# AWS re:Invent

## Real-Time Streaming Applications on AWS

## on AWS

### Use Cases and Patterns

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# Agenda

- Why real-time analytics?

- What is real-time data?

- What real-time services does AWS offer?

- Who uses them?

- How do I use them?

- Q & A

# WHY REAL-TIME ANALYTICS?

# Why Real-Time Analytics?

# A Day in the Life

**Error 500**

The server encountered an internal error and was unable to complete your request.

# A Day in the Life

219.134.32.117 - - [16/Feb/1998:09:38:20 -0800] "GET /wp-content HTTP/1.1" 200 4521 "-" "Mozilla/5.0 (compatible; MSIE 10.0; Windows NT 6.1; Trident/5.1; .NET CLR 3.8.23015.5)"

95.169.41.62 - - [16/Feb/1998:09:38:20 -0800] "PUT /app/main/posts HTTP/1.1" 200 3883 "-" "Mozilla/5.0 (Windows NT 6.2; Trident/7.0; rv:11.0) like Gecko"

221.147.191.247 - - [16/Feb/1998:09:38:20 -0800] "GET /explore HTTP/1.1" 200 6579 "-" "Mozilla/5.0 (Windows; U; Windows NT 5.1) AppleWebKit/538.0.1 (KHTML, like Gecko) Chrome/38.0.895.0 Safari/538.0.1"

179.96.123.130 - - [16/Feb/1998:09:38:20 -0800] "GET /list HTTP/1.1" 200 560 "-" "Mozilla/5.0 (Windows NT 6.3; Win64; x64; rv:5.4) Gecko/20100101 Firefox/5.4.6"
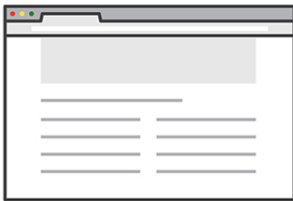
# Diminishing Value of Data
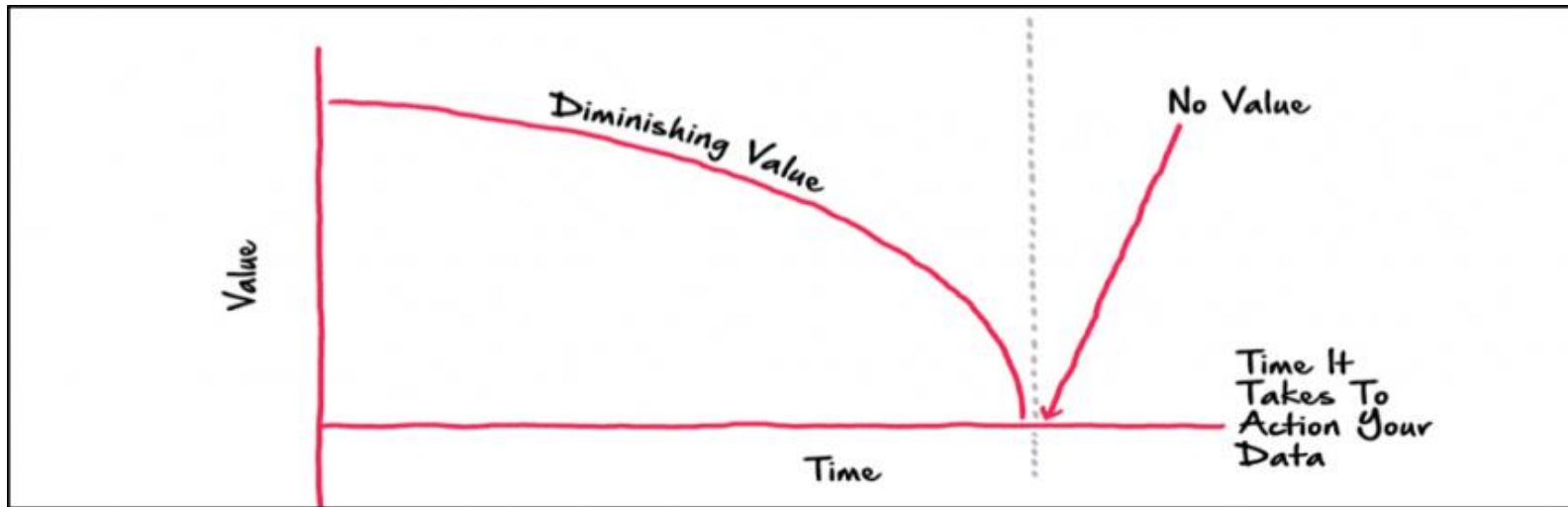
WHAT IS REAL-TIME DATA?

# What Is Real-Time Data?

Mobile Apps

Web Clickstream

[Wed Oct 11 14:32:52 2000] [error] [client 127.0.0.1] client denied by server configuration: /export/home/live/ap/htdo cs/test

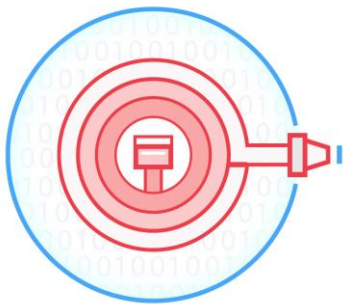Application Logs

Metering Records

IoT Sensors

Smart Buildings

# Real-Time Analytics Requirements

Ingest → Transform → Analyze → React → Persist

- Durable
- Continuous
- Fast

- Reactive
- Available
- Reliable

# WHAT REAL-TIME SERVICES DOES AWS OFFER?

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aws

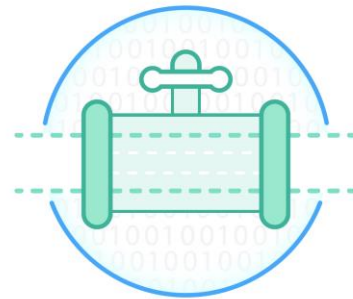# Amazon Kinesis: AWS Real-Time Services

**Kinesis Firehose**

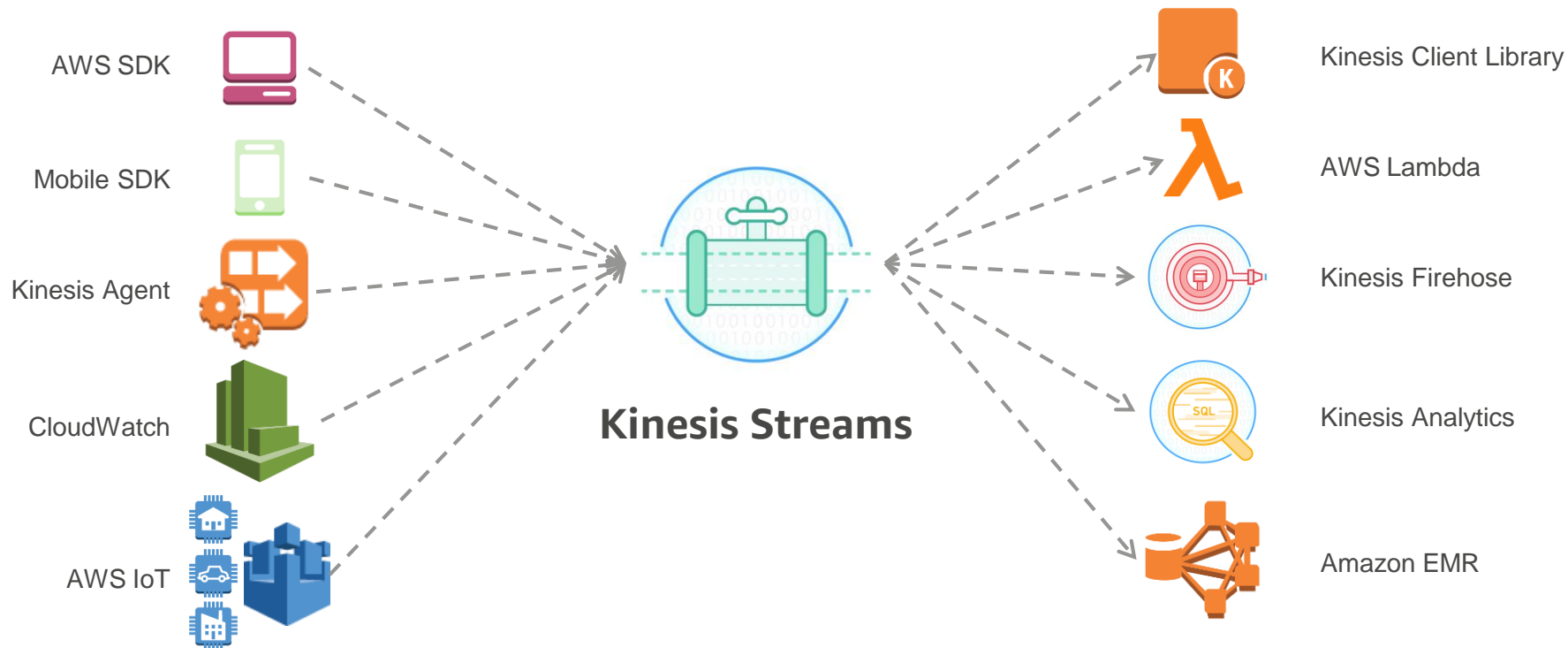Easily load streaming data into AWS

**Kinesis Analytics**

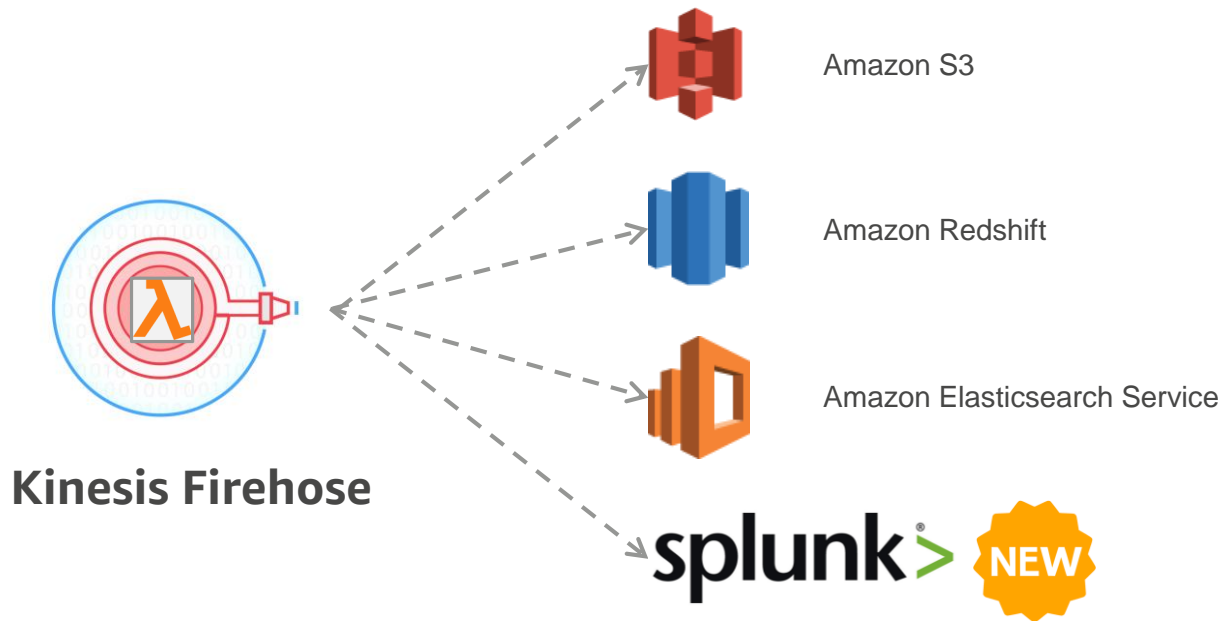Easily process and analyze streaming data with standard SQL

**Kinesis Streams**

Build custom applications that process and analyze streaming data

# What Is Kinesis Streams?



AWS SDK

Mobile SDK

Kinesis Agent

CloudWatch

AWS IoT

**Kinesis Streams**

Kinesis Client Library

AWS Lambda

Kinesis Firehose

Kinesis Analytics

Amazon EMR

# What Is Kinesis Firehose?



**Kinesis Firehose**

Amazon S3

Amazon Redshift

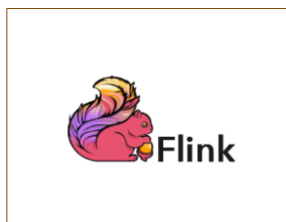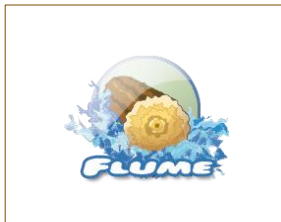Amazon Elasticsearch Service
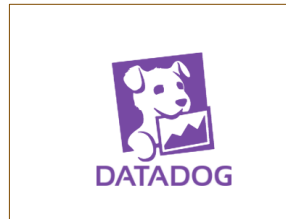
splunk> **NEW**

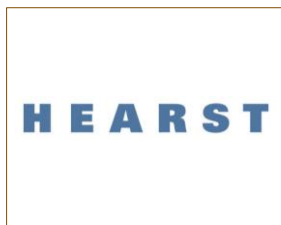# What Is Kinesis Analytics?

**Kinesis Analytics**

- **Continuous** anomaly detection
- **Continuous** time series analysis
- **Continuous** filtering
- **Continuous** aggregation
- **Continuous** enrichment

# Amazon Kinesis Third-Party Connectors
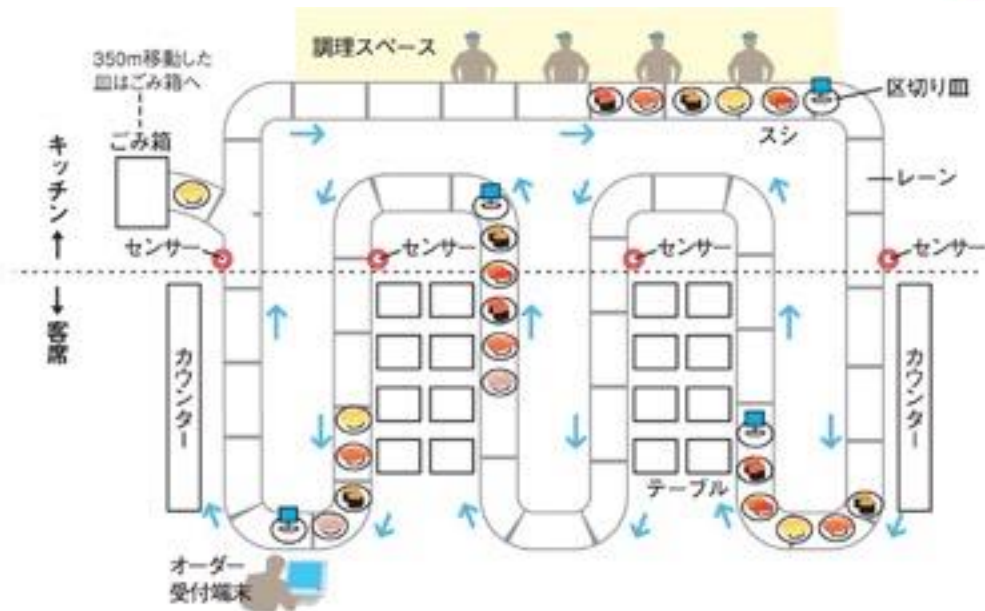
WHO USES THEM?
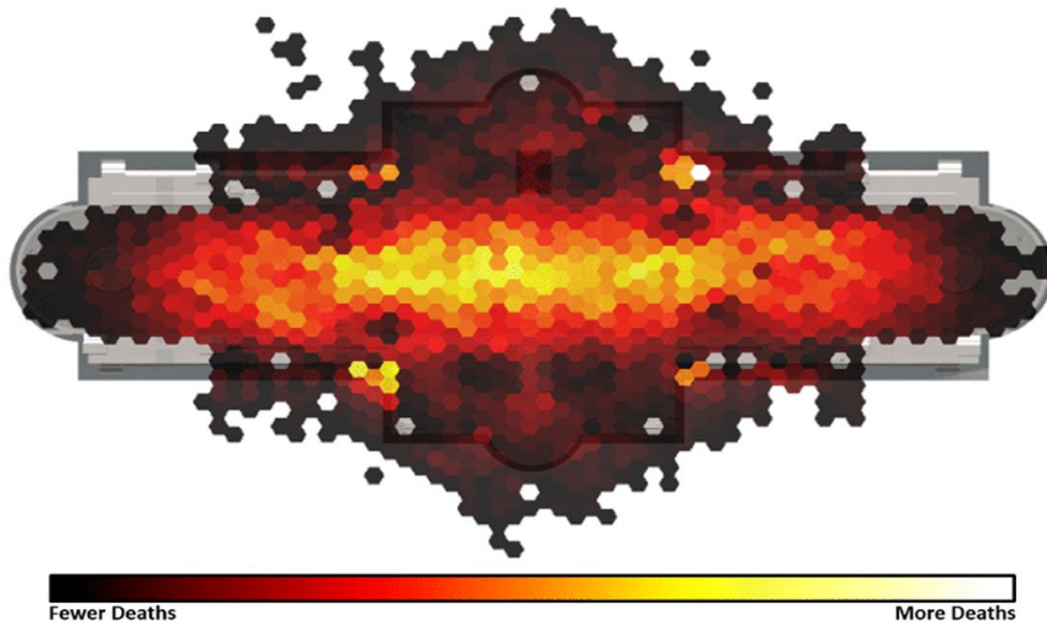
# Amazon Kinesis Customers

# Sushiro

aws

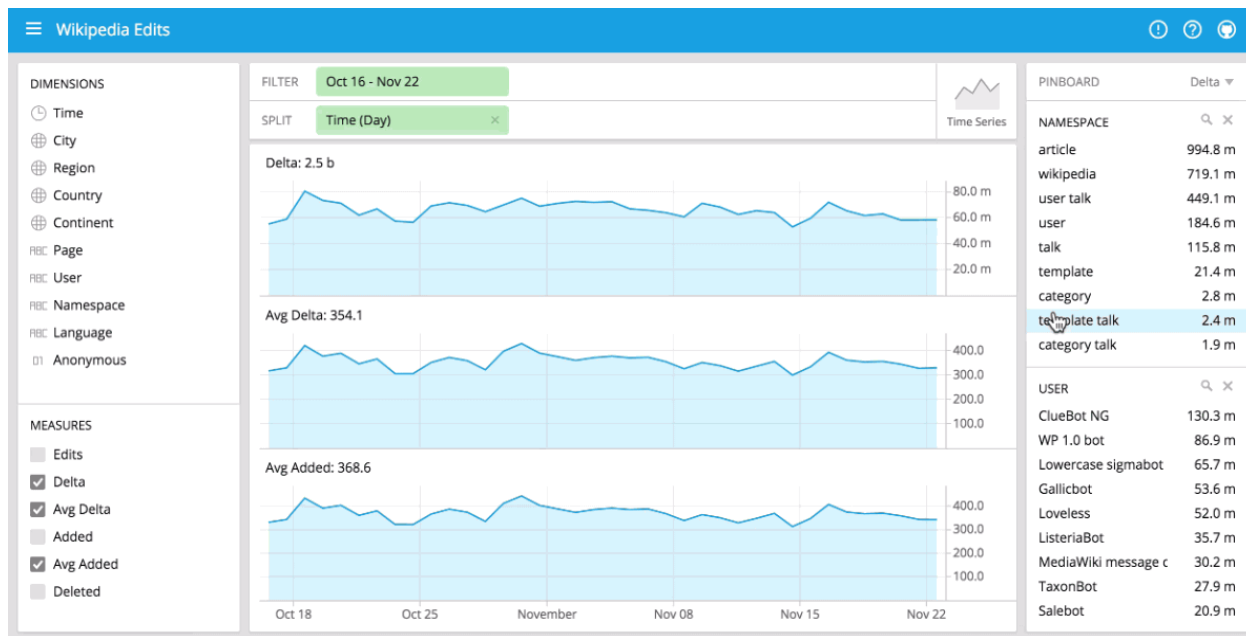# Sushiro

# Amazon Game Studios

# Amazon Game Studios



Fewer Deaths                                                      More Deaths
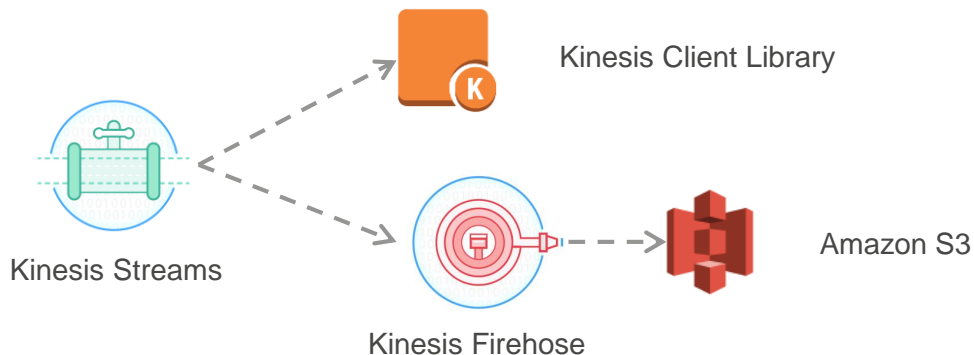
# Netflix

# Netflix

# HOW DO I USE THEM?

# Reference Architecture

## Real-time application

- Continuous data processing by KCL application
- Continuous data archival to Amazon S3



Kinesis Client Library

Kinesis Streams

Kinesis Firehose

Amazon S3

# Reference Architecture

## Real-time aggregation

- Continuous metric aggregation over time periods
- Continuous delivery to storage and analytics services
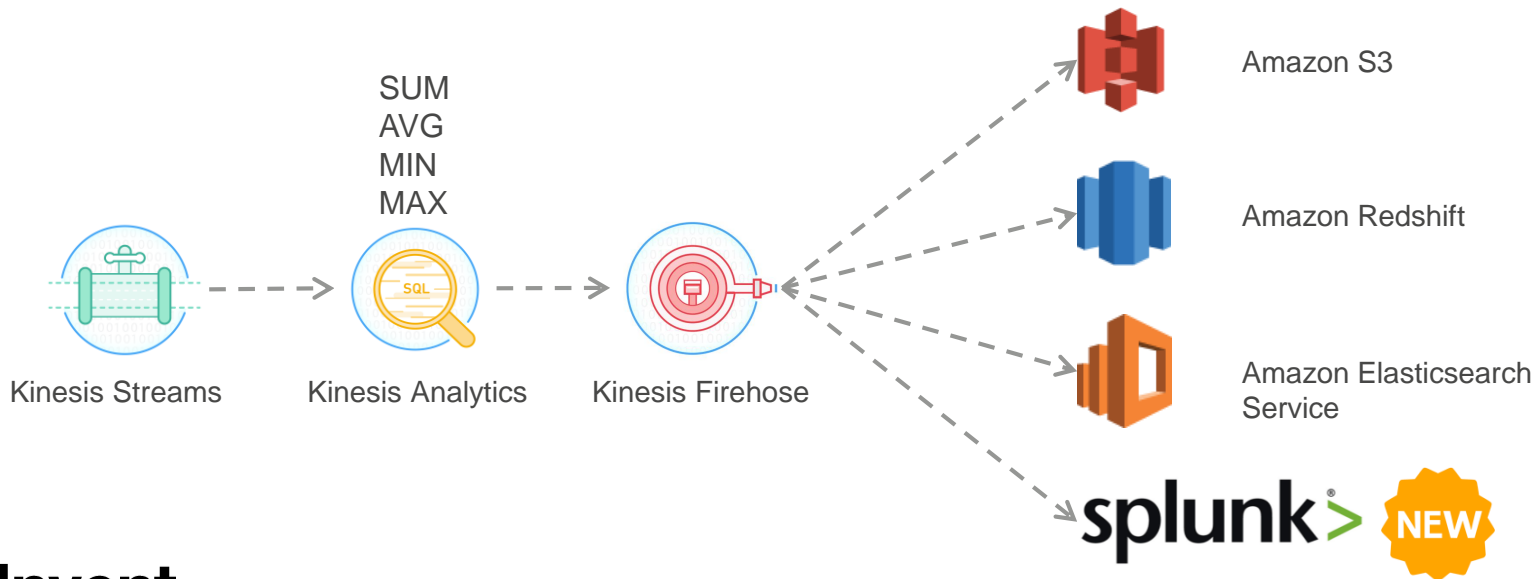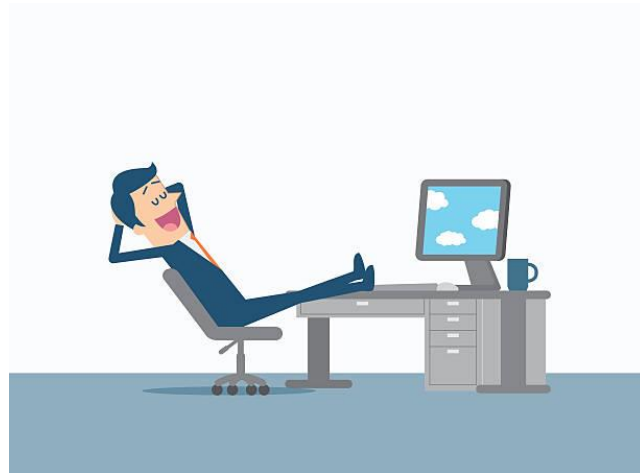
# Reference Architecture

## Real-time alarms and notifications

- Continuous anomaly detection over a sequence of events
- Real-time alarm and notification triggering



Kinesis Streams → Anomaly Detection / Kinesis Analytics → AWS Lambda → Amazon SNS / Amazon CloudWatch
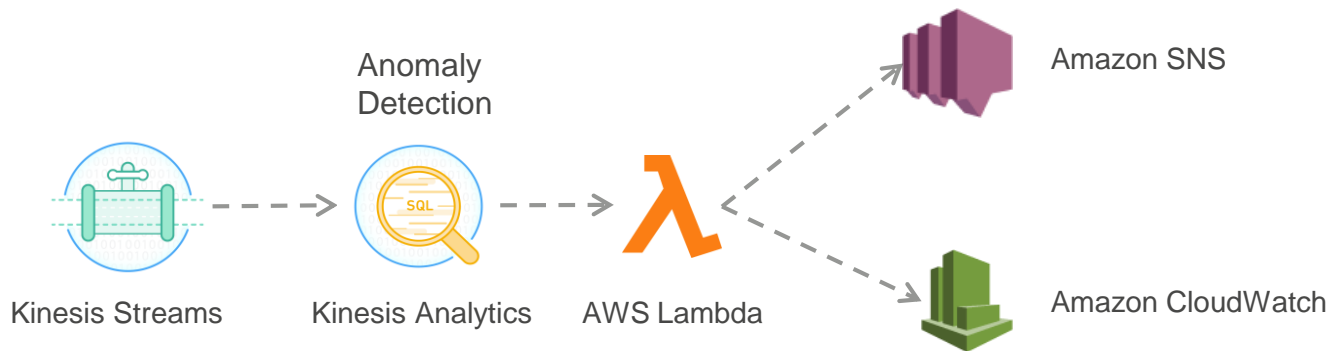
# GETTING STARTED

# Getting Started

# Getting Started

- Kinesis Home Page: https://aws.amazon.com/kinesis/

- Kinesis Blog Post: https://aws.amazon.com/kinesis/blog-posts/

- Getting Started Page: https://aws.amazon.com/kinesis/getting-started/

Q & A

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Thank you!