AWS State, Local, and Education Learning Days

Boston, MA

aws Learning Days
State, Local, and Education

Building a Modern Data Strategy

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State, Local, and Education

Agenda

- Why modern data architecture
- Modern data strategy
- Reference architectures for common scenarios
- Getting started

Why Modern Data Architecture

“If we have data, let’s look at the data. If all we have are opinions, let’s go with mine”

Jim Barksdale

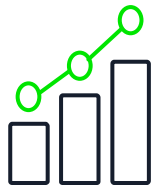
CEO of Netscape

Data is just the Building Blocks

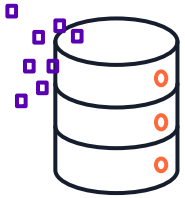
Data ▶ Information ▶ Insights

Without structure, tools and processes,
Data has very little value

The data challenge



Availability of electronic data is growing exponentially



Data coming from new, disconnected sources

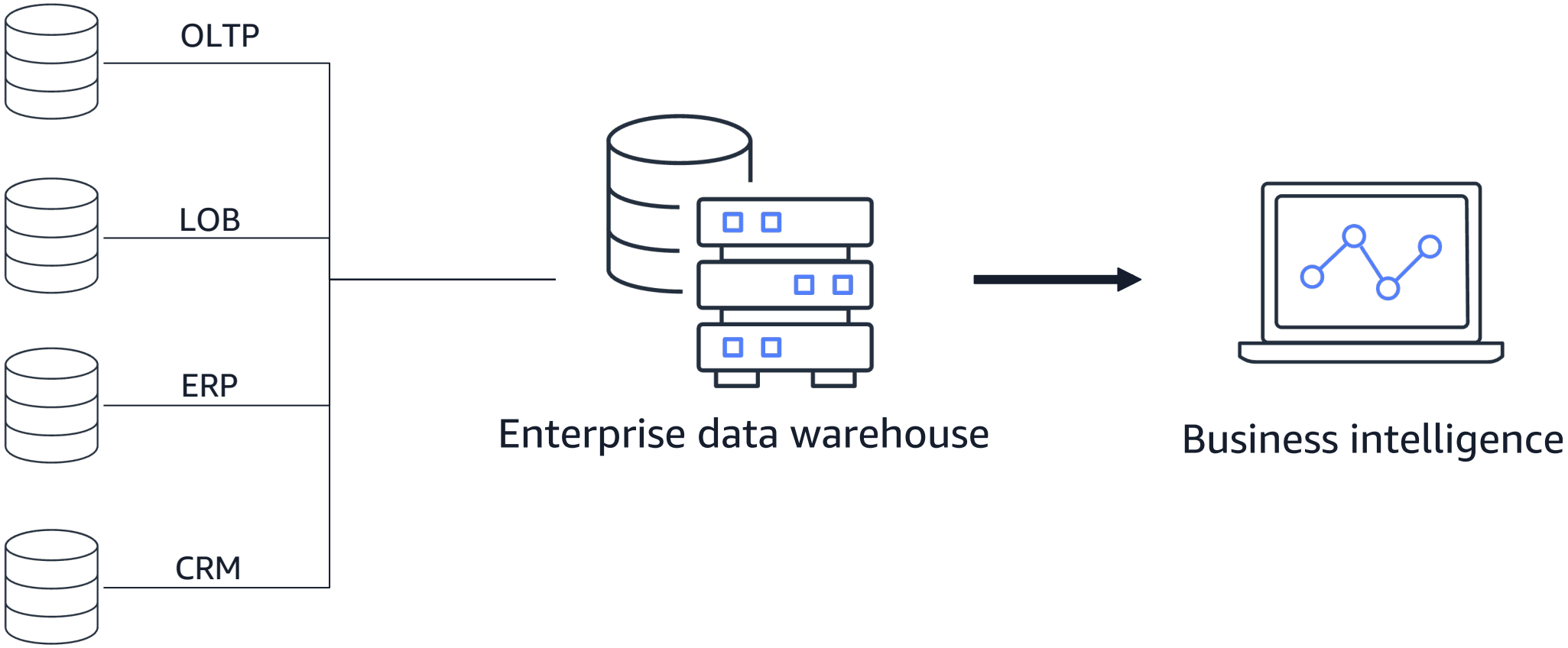
Increasingly diverse in file type and volume

Used by many people (e.g. policy makers, researchers, etc.)

Analyzed by many applications

Current state

Currently, decision-making revolve around the **enterprise data warehouse**



Data no longer scales

There is more data and more diversity of data than people think

Data growth

>10x
every 5 years

Data platforms need

To live for
15+
years

To scale
1,000x

Accessibility of data

Data scientists

Business users

Analysts

Applications

Machine learning

SQL analytics

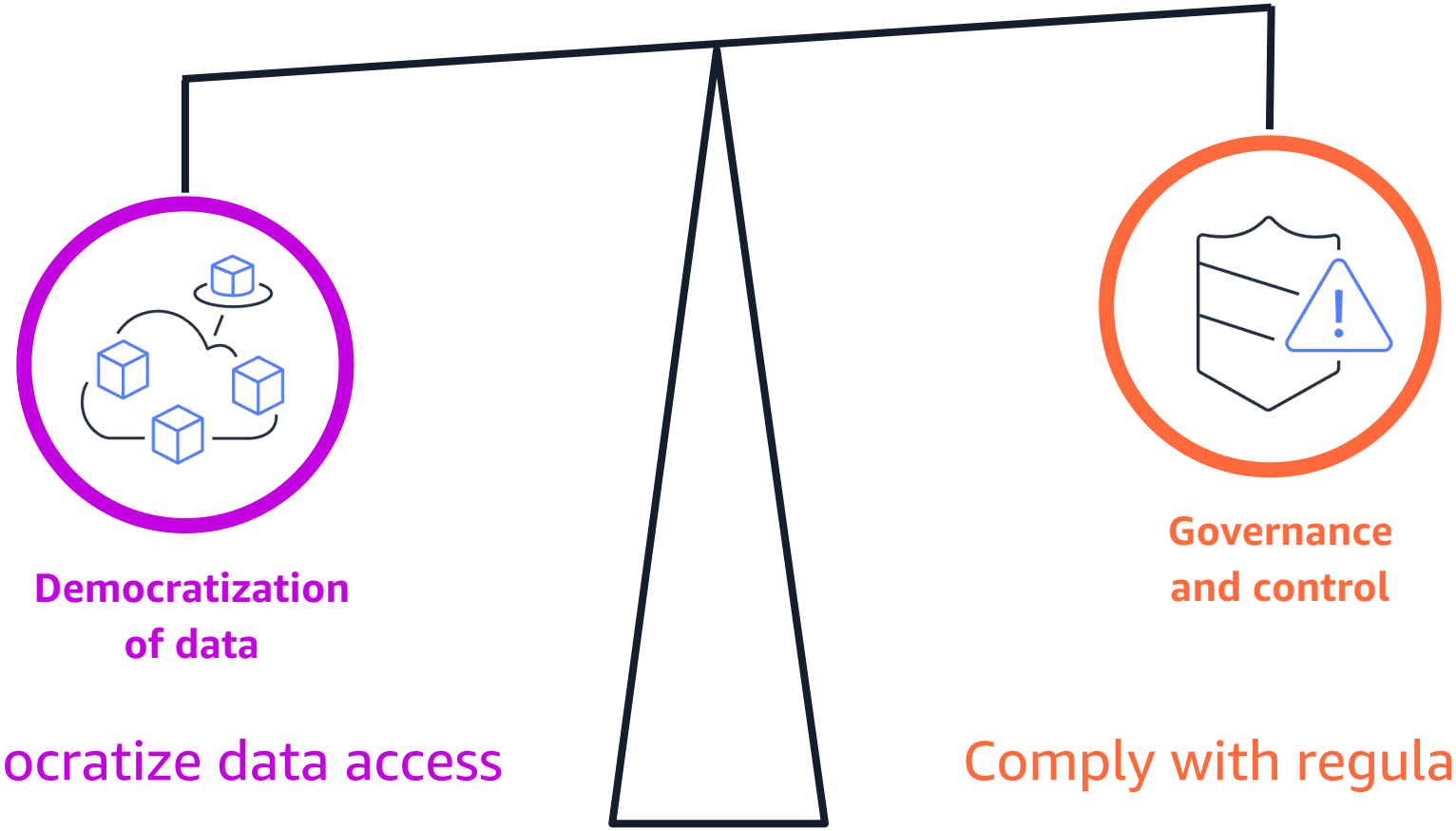
Scientific

Real-time, streaming

There are **more people** accessing data

And in **different ways**

More regulatory pressure



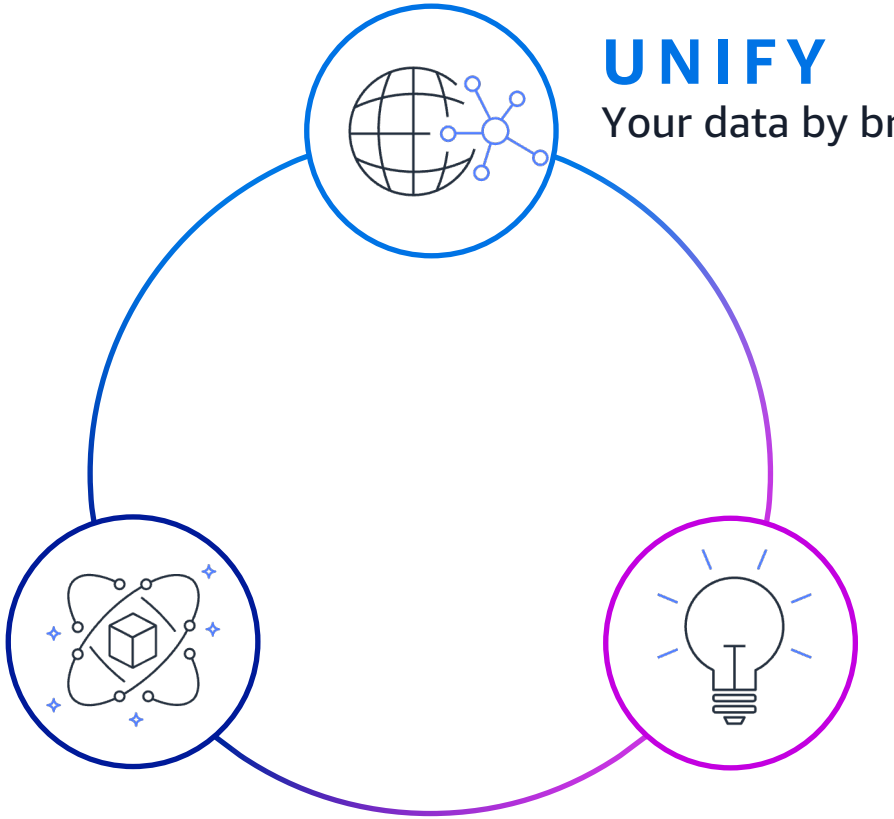
What now? Let’s rethink everything

Raw Data

Insights

Modern Data Strategy

Modern data strategy for better business outcomes

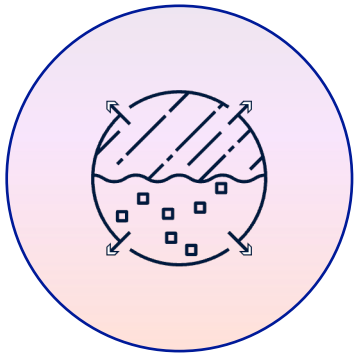


UNIFY
Your data by breaking down silos

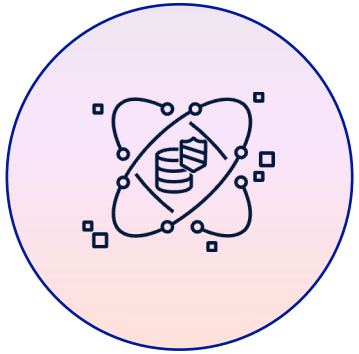
MODERNIZE
Your data infrastructure to a scalable, trusted, and secure cloud provider

INNOVATE
By inventing new experiences and reimagining existing processes

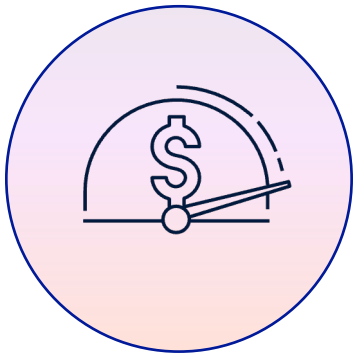
AWS modern data strategy components



Scalable data lakes

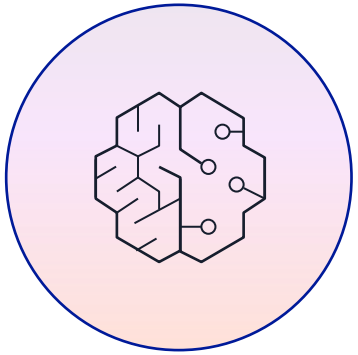


Unified data access, security, and governance



Purpose-built data services for performance and cost

Serverless and easy to use



Built-in machine learning

Create better business outcomes with data

Make better, faster decisions

Improve customer experience

Prepare for the future

Reduce costs and improve productivity

Examples

Create better citizen & student experiences & outcomes

→ Student success & community relevance

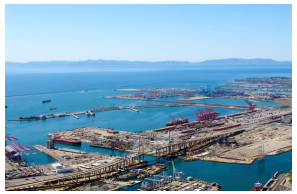
Respond to the unexpected

→ Support research in the swine industry

Unifying data to enable 360-degree views

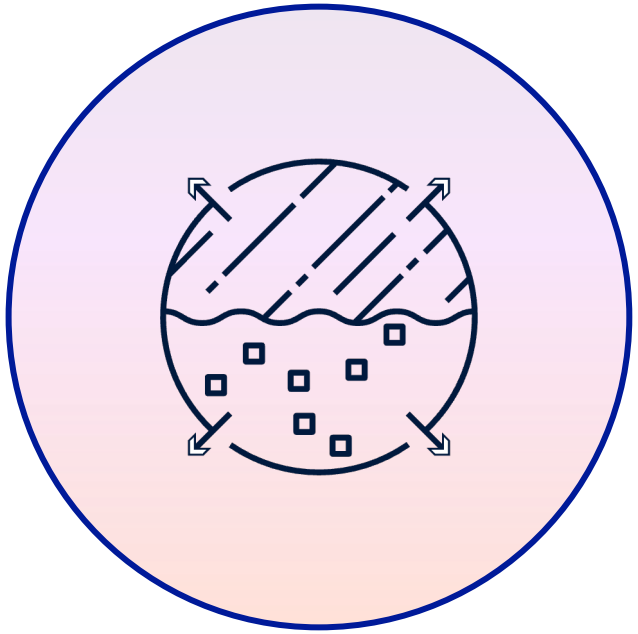
→ Transform human services

Enhancing efficiency



Port of Long Beach

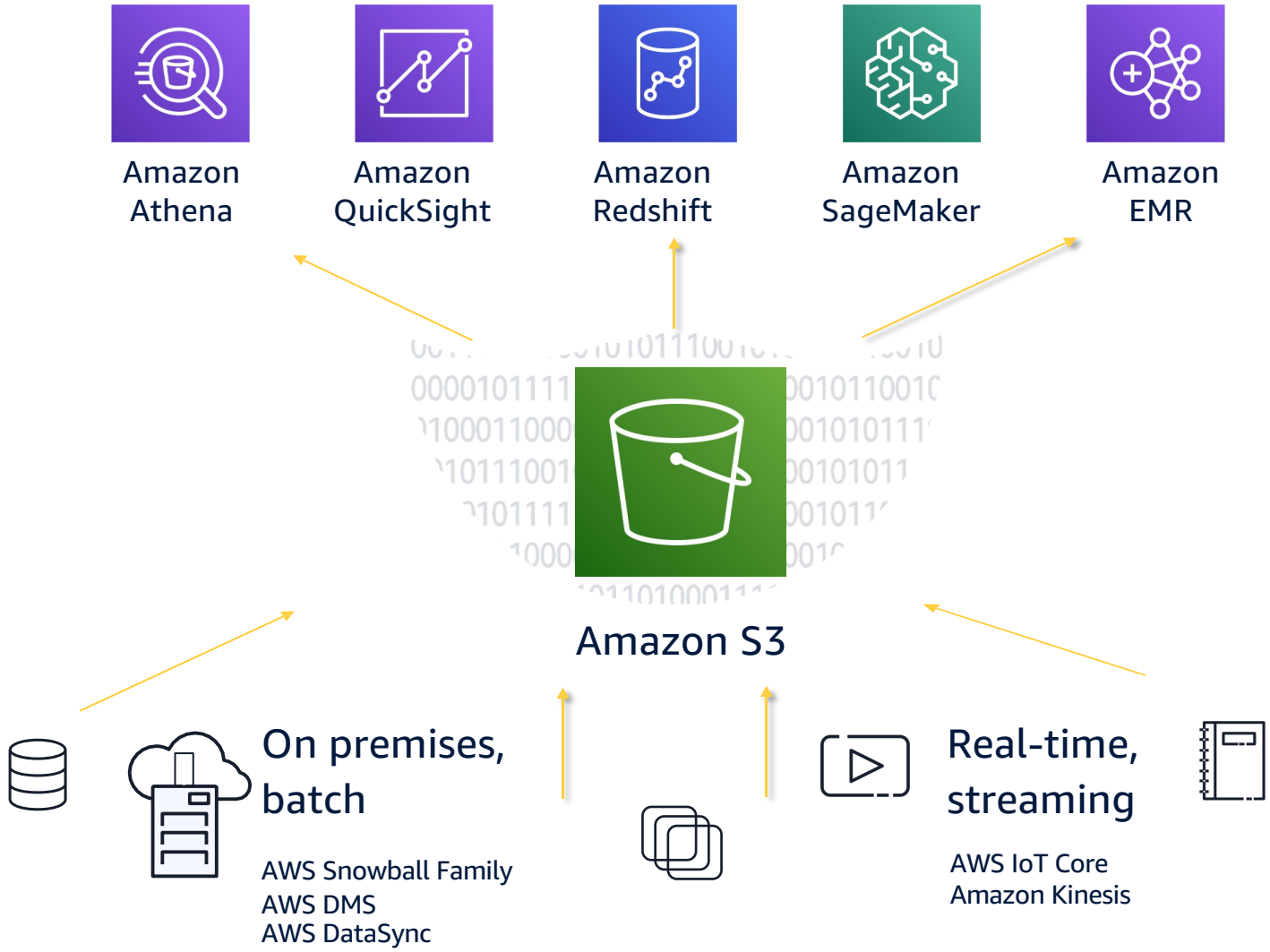
→ Create end-to-end visibility

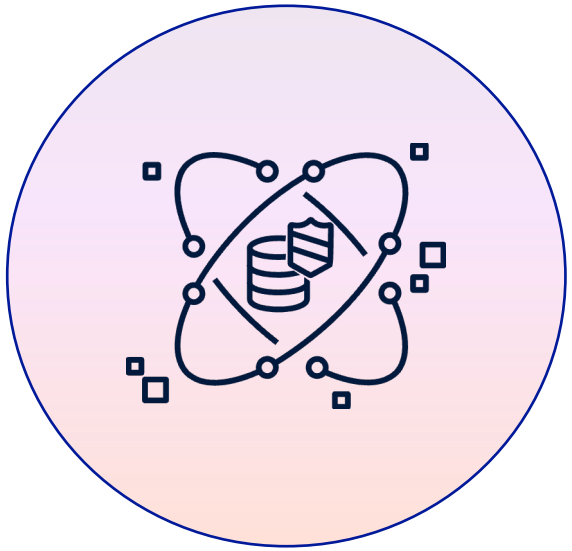


Unify Data with Scalable data lakes

Amazon S3: Data lakes on AWS

- Store unlimited data in open file formats
- Unmatched durability, availability, and scalability
- Decouple storage from compute
- Choice of analytical and ML engines
- Pay as you go

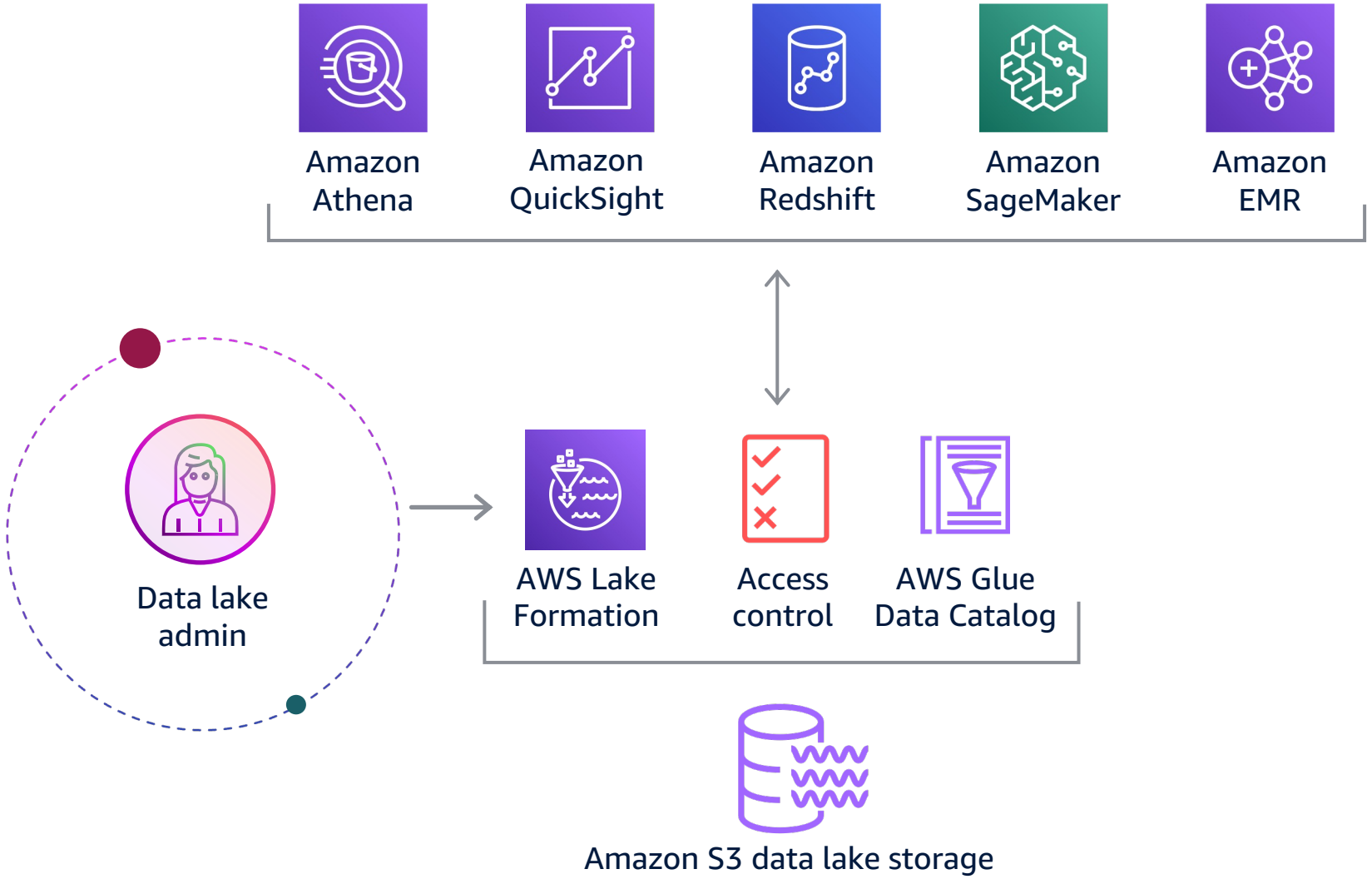


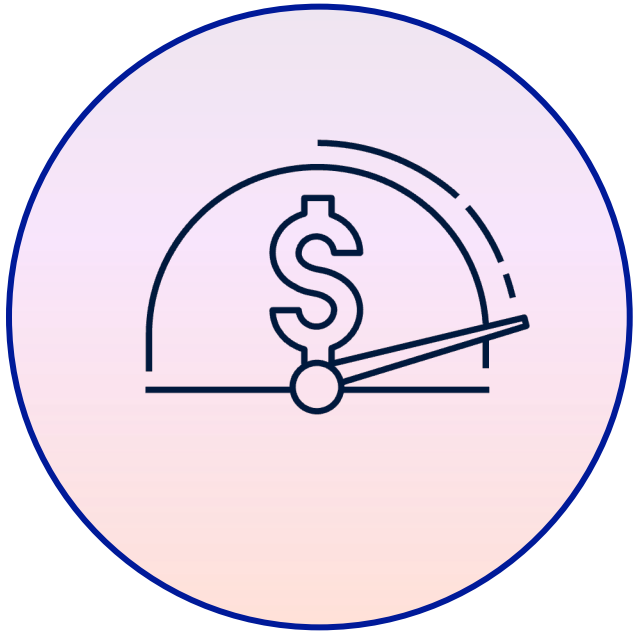


Unified data access, security, and governance

AWS Lake Formation: Unified data governance

Simplified and unified security management

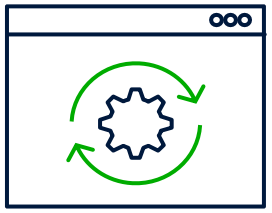




Modernize with Purpose-built data services

To get more value from their data, customers are...

Breaking free from legacy databases



Moving to fully managed database and analytics services

Modernizing your data warehouse

Building modern applications with purpose-built databases

A family of purpose-built data services

Business intelligence and machine learning

- **Amazon QuickSight** — Visualizations
- **AWS Data Exchange** — Data exchange
- **Amazon SageMaker** — ML
- **Amazon Comprehend** — NLP
- **Amazon Transcribe** — Speech-to-text
- **Amazon Textract** — Extract text
- **Amazon Personalize** — Recommendations
- **Amazon Forecast** — Forecasts
- **Amazon Translate** — Translation
- **Amazon CodeGuru** — Code reviews
- **Amazon Kendra** — Enterprise search
- **Plus many more**

Analytics

- **Amazon Redshift** — Data warehousing
- **Amazon EMR** — Hadoop + Spark
- **Amazon Athena** — Interactive analytics
- **Amazon OpenSearch Service** — Operational analytics
- **Amazon Kinesis Data Analytics** — Real time

Databases

- **Amazon Aurora** — MySQL, PostgreSQL
- **Amazon RDS** — MySQL, PostgreSQL, MariaDB, Oracle, SQL Server, DB2
- **Amazon DynamoDB** — Key value, Document
- **Amazon DocumentDB** — Document
- **Amazon Keyspaces (for Apache Cassandra)** — Wide column
- **Amazon Neptune** — Graph
- **Amazon Timestream** — Time series
- **Amazon ElastiCache** — Redis, Memcached

Blockchain

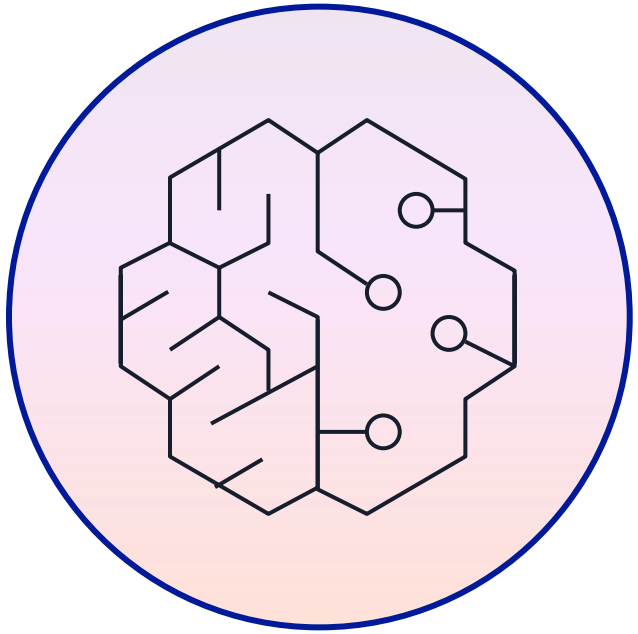
- **Amazon Managed Blockchain**

Data lake

- **Amazon S3/ Amazon S3 Glacier**
- **AWS Lake Formation** — Data lakes
- **AWS Glue** — ETL and Data Catalog

Data movement

AWS DMS | AWS Transfer family | AWS Glue | AWS Snowball | Amazon Kinesis Data Firehose | Amazon Kinesis Data Streams | Amazon MSK



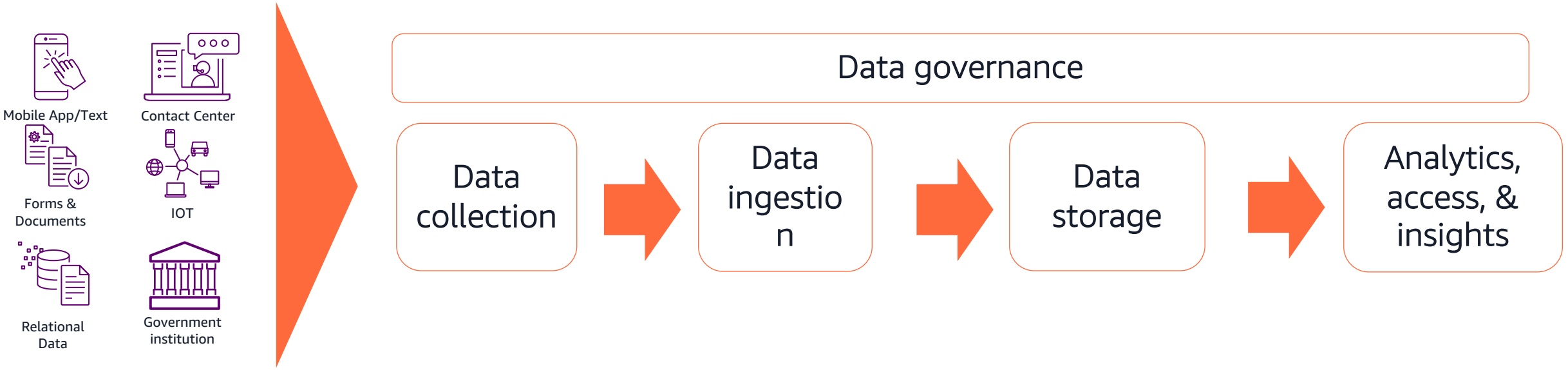
Innovate with
AI & machine learning

Build new experiences and reimagine old processes with AI/ML

- Make accurate predictions, get deeper insights from your data, and improve customer experience
- Create ML predictions without any ML experience or writing any code
- Build applications with our pre-trained models
- Train and apply your own models
- Use your own algorithms by working directly with ML-optimized AWS infrastructure
- 100,000+ customers use AWS AI and ML services to make predictions from their data

Putting it all together

Key components of modern data architecture



Security – Reliability – Operational Excellence – Performance Efficiency – Cost Optimization – Sustainability

Key considerations:

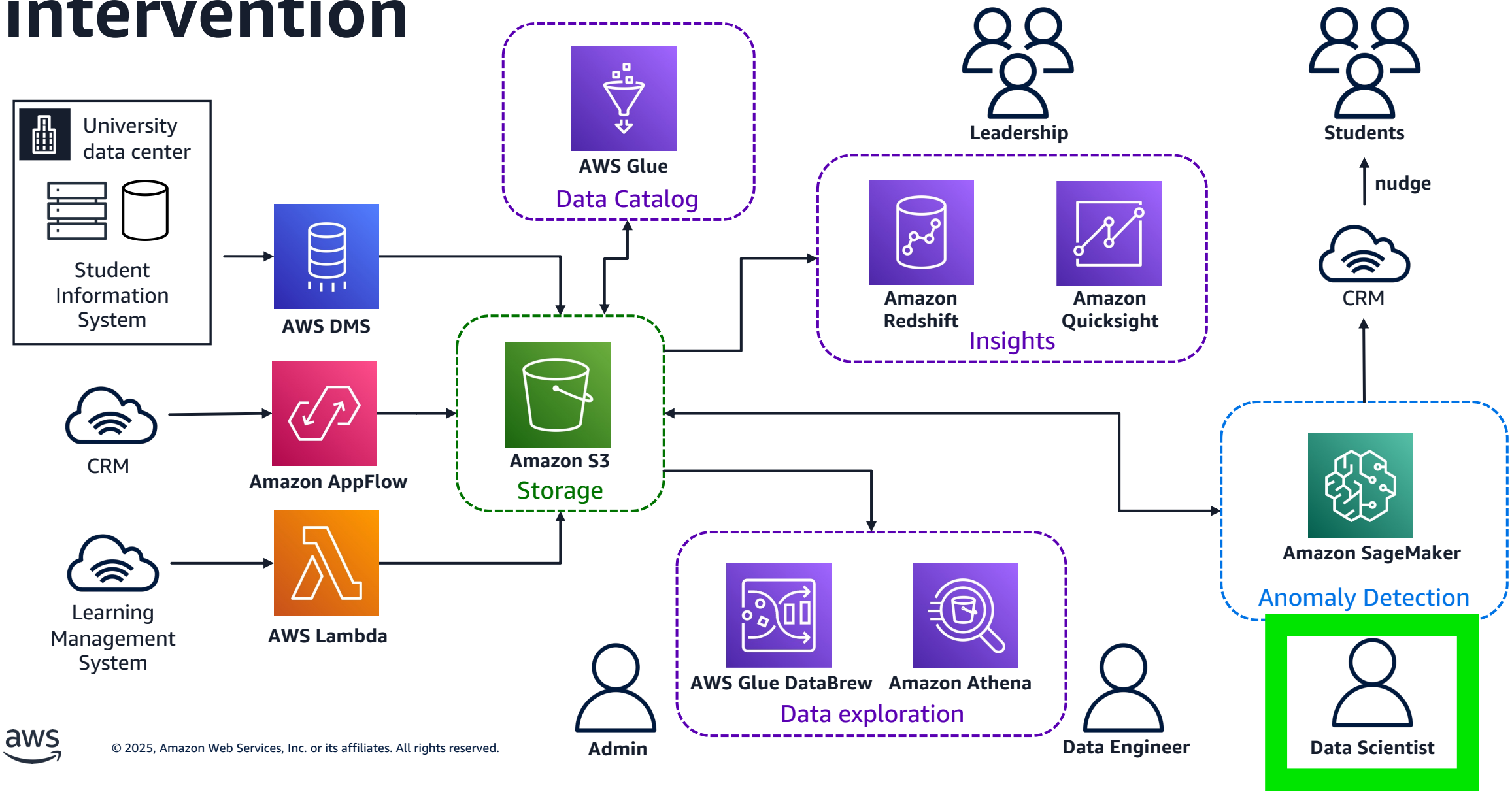
1. Ability to handle the increasing volume, velocity, and variety of data
2. Each component should be independently scalable
3. Make data easily accessible and sharable

Reference Architecture

Improving student outcomes - Retention

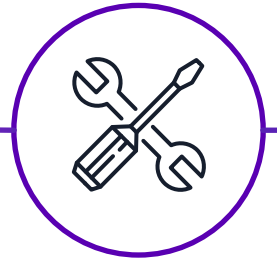
1. **Identify at-risk students** from behaviors
2. Aggregated student touchpoint data from the **SIS, LMS, and CRM**
3. Feed insights into communication platform for **early intervention and nudging**

Sample reference architecture for student intervention



Get started

BUILD WITH US



ML Solutions Lab

AWS Professional Services

AWS Immersion Day

Data-Driven Everything

Migration Assistance Program

BUILD WITH PARTNERS

AWS Partner Network—100,000+ partners

AWS Marketplace (ISVs)

UPSKILL YOUR TEAMS

AWS Training and Certification

ML Embark Program

Thank you!

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Sam Abraham

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Up Next in this Room

11:30am – 12:30pm

200
level

AI/ML for data and analytics

Unleash the power of data: Transform public sector insights with AI and ML across your entire enterprise.

Please complete the survey for this session

Track: Data and Analytics

Session: Building a Modern Data Strategy

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