
555-0100				
123 Any Street, Any Town, USA				
Same as home address				
Any Company (2018-Current)				
Any Role				
Previous Company # 1 (2014-20				
Previous Role # 1				
Previous Company #2 (2010-201				
Previous Role # 2				



### Speech and language

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#### **Intelligent document** processing

#### Computer vision



### **Predictions** and insights

# Top AI/ML use cases for state and local government







### Speech and language

### Intelligent document processing

#### Computer vision





### Predictions and insights

# **Generative AI-Enabled Citizen Engagement**

### **Engage citizens and drive improvements** in customer satisfaction

- Improve contact center agent effectiveness with real-time translation and decision support using Amazon Connect and Contact Center Intelligence
- Analyze call and text interactions with citizens to spot issues and trends and drive improvement
- Improve self service





# Using Al to improve agent efficiency

"During peak hours, previously you're 45-50 minutes on hold, and now that's has been reduced to about three and a half minutes. One of the other benefits we've gotten from Amazon Connect is sentiment analysis. On a call, we get real-time feedback on whether or not the customer was happy, frustrated, or angry..."

—Benny Chacko, Deputy General – LA County Internal Services Department





# Top generative AI use cases for state and local government



SampleOutput.pdf (1 page) ~

#### Employment Application

This is a sample employment application form. and answer all questions.

Personal Information				
Full Name:	Jane Doe			
Phone Number:	555-0100			
Home Address:	123 Any Street, Any Town, USA			
Mailing Address:	Same as home address			
Work History				
Current Company:	Any Company (2018-Current)			
	Any Role			
Company#1:	Previous Company # 1 (2014-20)			
	Previous Role # 1			
Company#2:	Previous Company #2 (2010-201			
	Previous Role # 2			



### Speech and language

#### Intelligent document processing

#### Computer vision





### Predictions and insights

# Extract insights from unstructured content

Extract insights from unstructured documents and forms, like images, PDFs, and audio

- Analyze text with natural language processing (NLP) to identify topics, extract entities, understand sentiment, and classify documents with Amazon Textract, Amazon Rekognition, and Amazon Comprehend
- Translate content at scale with Amazon Translate





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# King County Assessor's Office



### **CHALLENGE**

Reduce data entry, eliminate data errors, and improve data time lines.

#### SOLUTION

Intelligent documents processing for documents and electronic files, streamlining and unlock data and information from paper documents and electronic files

#### RESULT

King County employees will focus on higher value, more satisfying work, and ultimately help the county realize its vision for connected communities, connected data, and connected government."





# THE ATIVE ALAWS VENDE FOR THE PUBLIC ECTOR

Broadest and most complete set of machine learning capabilities

	Vision	Chatbots	Business tools	Search
AI SERVICES	Rekognition	Lex	Personalize Forecast Fraud Detector Lookout for Metrics	Kendra
	Speech	Text		Code + DevOps
	Polly	Comprehend	Contact centers	CodeGuru
	Transcribe	Translate Textract	Contact Lens Connect Voice ID	DevOps Guru





#### Healthcare

HealthLake Comprehend Medical Transcribe Medical

#### Industrial

Panorama Appliance and SDK, Monitron, Lookout for Equipment, Lookout for Vision

# **Amazon Generative Al**







# Question: What is generative artificial intelligence (AI)?

- Creates new content and ideas, including conversations, stories, images, videos, and music
- Powered by large models that are pretrained on vast corpuses of data and commonly referred to as foundation models (FMs)











## **Common use cases**







#### Search



#### Video generation

# Generative AI public sector application examples



### **Constituent Communications**

Citizen engagement and feedback, transparency



### **Public Health**

Personalized care, population health assessments



### **Public Safety**

Public safety and crime prevention, Emergency response and disaster management



### Transportation

Trafic optimization, autonomous vehicle control, personalized transportation experiences



### Finance

Budget Optimization, fraud detection, risk assessment and mitigation



**Constituent Services** 

Urban planning, Personalized urban services



#### **Energy and utilities** Energy management, Waste management, Smart grid

Energy management, Waste mar optimization



### **Research and Engagement**

Environmental monitoring



#### **CeS** ban services

GENERATIVE AI/ML AND AI GOVERNANCE FOR THE PUBLIC SECTOR

# Instead of sending your data to the model, bring the model to your data.



# Generative Al stack

#### **APPLICATIONS THAT LEVERAGE FMs**

Amazon Q

Amazon Q in Amazon QuickSight

#### TOOLS TO BUILD WITH FMS AND LLMS

Amazon Bedrock Guardrails Agents Customization capabilities

**INFRASTRUCTURE FOR FM TRAINING & INFERENCE** 

	GPUs	t?	Trainium	¢	Inferentia
Ô	UltraClus	ters	🕮 EFA	Ó	EC2 Capac

aws

Amazon Q in Amazon Connect



Amazon CodeWhisperer



SageMaker

ity Blocks

4 Nitro

Neuron

### Amazon generative AI portfolio – Your choice Choice of many foundation models





GENERATIVE AI/ML AND AI GOVERNANCE FOR THE PUBLIC SECTOR

# Demos



# Visual authoring in QuickSight

Use everyday language to generate and fine-tune visuals in seconds





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industry

# Amazon Bedrock keeps data secure and private



None of the customer's data is used to train the underlying model

All data is encrypted in transit and at rest

Data used to customize models remains within your VPC

Support for standards, including GDPR and HIPAA





# **Guardrails for Amazon Bedrock**

Safeguard your generative AI applications with your responsible AI policies

AVAILABLE IN PREVIEW

Easily configure harmful content filtering based on your responsible AI policies

Apply Guardrails to any FM or agent

Redact PII information in FM responses (coming soon)



# **Pillars of responsible AI**

#### Value alignment

Systems should be designed and used in ways that align with the organization mission, social norms, and legal regulations





#### Inclusion

Inclusion of diverse and unique skills, experiences, perspectives, and cultural backgrounds



#### **Training and education** Appropriate knowledge sharing and education to understand purpose, use, and impact

#### **Accountability**



Structured, maintaining human involvement and responsibility for design, development, decision processes, and outcomes

Data privacy and protection Protects the quality and integrity of data used as well as its relevance, access, and processing

#### Fairness

Systems must be designed to minimize bias and promote inclusive representation

#### **Transparency and explainability** Understanding how data is used and how decisions and outcomes are made understandable to a human









- How can we support you in ensuring accuracy and authority of model outputs?
- How can we use "guardrails" to minimize inappropriate content?
- How can we maximize the public investment and minimize cost?
- What are your latency requirements for specific use cases?
- What are the potential regulatory, data privacy, and security considerations that may dictate model architecture.
- How can we ensure proprietary, copyrighted, and IP concerns are addressed?





# Thank you!

### Sergio Ortega sergioai@amazon.com

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Step 1: Select <Your Track Name> Step 2: Select <Your Session Title>

