



aws INNOVATE

DATA EDITION

23 August, 2022

Putting machine learning in the hands of every builder with AWS Database and Analytics services

Tom McMeekin

Enterprise Solutions Architect

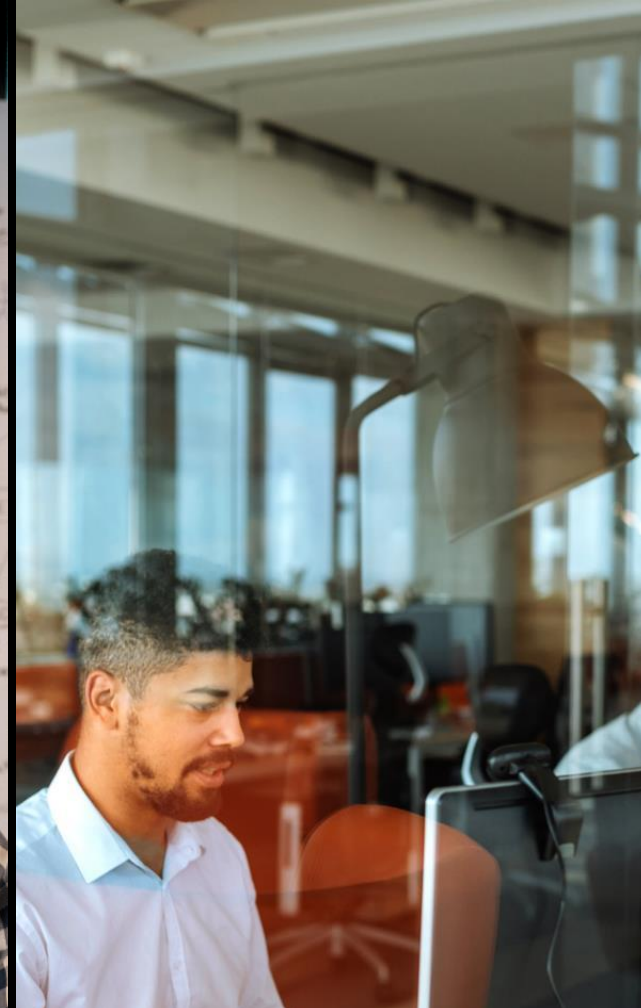




Transform customer
experience



Improve business
operations



Better and faster
decision-making



Innovation



NEXT GEN STATS

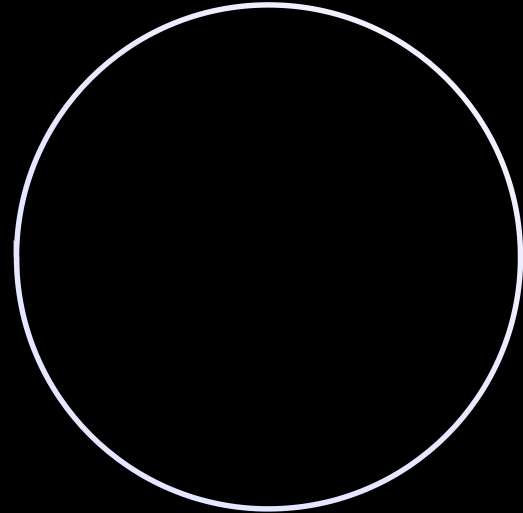
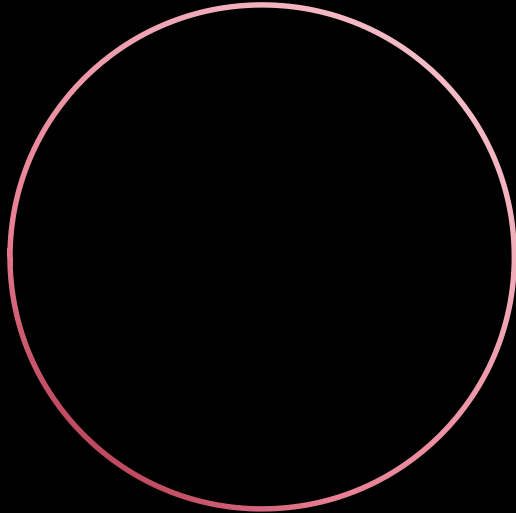
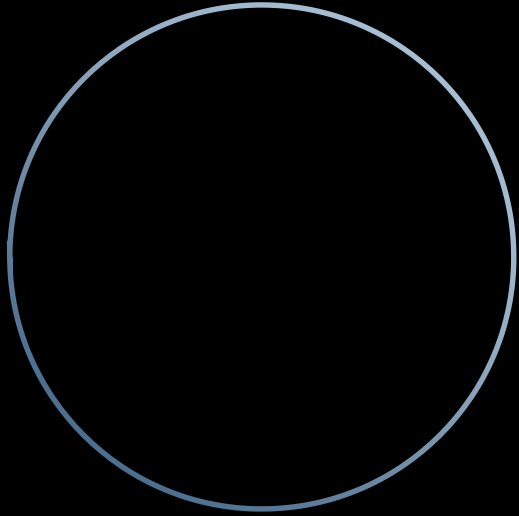
powered by 

"...AWS allows both **data experts** and **novices** to have a more seamless and intuitive experience within Next Gen Stats..."

Michael Chi, Director of NFL Next Gen Stats



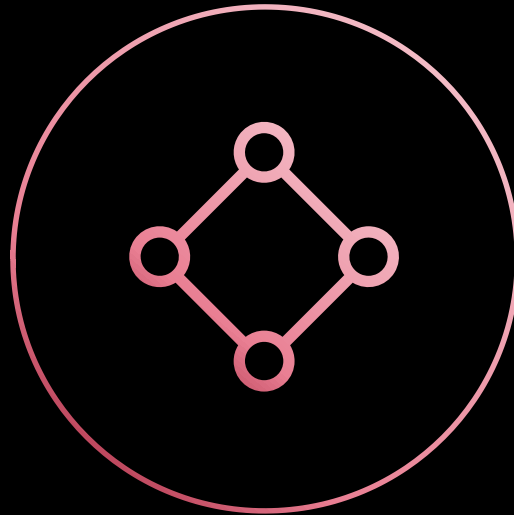
Modern data strategy



Modern data strategy



MODERNIZE



UNIFY

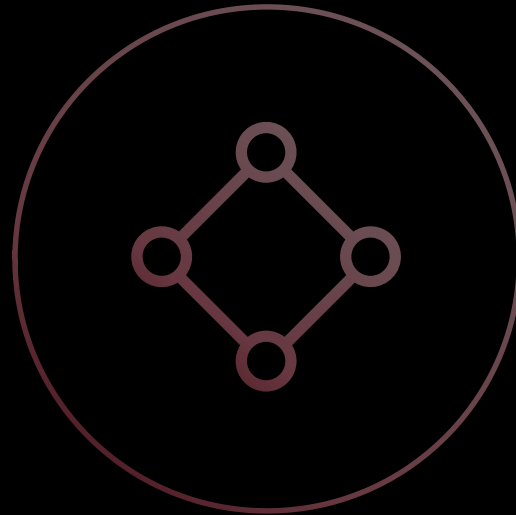


INNOVATE

Modern data strategy



MODERNIZE



UNIFY



INNOVATE

Purpose-built data services

Business Intelligence & Machine Learning

Analytics

Databases

Blockchain

Data Lake

Data Movement

Purpose-built data services | the most complete family

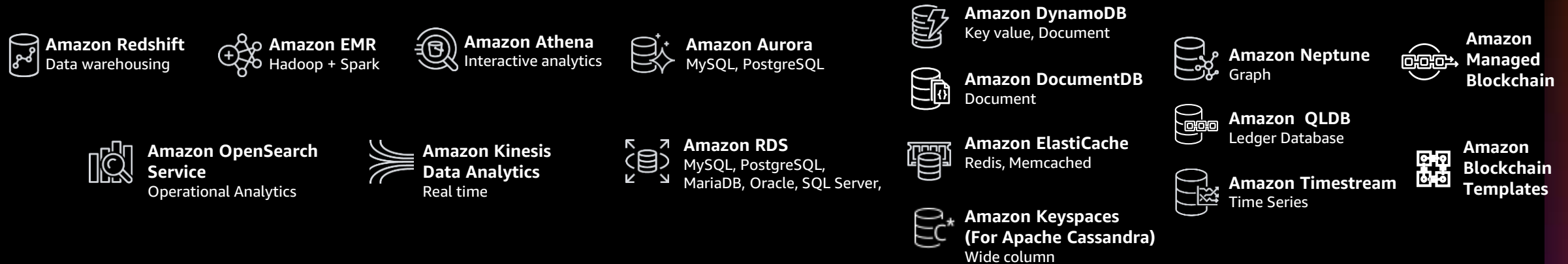
Business Intelligence & Machine Learning



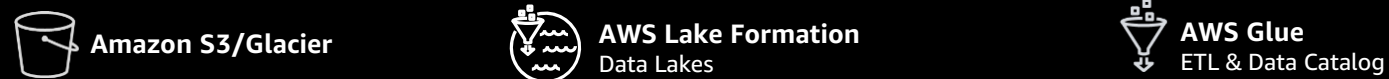
Analytics

Databases

Blockchain



Data Lake



Data Movement

AWS Database Migration Service | AWS Snowball | AWS Snowmobile | Amazon Kinesis Data Firehose | Amazon Kinesis Data Streams | Amazon Managed Streaming for Kafka

Machine learning development is complex



Label
data



Data
collection prep



Store
features



Detect bias
and explain
predictions



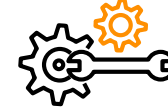
Visualize in
notebooks



Pick
algorithm



Train
models faster



Tune
parameters



Deploy in
production



Manage
& monitor

The AWS AI/ML stack

ML FRAMEWORKS & INFRASTRUCTURE

PyTorch, Apache
MXNet, TensorFlow

Amazon EC2

CPUs

GPUs

AWS Inferentia

AWS Trainium

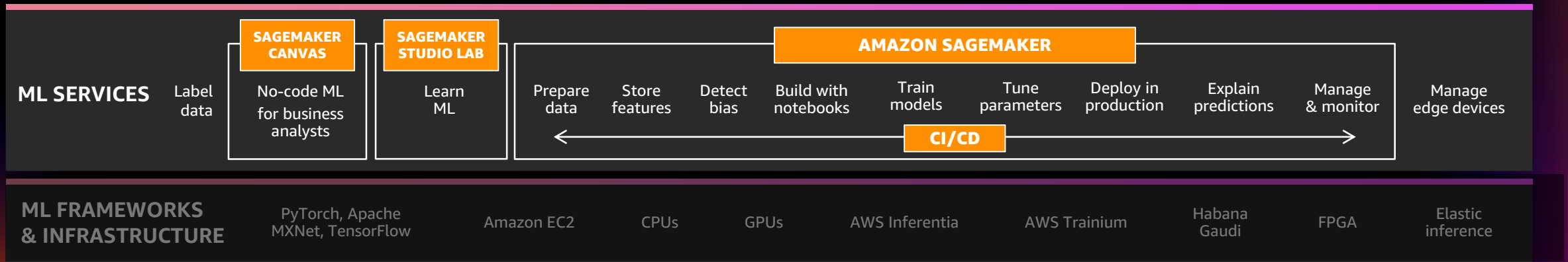
Habana
Gaudi

FPGA

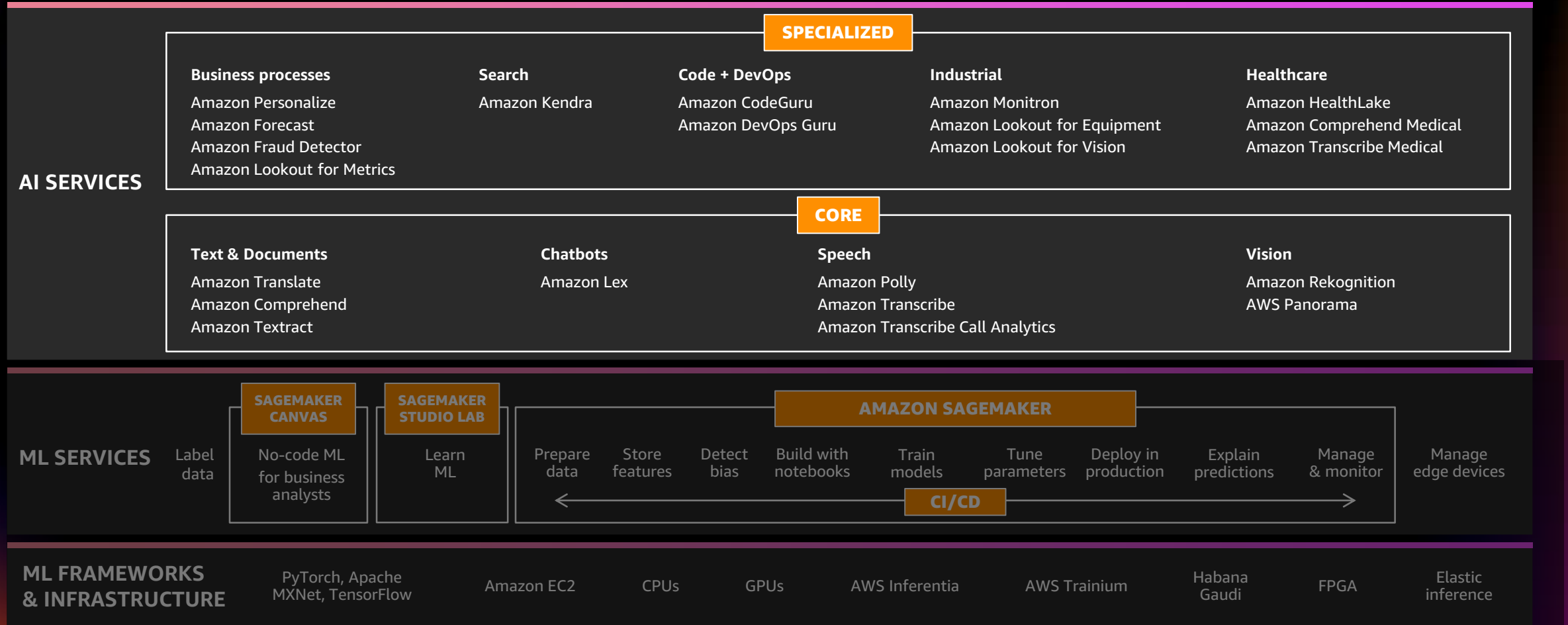
Elastic
inference



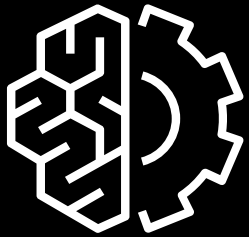
The AWS AI/ML stack



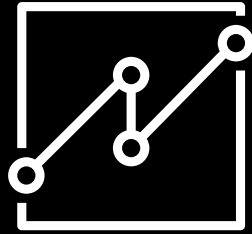
The AWS AI/ML stack



Machine learning is becoming **accessible to all**



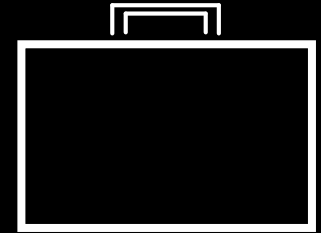
Practitioner



Analyst



App Developer



Business User

AWS brings ML closer to data



Databases



Data warehouses
+ data lakes



Business
intelligence tools

AMAZON
AURORA ML



AMAZON
NEPTUNE ML



AMAZON
REDSHIFT ML



AMAZON
ATHENA ML



AMAZON
QUICKSIGHT ML





Analyst

Amazon Redshift ML

CREATE, TRAIN, AND DEPLOY ML
MODELS USING FAMILIAR SQL
COMMANDS

TRAIN



```
CREATE MODEL customer_churn
FROM (SELECT c.age, c.zip, c.monthly_spend,
c.monthly_cases, c.active AS label
FROM customer_info_table c)
TARGET label
FUNCTION predict_customer_churn
```

PREDICT



```
SELECT n.id, n.firstName, n.lastName,
predict_customer_churn(n.age,c.zip,..)
AS activity_prediction
FROM new_customers n
WHERE n.marital_status = 'single'
```



"...We were immediately struck by the fact that Amazon Redshift ML makes fitting an XGBoost model or feed-forward neural network as easy as writing a SQL query..."





Analyst

Amazon Athena ML

INVOKE ML MODELS FOR
INFERENCE DIRECTLY FROM A
SQL QUERY

PREDICT



```
USING EXTERNAL FUNCTION  
predict_customer_churn (age INTEGER)  
RETURNS DOUBLE  
SAGEMAKER 'xgboost-2019-09-20-04-49-29-  
303'  
  
SELECT n.id, n.firstName, n.lastName,  
predict_customer_churn(n.age)  
AS activity_prediction  
FROM new_customers n  
WHERE n.marital_status = 'single'
```




App Developer

Amazon Aurora ML

SIMPLE, OPTIMIZED, AND
SECURE INTEGRATION BETWEEN
AURORA AND AWS ML SERVICES
USING SQL



pgAdmin

FileObjectToolsHelp

Browser

DashboardPropertiesSQLStatisticsDependenciesDependentspostgres/postgres@aurora-ml-db*

Servers (1)

aurora-ml-db

postgres/postgres@aurora-ml-db

FolderSaveFilterNo limitExecuteStatisticsRefreshHelp

QueryQuery History

1select customer_id, review_id, review_body

2from review_simple;

3

Data outputMessagesNotifications

Successfully run. Total query runtime: 1 secs 609 msec.
49 rows affected.

Total rows: 49 of 49

Query complete 00:00:01.609

Ln 1, Col 32



Practitioner

Amazon Neptune ML

MAKE PREDICTIONS ON GRAPH
DATA WITHOUT ML EXPERTISE

TRAIN



```
neptune_ml.train_model (  
    export_file_location,  
    TRAINING_JOB_NAME,  
    PROCESSING_PARAMS,  
    TRAINING_PARAMS,  
    ENDPOINT_PARAMS  
)
```

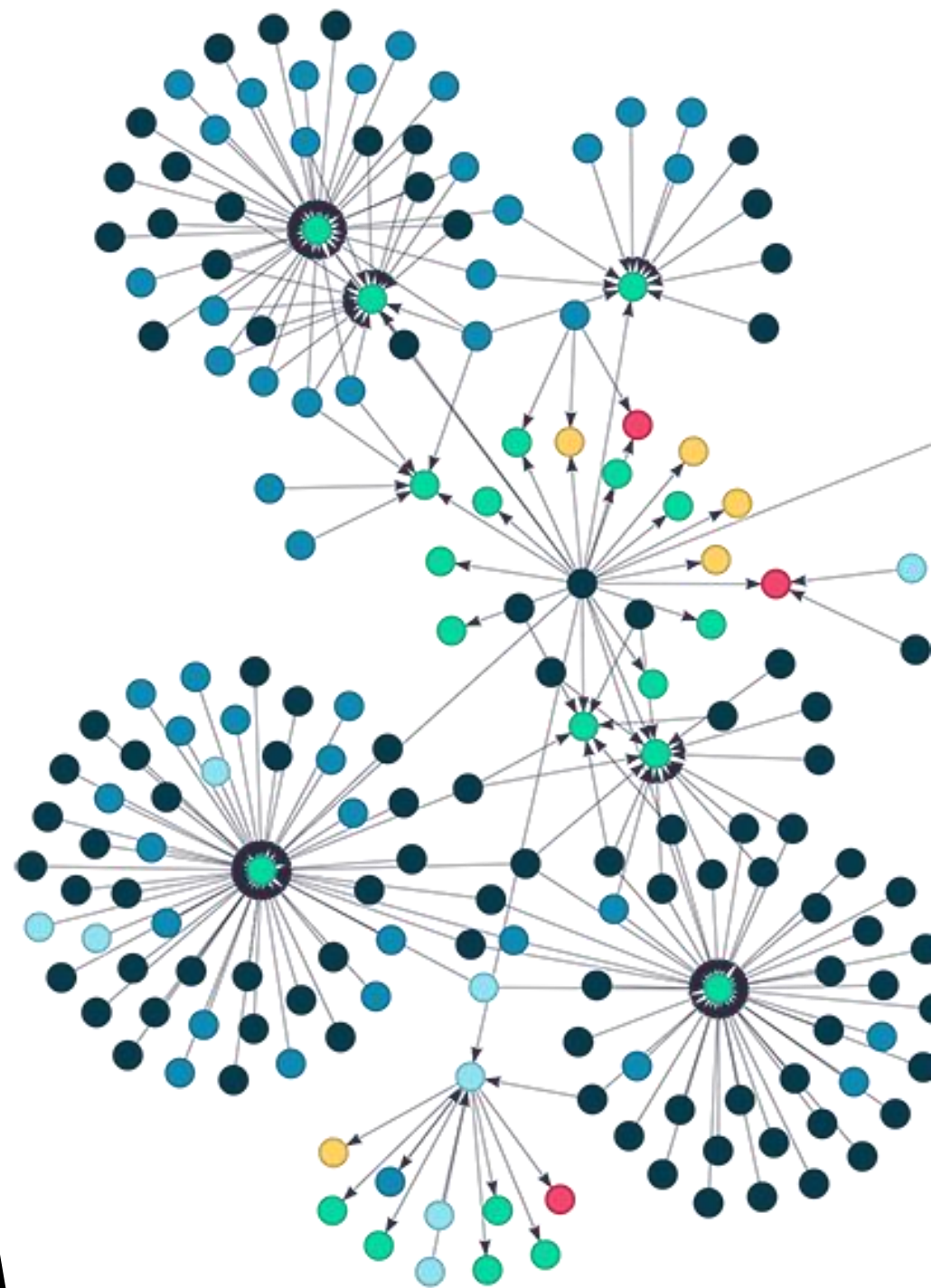
PREDICT



```
%%gremlin  
  
g.with (  
    "Neptune#ml.endpoint", "<ENDPOINT_NAME>".  
    V().has('title', 'MOVIE_NAME(YEAR)').properties  
    ("genre").with("Neptune#ml.classification").value()
```

Careem

Detecting identity fraud using
Amazon Neptune ML

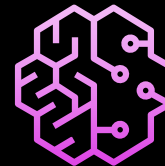




Business User

Amazon QuickSight ML

ML-POWERED INSIGHTS AND
DATA VISUALIZATIONS



ML predictions



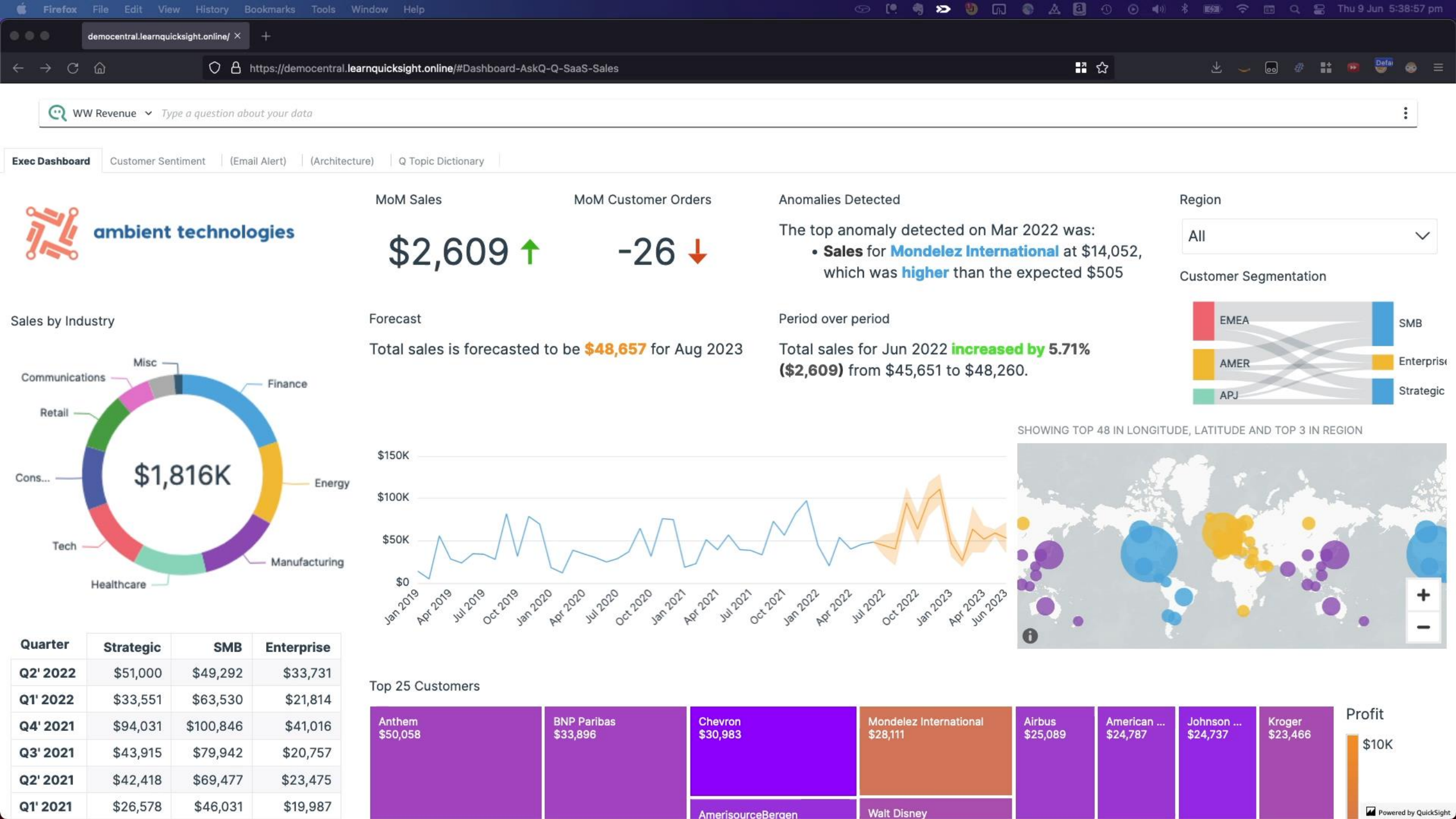
Machine learning powered insights



Natural language querying capability



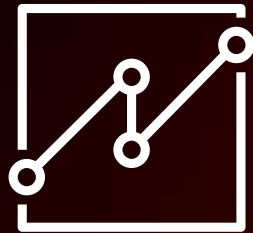
Auto narrative



Putting **machine learning** in the hands of **every builder**



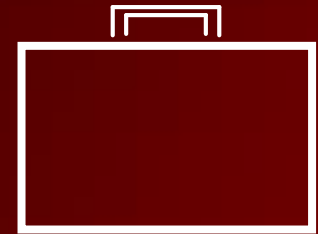
Practitioner



Analyst



App Developer



Business User

AWS brings **ML** closer **to the data**



AMAZON
AURORA ML



AMAZON
NEPTUNE ML



AMAZON
REDSHIFT ML



AMAZON
ATHENA ML



AMAZON
QUICKSIGHT ML

Learn more with these sessions

SESSION TITLE

Analyze data and detect transaction anomalies using Amazon Athena ML

Personalize customer engagements with marketing automation

Go beyond insights to predictive analytics with Amazon Redshift ML and Amazon SageMaker

Build an engaging audience experience with media analytics

Improving customer experience on Amazon Connect with data analytics and machine learning

Improving your business based on big data with Analytics and Machine Learning

Visit the AWS Data resource hub

A modern data strategy can help you manage, act on, and react to your data so you can make better decisions, respond faster, and uncover new opportunities. Dive deeper with these resources today.

- Harness data to reinvent your organization
- In unpredictable times, a data strategy is key
- Make data a strategic asset
- Rewiring your culture to be data-driven
- Put your data to work with a modern analytics approach
- ... and more!



<https://tinyurl.com/data-hub-aws>

[Visit resource hub](#)

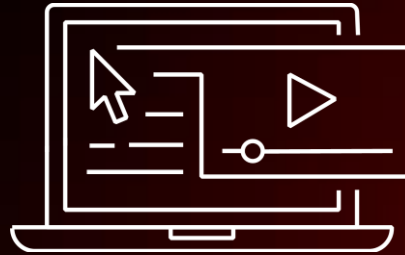
AWS Training and Certification for Data and Analytics



AWS Data & Analytics FREE Training Resources

Discover how to harness data, one of the world's most valuable resources, and innovate at scale.

<https://bit.ly/3Ntlhy7>



AWS Data Analytics Learning Plan

This learning plan expose you to the fastest way to get answers from all your data to all your users. It can also help prepare you for the AWS Certified Data Analytics - Specialty certification exam.

<https://bit.ly/3wBVjD1>



AWS Certified Data Analytics - Specialty

Earning AWS Certified Data Analytics – Specialty validates expertise in using AWS data lakes and analytics services.

<https://go.aws/3lwF0RR>

Thank you for attending AWS Innovate – Data Edition

We hope you found it interesting! A kind reminder to **complete the survey**.
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twitch.tv/aws

Thank you!