AWS State, Local, and Education Learning Days

Washington D.C

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aws Learning Days
State, Local, and Education

Practical AI for Public Sector

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AI/Machine learning (ML) is at an inflection point

Key drivers: Compute capacity increase | Data growth | Model sophistication

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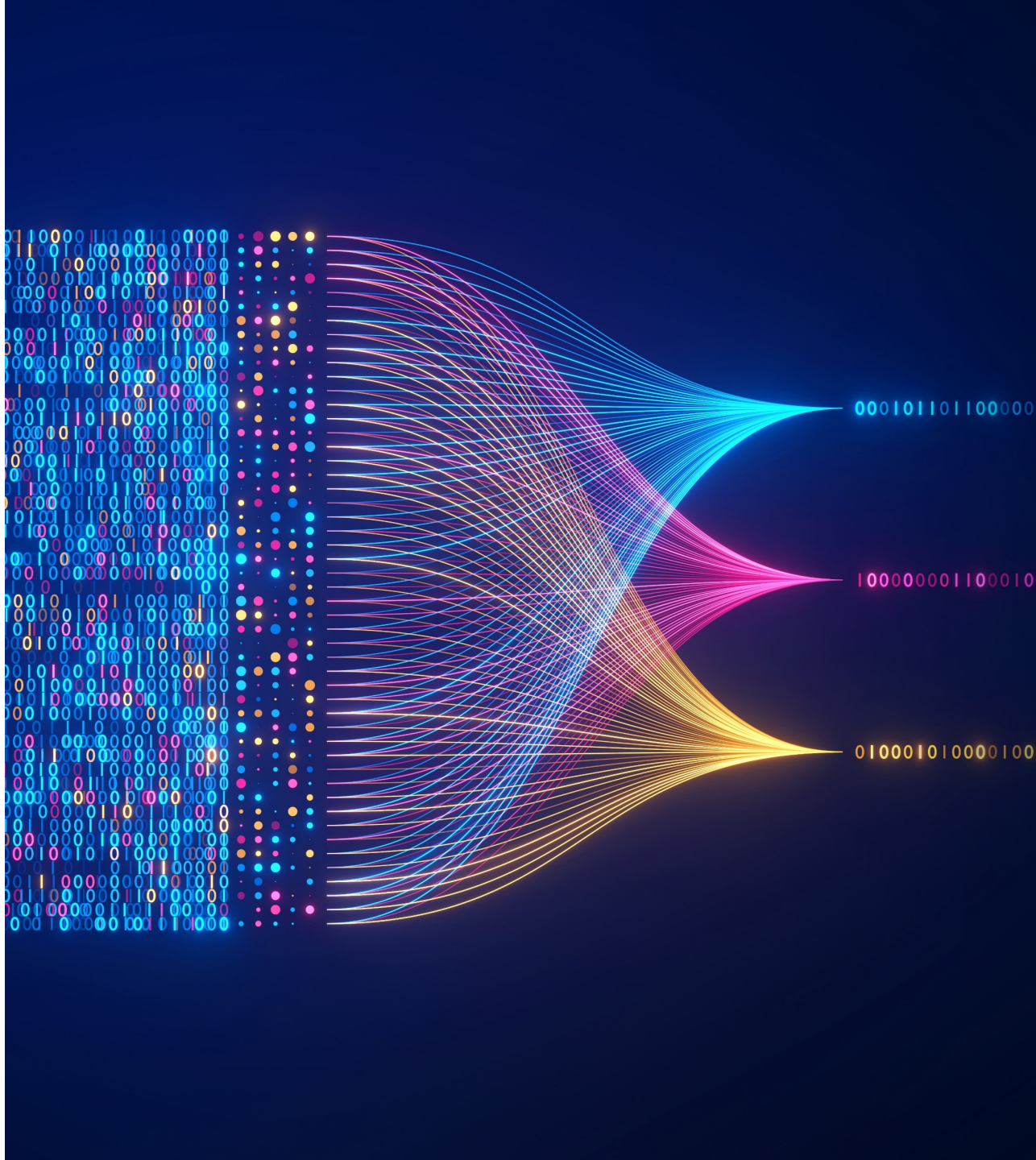
Generative AI is powered by foundation models

Pretrained on vast amounts of unstructured data

Contain large number of parameters that make them capable of learning complex concepts

Can be applied in a wide range of contexts

Customize FMs using your data for domain specific tasks



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Generative AI
Application

Generative AI Application
Data Foundation
STORAGE
GOVERNANCE & COMPLIANCE
DATABASES, ANALYTICS, & DATA LAKES
DATA INTEGRATION

Your data is the **differentiator**

Generic
generative AI

Generative AI that
knows your business
and your customers

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What could go wrong?

Inaccuracies	Bias	Copyright and IP	Security and privacy
Answers that are factually incorrect, irrelevant, or nonsensical, because of limitations in their training data and architecture	Answers that display discriminatory behaviour resulting in prejudiced or unequal treatment of a particular group or groups	The rights of content creators from whom training data is collected remains uncertain and is currently being challenged	Some model providers use and store data for training purposes. Entire end-to-end data pipelines require security and data privacy controls.
"The world record for crossing the English channel on foot is 15 hours"	***"Generate a picture of a person cleaning" returns overwhelmingly women***	***Artists suing creators of foundation models alleging the improper use of its photos***	***Engineers accidentally releasing source code by putting into a foundation model for debugging***

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Current Challenges

- **Consumer facing applications for enterprise problems**
- **Relying on foundation models alone to solve problems**
- **Inaccessible, unintegrated and poor-quality data**
- **Not aligning use cases to strategic priorities**
- **Shadow AI**

Goldman Sachs | Global Macro Research

ISSUE 129 | June 25, 2024 | 5:10 PM EDT

TOP of MIND

GEN AI: TOO MUCH SPEND, TOO LITTLE BENEFIT?

Tech giants and beyond are set to spend over $1tn on AI capex in coming years, with so far little to show for it. So, will this large spend ever pay off? MIT's Daron Acemoglu and GS' Jim Covello are skeptical, with Acemoglu seeing only limited US economic upside from AI over the next decade and Covello arguing that the technology isn't designed to solve the complex problems that would justify the costs, which may not decline as many expect. But GS' Joseph Briggs, Kash Rangan, and Eric Sheridan remain more optimistic about AI's economic potential and its ability to ultimately generate returns beyond the current "picks and shovels" phase, even if AI's "killer application" has yet to emerge. And even if it does, we explore whether the current chips shortage (with GS' Toshiya Hari) and looming power shortage (with Cloverleaf Infrastructure's Brian Janous) will constrain AI growth. But despite these concerns and constraints, we still see room for the AI theme to

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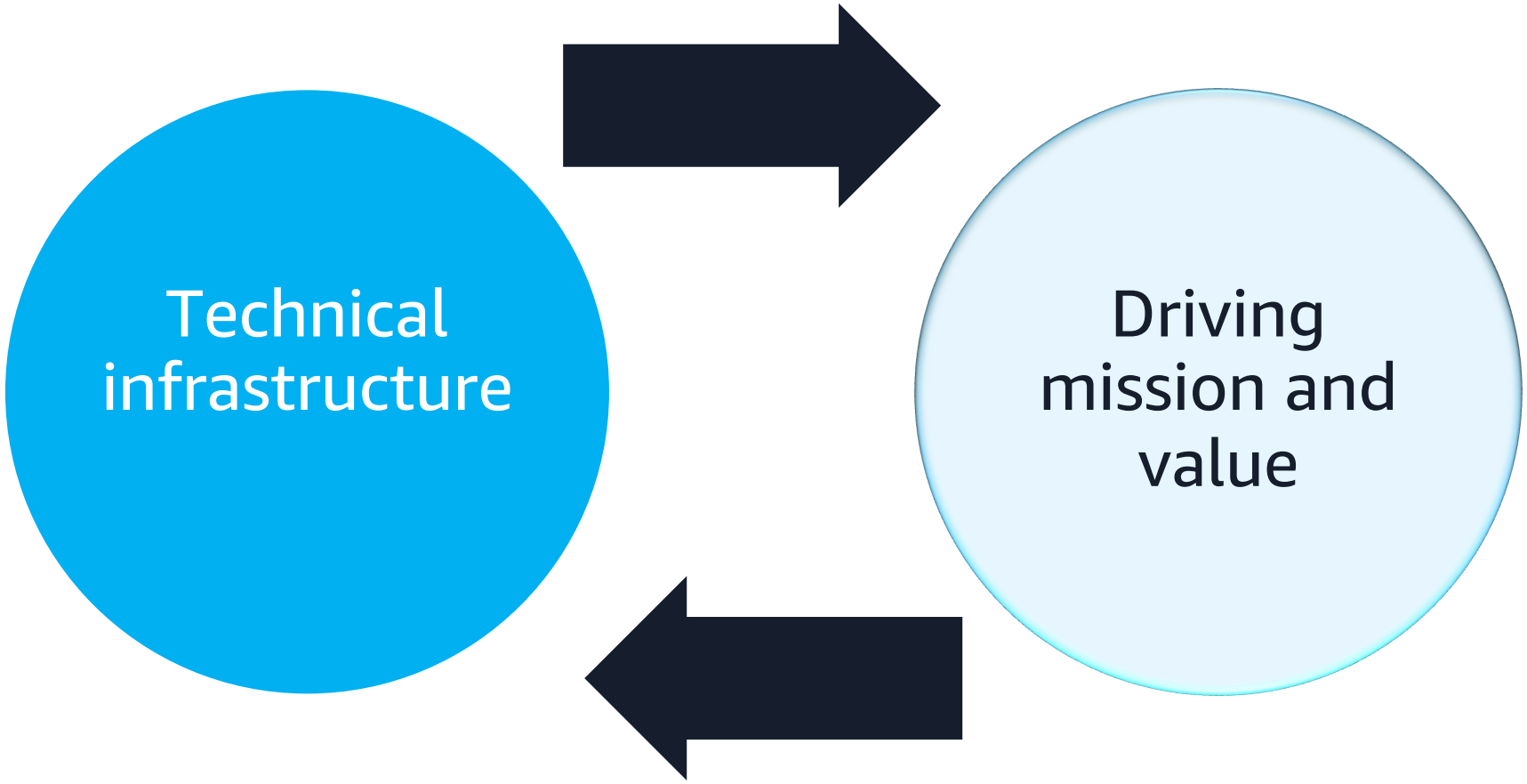
AWS: Supporting Generative AI in the public interest



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Amazon Bedrock

The easiest way to build and scale generative AI applications with foundation models

Choice of industry-leading FMs available via a single API

Customize your models using your organization's data

Enterprise-grade security and privacy

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Amazon Bedrock

stability.ai

AI21 labs	amazon	ANTHROPIC	cohere	Meta	MISTRAL AI_	Stable Diffusion
Contextual answers, summarization, paraphrasing	Text summarization, generation, Q&A, search, image generation	Summarization, complex reasoning, writing, coding	Text generation, search, classification	Q&A and reading comprehension	Text summarization, Q&A, text classification, text completion, code generation	High-quality images and art
Jurassic-2 Ultra	Amazon Titan Text Premier	Claude 3 Opus	Command	Llama 3 8B	Mistral Large	Stable Diffusion XL1.0
Jurassic-2 Mid	Amazon Titan Text Lite	Claude 3 Sonnet	Command Light	Llama 3 70B	Mistral 7B	Stable Diffusion XL 0.8
	Amazon Titan Text Express	Claude 3 Haiku	Embed English	Llama 2 13B	Mixtral 8x7B	
	Amazon Titan Text Embeddings	Claude 2.1	Embed Multilingual	Llama 2 70B		
	Amazon Titan Text Embeddings V2	Claude 2	Command R+			
	Amazon Titan Multimodal Embeddings	Claude Instant	Command R			
	Amazon Titan Image Generator					

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Amazon Bedrock

Helps keep your data secure and private

None of the customer's data is used to train the underlying models, nor is it shared with Model Providers

All data is encrypted in transit and at rest; data used for customization is securely transferred through customer's VPC

Data remains in the region where API processed

Support for GDPR, SOC, ISO, CSA compliance and HIPAA eligibility

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Guardrails for Amazon Bedrock

Apply guardrails to multiple foundation models and Agents for Amazon Bedrock

Configure harmful content filtering based on your responsible AI policies

Define and disallow denied topics with short natural language descriptions

Redact sensitive PII information in FM responses

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Gen AI Agent?

Intelligent, autonomous systems

Plan, reason, and act

Access to enterprise data

Ability to use tools

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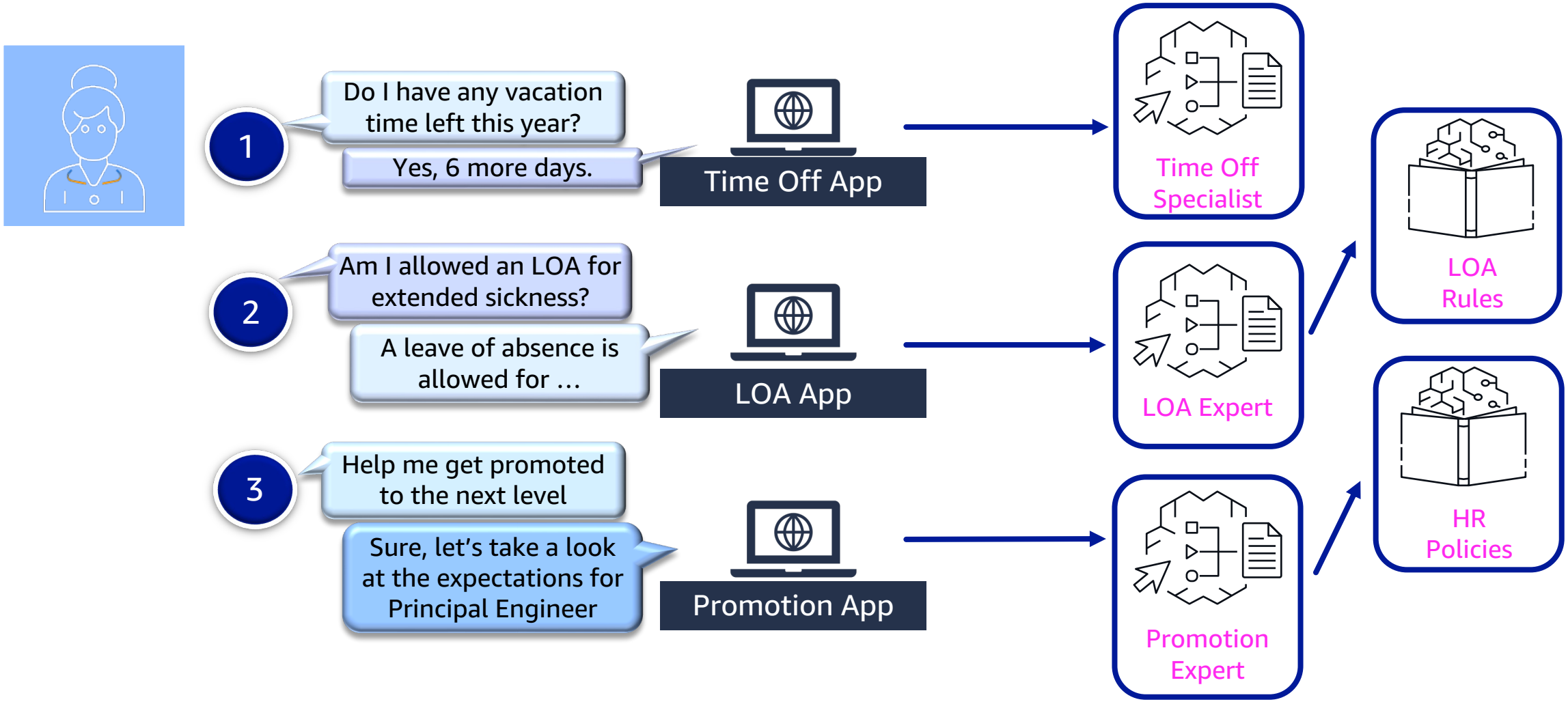
Using multiple agents helps . . .



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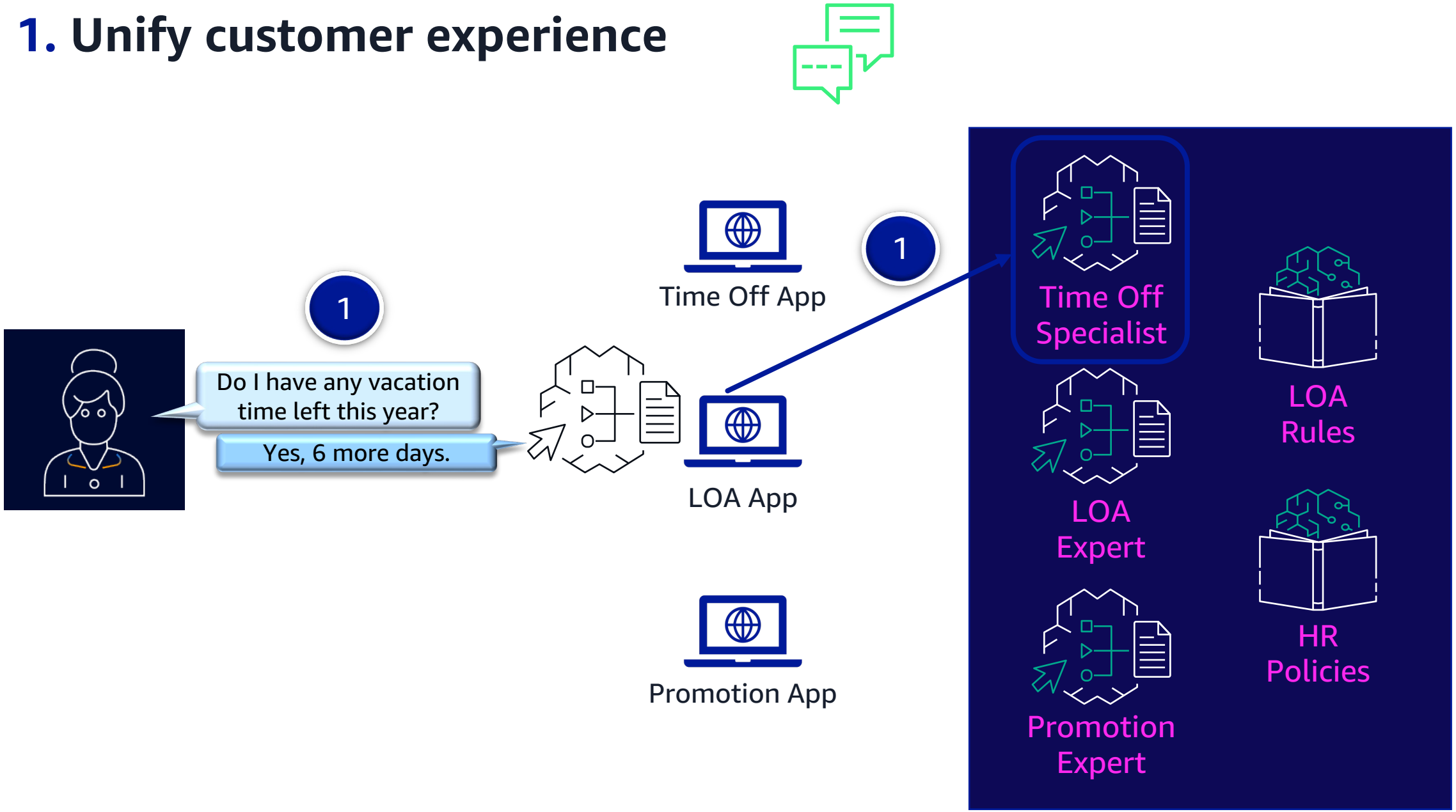
1. Unify customer experience



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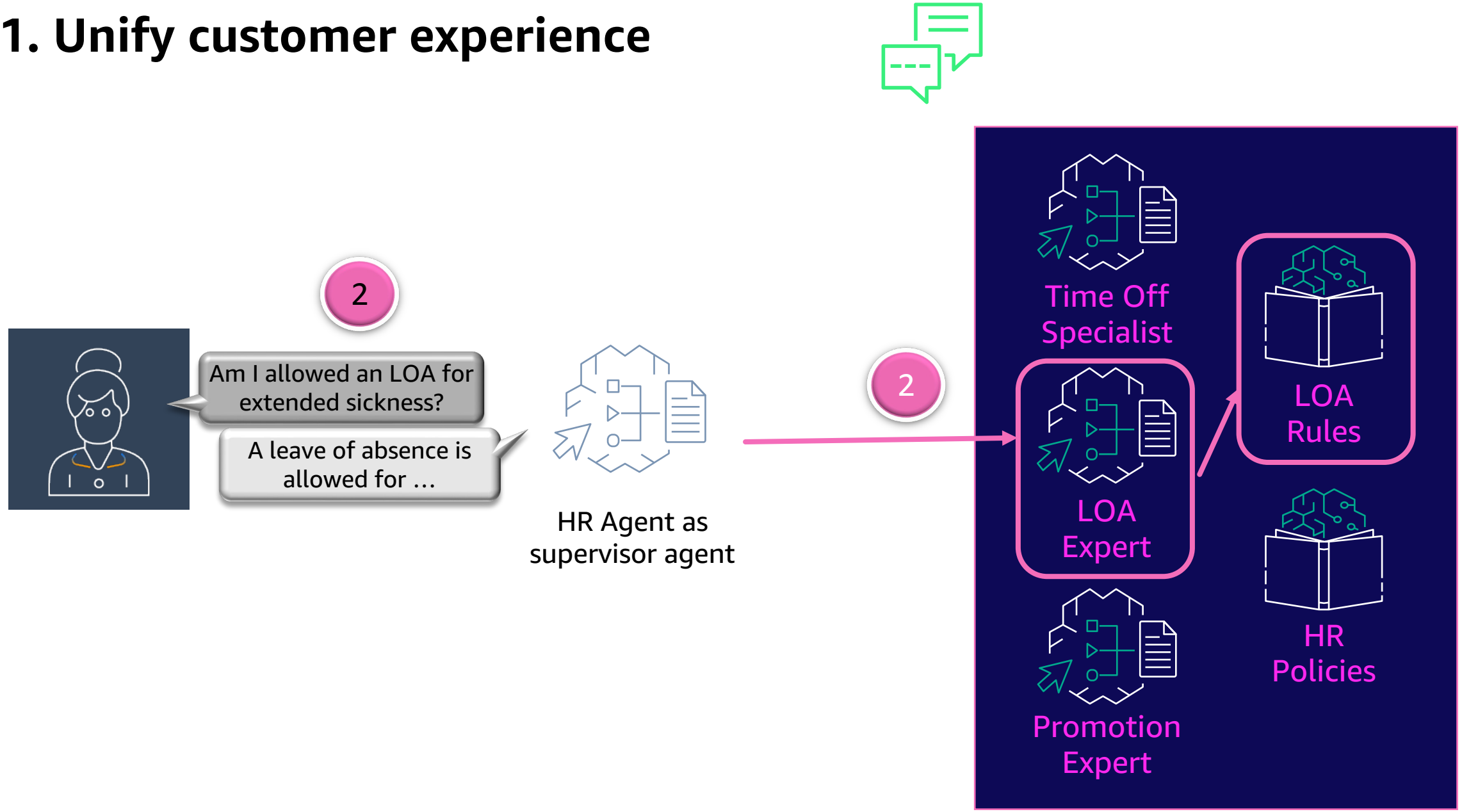

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1. Unify constituent experience

Supervisor provides one-stop shop for customers, with optimized routing and seamless conversation handling

Help me get promoted

One-stop shop

Sure, let's take a look at the expectations for Principal Engineer

HR Agent as supervisor agent

Optimized routing

3

Time Off Specialist

LOA Rules

LOA Expert

HR Policies

Promotion Expert

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Amazon Q

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Contra Costa County District Attorney's Office Makes Unbiased Charging Decisions with Generative AI Solution on AWS

Automating Sensitive Data Redaction with ScaleCapacity and AWS Generative AI

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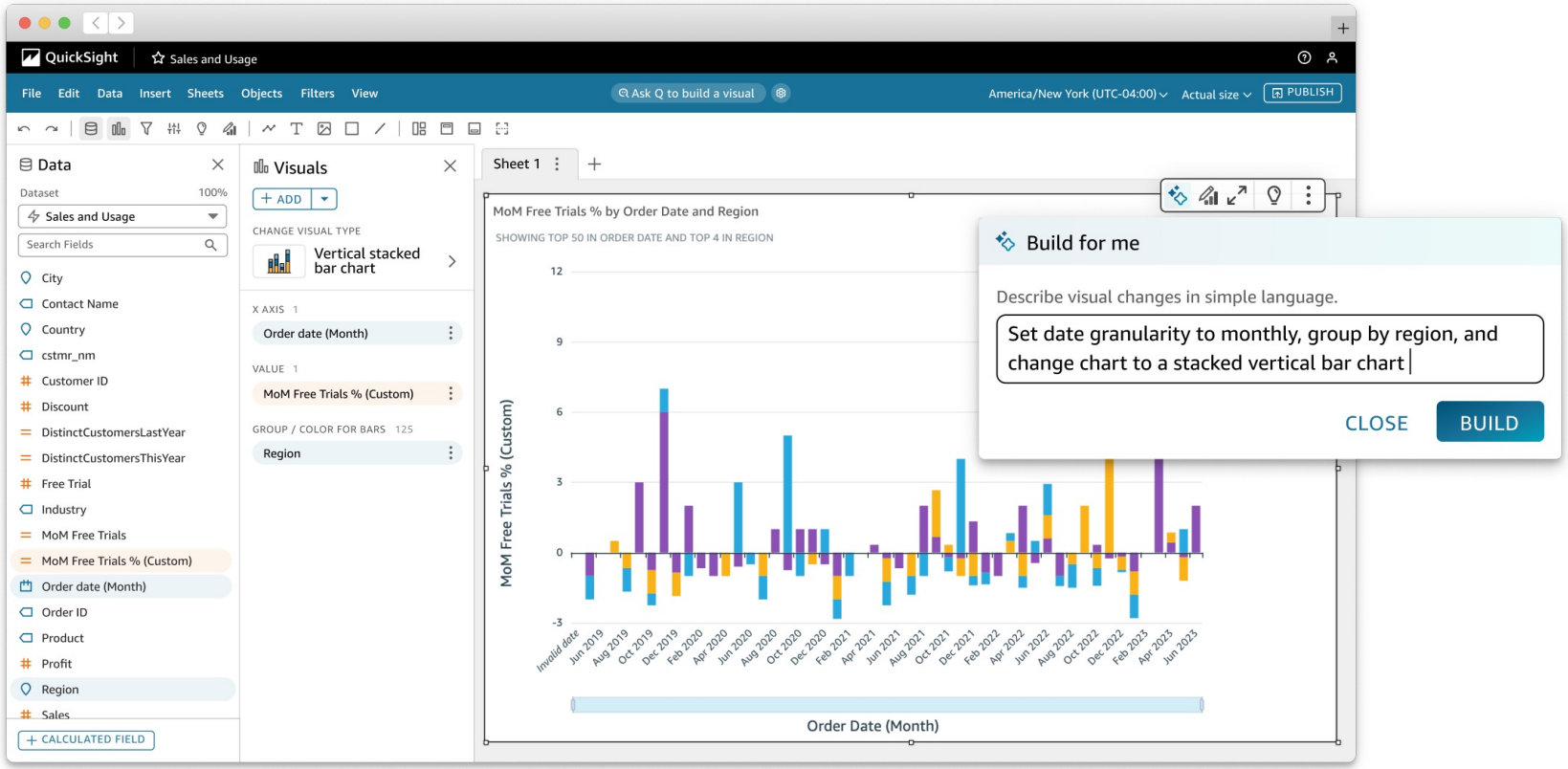
Visual authoring in **QuickSight**

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



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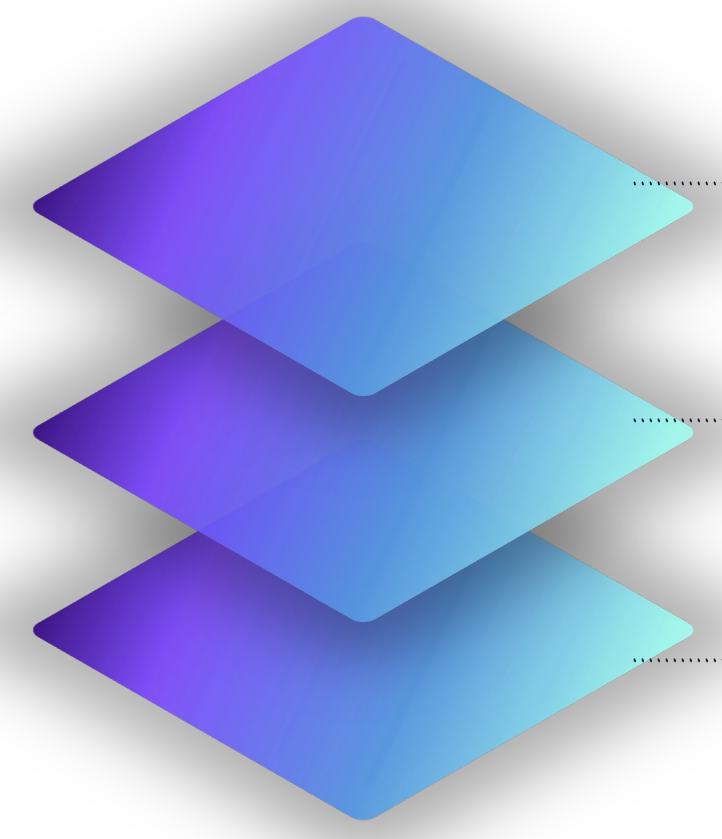
Generative AI Stack



APPLICATIONS THAT LEVERAGE LLMs AND FMs

- Amazon Q Business
- Amazon Q Developer
- Amazon Q in QuickSight
- Amazon Q in Connect
- Amazon Q in AWS Supply Chain

TOOLS TO BUILD WITH LLMs AND OTHER FMs

Amazon Bedrock

- Guardrails
- Agents
- Studio
- Customization Capabilities
- Broadest selection of models

INFRASTRUCTURE FOR FM TRAINING AND INFERENCE

- GPUs
- Trainium
- Inferentia
- SageMaker
- UltraClusters
- EFA
- EC2 Capacity Blocks
- Nitro
- Neuron

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Accelerate your impact

Rapid AI prototyping and innovation engagements

Noah Eden
Global Lead, Cloud Innovation Centers
Worldwide Public Sector
Amazon Web Services

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Cloud Innovation Centers: Solving public sector challenges

What is a CIC?

Cloud Innovation Centers enable public sector and AWS to collaborate and solve real-world challenges, through the collaboration with students and higher education.

Where are the CICs located?

Artificial Intelligence Cloud Innovation Center
Arizona State University

Cal Poly
Digital Transformation Hub

How can CICs help?

- Industry-Leading Innovation Processes
- Cloud Technology Expertise
- Prototype Development
- Innovation Events

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Innovating together with university students

Public sector organizations bring organizational or mission-related challenges…

We deliver technical proof of concept solutions…

My eCISO

A cybersecurity chatbot to help assess entities' compliance with NIST Cybersecurity Framework

ScopeBuilder

Uses LLMs to build high quality scopes of work for campus procurement

Educational Simulation Tool

Helps pharmacy students practice in real-world patient interactions

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Artificial Intelligence Cloud Innovation Center
Arizona State University

PDF Accessibility Project

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> With the introduction of new accessibility standards, AI and machine learning offer what may be the most viable path to success, given our resources and scope.

Cory Tressler

Assistant Dean for Technology and Digital Programs

The Ohio State University Libraries

THE OHIO STATE UNIVERSITY

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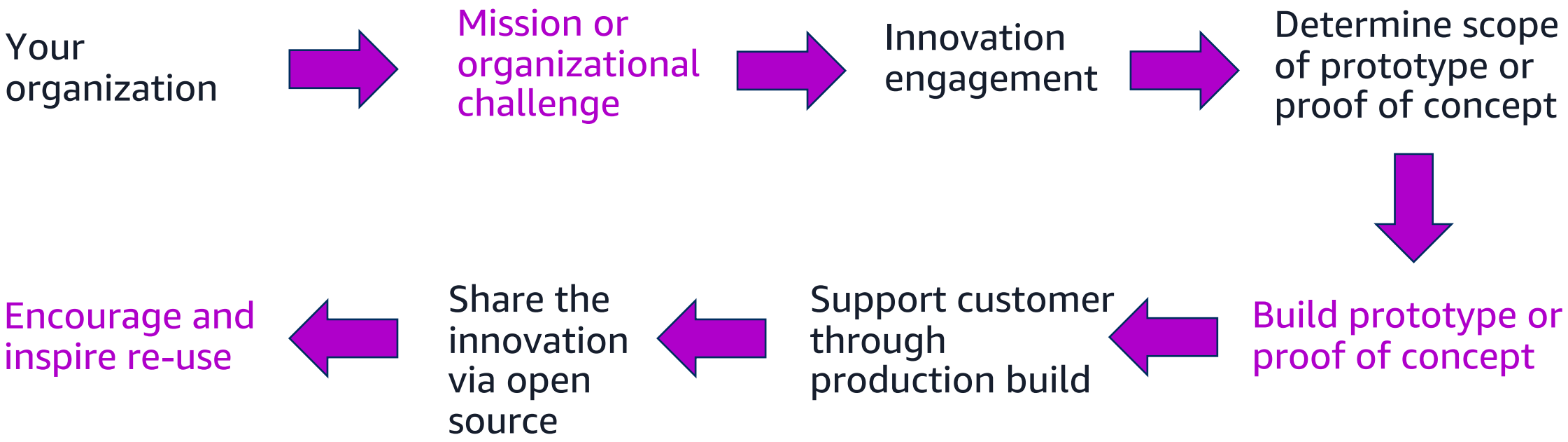
Engagement lifecycle



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What is your top innovation priority?

…to more easily communicate with constituents?

…to index your websites and enable smarter, multi-lingual search?

…to quickly analyze or aggregate thousands of paper records?

…to enable citizens to access the resources and guidance they need?

…to improve graduation rates via support of faculty?

Or something else entirely?

Let’s innovate and build together.

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Thank you!

Please complete the survey for this session

AI/ML track

Practical AI for Public Sector

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