Build Business Outcomes with a Modern Data Architecture (Level 200)

Craig Stires, Head of Big Data & Analytics

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The old approaches aren't good enough

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People

Too much specialization required and other heavy lifting keeps teams stagnant

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Process

Long procurement and deployment cycles create missed opportunities

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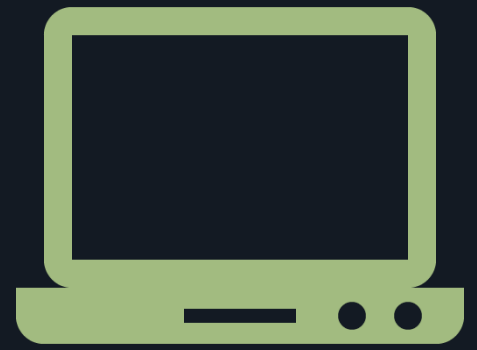
Long procurement and deployment cycles create missed opportunities

Technology



Legacy systems are inadequate or too expensive to scale for evolving use cases

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Why customers build data platforms on AWS

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People

Infrastructure as code allows for fast iterations and auditable changes, at the speed of business

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Some services are instantly available, others take minutes to provision, not months

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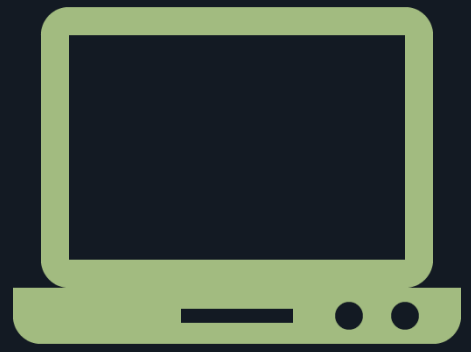

AWS has the broadest and deepest cloud platform, and is built for security and governance

Let’s go on a common customer journey

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Meet EarEcstasy, as they move from B2B to B2C

2005

EarEcstasy manufacturers headsets. They ran a traditional B2B business since 2005, selling through distribution and retail channels.

* This case is representative of a common customer journey, but EarEcstasy isn't an actual business

Meet EarEcstasy, as they move from B2B to B2C

2005

EarEcstasy manufacturers headsets. They ran a traditional B2B business since 2005, selling through distribution and retail channels.

2018

In 2018, they launched their first “Smart Buds”. These wireless headsets have voice enablement, GPS tracking, and heartrate monitors built in, and the device syncs with the users mobile phone via Bluetooth. The mobile app also supports scene detection.

* This case is representative of a common customer journey, but EarEcstasy isn’t an actual business

EarEcstasy needs to answer new questions and move faster

Lim, Head of Finance

Raymond, Head of Product

EarEcstasy needs to answer new questions and move faster

How do quality issues impact cost of production?

Can I look at supplier performance over time?

How can we reduce our inventory holding costs?

Lim, Head of Finance

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EarEcstasy needs to answer new questions and move faster

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Which regions are the new earbuds selling well?

What is the demand forecast by product category?

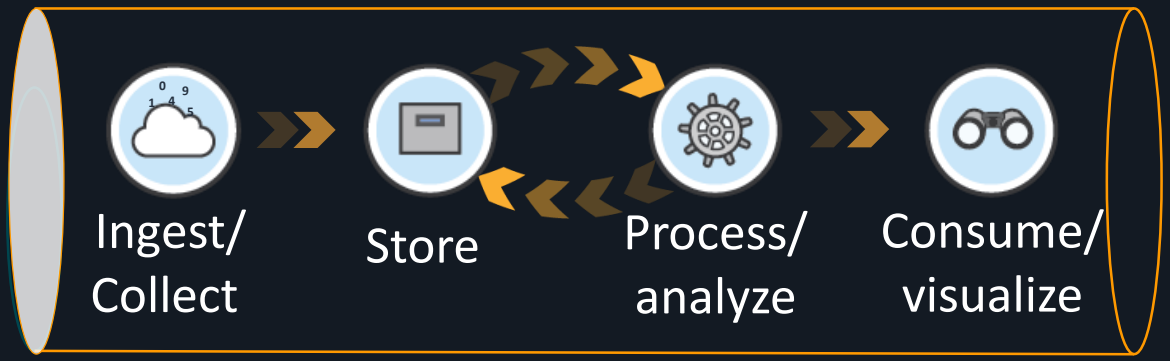
What is the social sentiment about our products?

Raymond, Head of Product

To answer new questions quickly, we look to a modern data architecture design

Massive upfront costs
Overprovisioned capacity
Long implementation times

Pay as you go, for what you use
Decoupled pipelines and engines
Experimentation platform



Outcome 1: Modernize and consolidate

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Start with a set of specific questions to answer, then work backwards to the data required

How do quality issues impact cost of production?

Can I look at supplier performance over time?

How can we reduce our inventory holding costs?

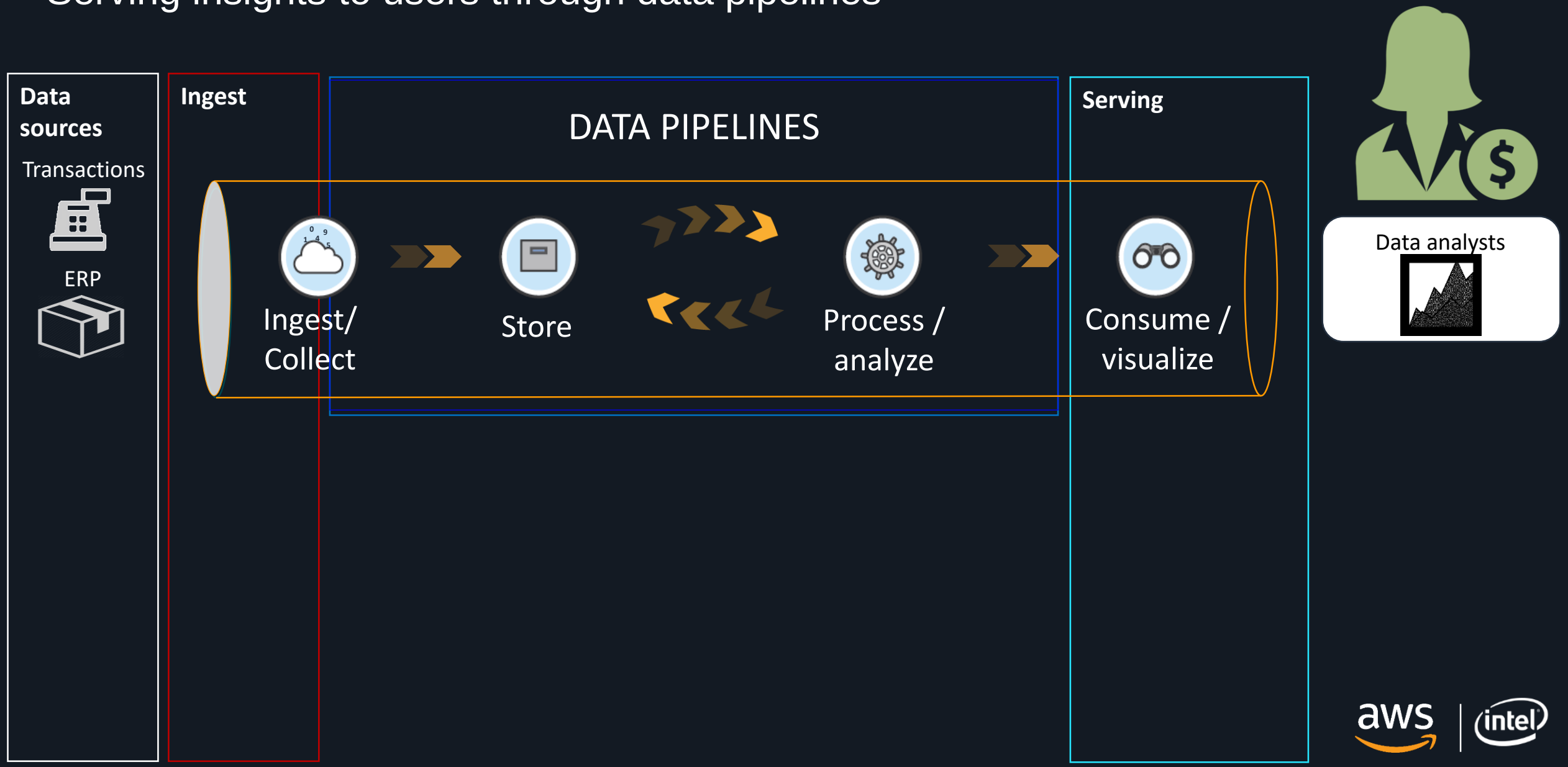
Lim, Head of Finance

Order History / Returns (CRM)

Inventory / Production (ERP)

Modern data architecture

Serving insights to users through data pipelines



Start small and iterate

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Modern data architecture

Insights to enhance business applications, new digital services

Data sources

Transactions

ERP

Ingest

DATA PIPELINES

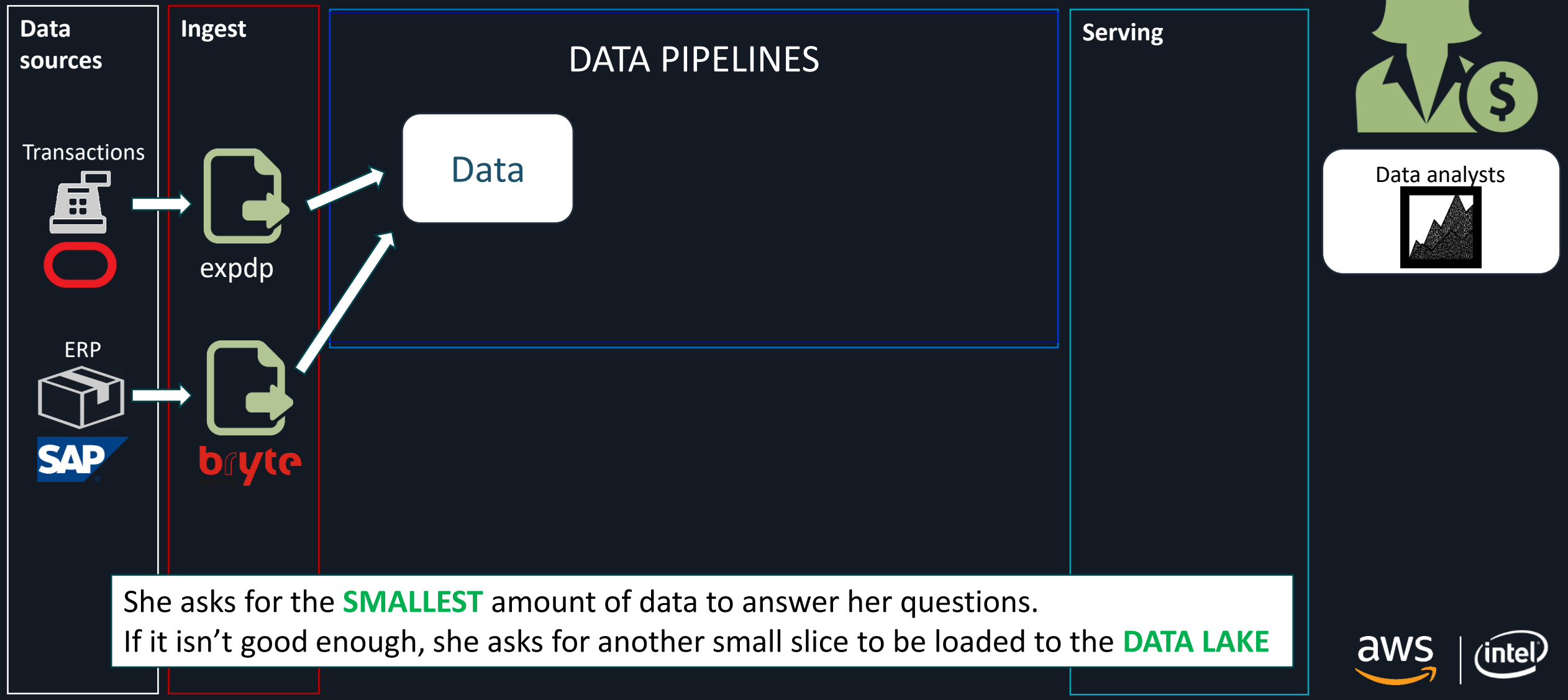
Serving

Data analysts

She asks for the **SMALLEST** amount of data to answer her questions.
If it isn't good enough, she asks for another small slice to be loaded to the **DATA LAKE**

Modern data architecture

Insights to enhance business applications, new digital services



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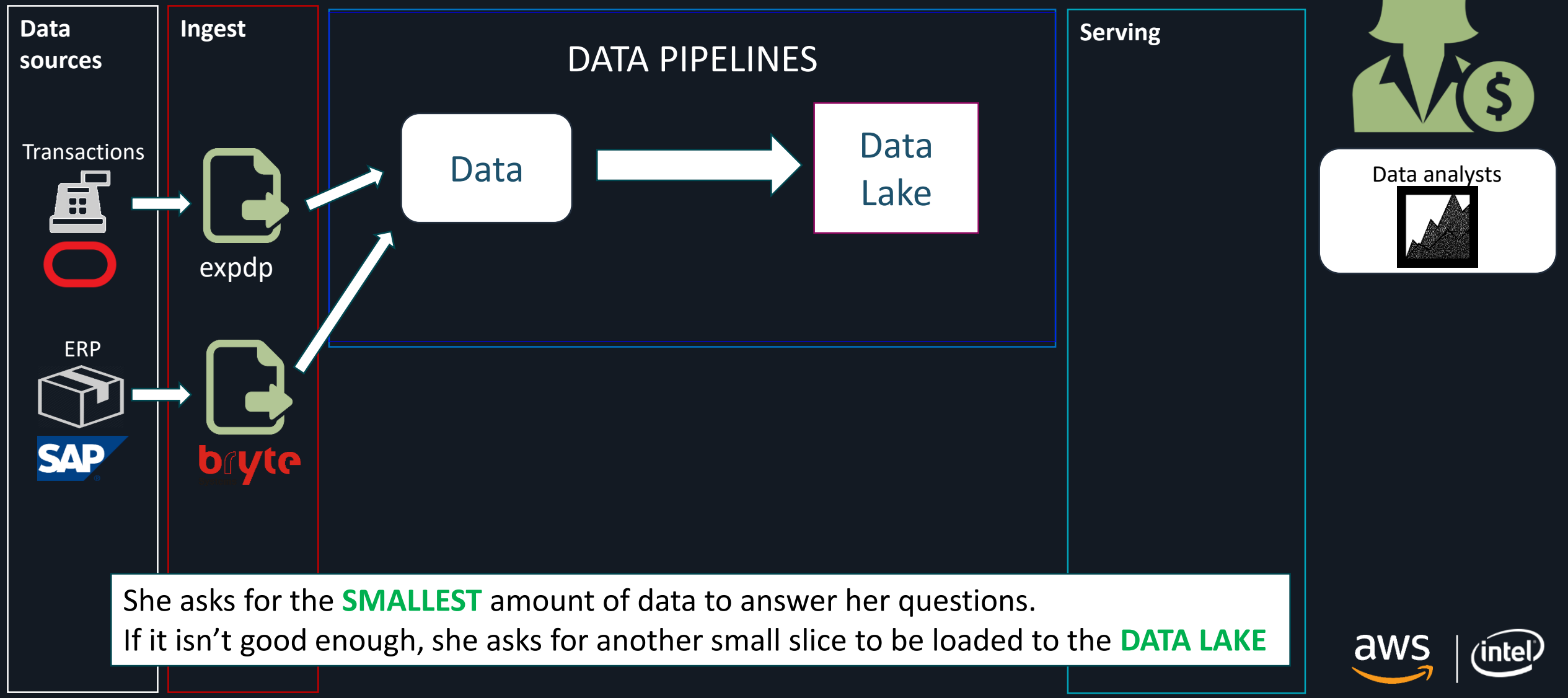
Modern data architecture

Insights to enhance business applications, new digital services



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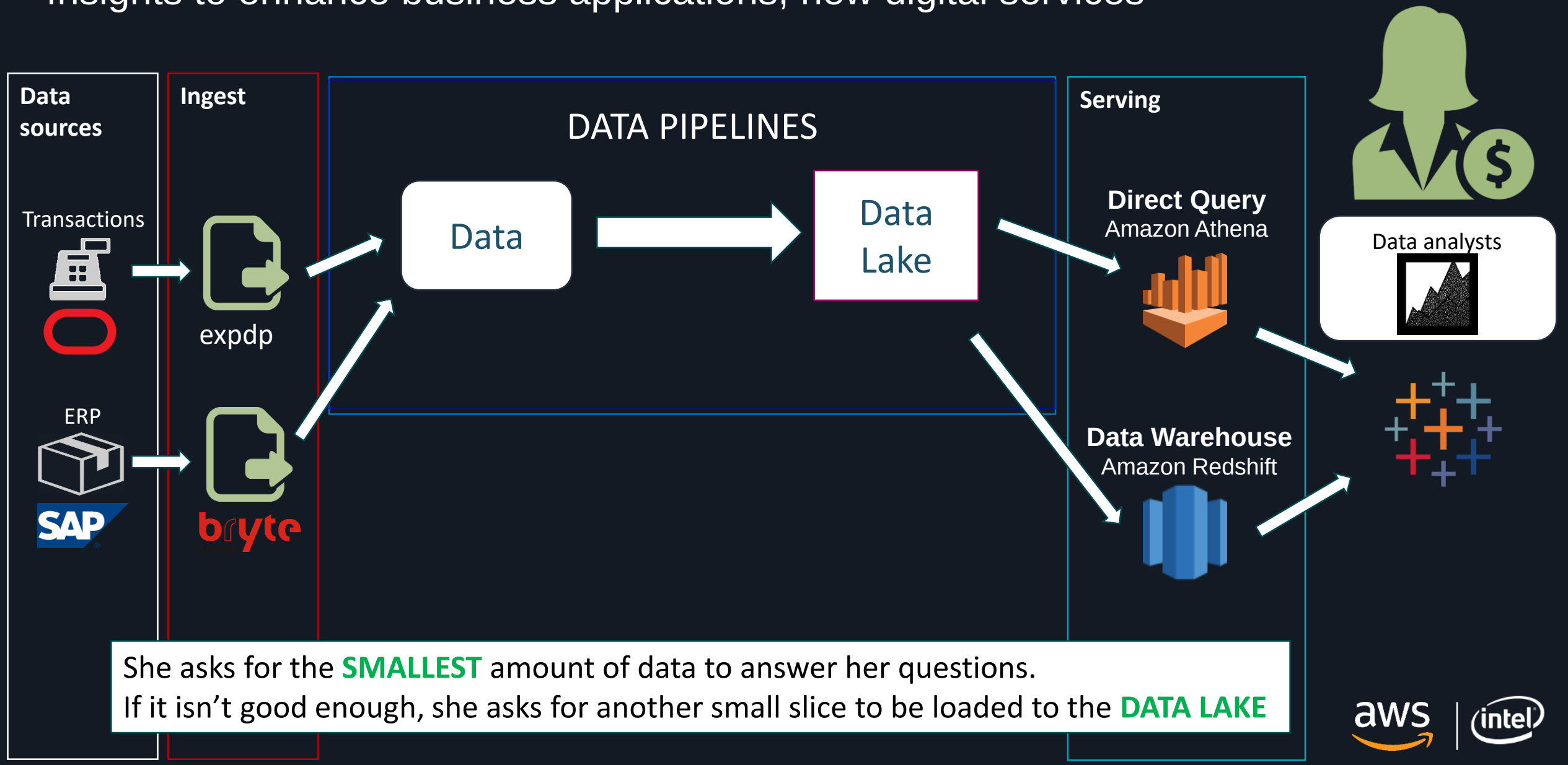
Modern data architecture

Insights to enhance business applications, new digital services



Characteristics of a Data Lake

Collect
Anything

Characteristics of a Data Lake

Collect Anything

Dive in Anywhere

Characteristics of a Data Lake

Collect Anything

Dive in Anywhere

Flexible Access

Characteristics of a Data Lake

Collect Anything

Dive in Anywhere

Flexible Access

Future Proof

Start with a set of specific questions to answer, then work backwards to the data required

Which regions are the new earbuds selling well?

What is the demand forecast by product category?

What is the social sentiment about our products?

Raymond, Head of Product

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Which regions are the new earbuds selling well?

What is the demand forecast by product category?

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Order History / Returns (CRM)

NOW IN THE DATA LAKE

Start with a set of specific questions to answer, then work backwards to the data required

Which regions are the new earbuds selling well?

What is the demand forecast by product category?

What is the social sentiment about our products?

Raymond, Head of Product

Order History / Returns (CRM)

NOW IN THE DATA LAKE

Trending / Mentions (Social)

Experiment, validate, then scale

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Modern data architecture

Insights to enhance business applications, new digital services

Business users

Data sources

Transactions

ERP

Social media

Ingest

DATA PIPELINES

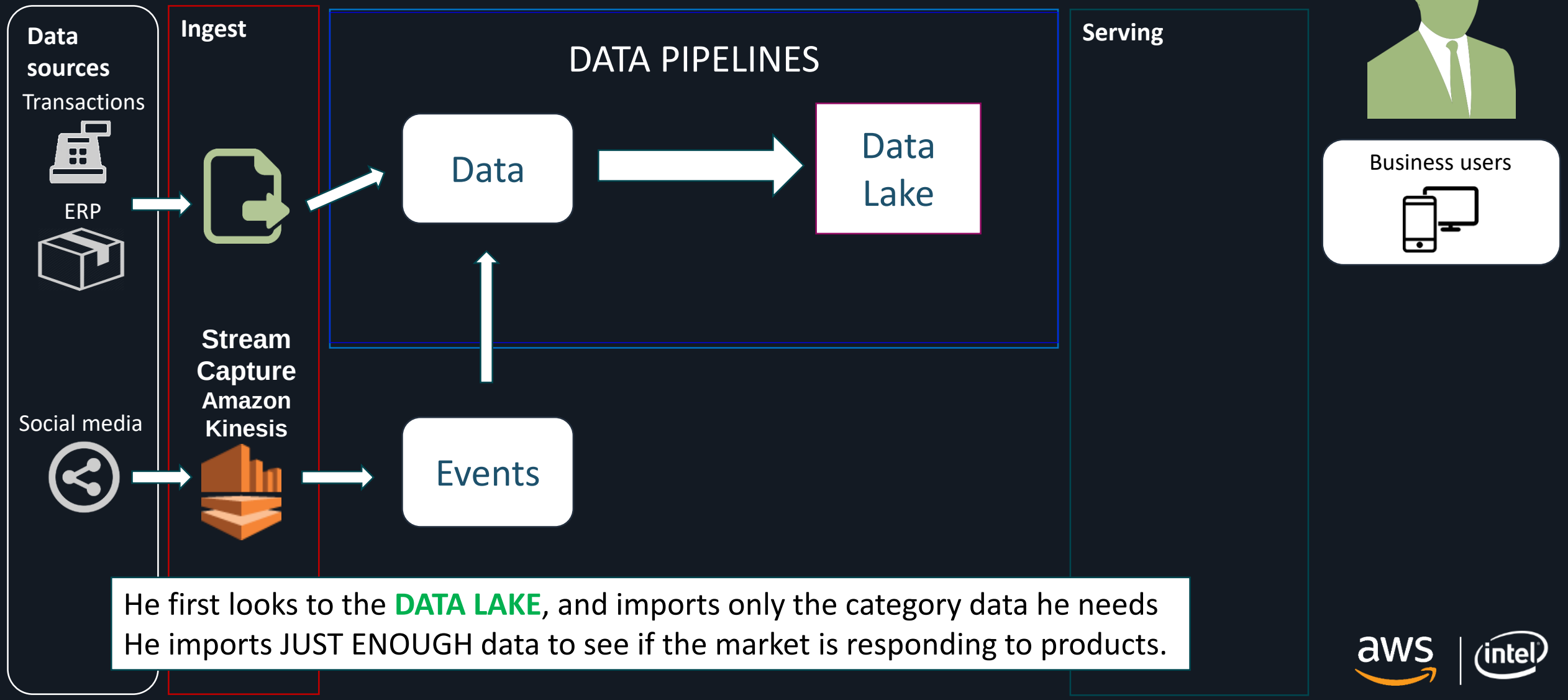
Data Lake

Serving

He first looks to the **DATA LAKE**, and imports only the category data he needs
He imports JUST ENOUGH data to see if the market is responding to products.

Modern data architecture

Insights to enhance business applications, new digital services



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Modern data architecture

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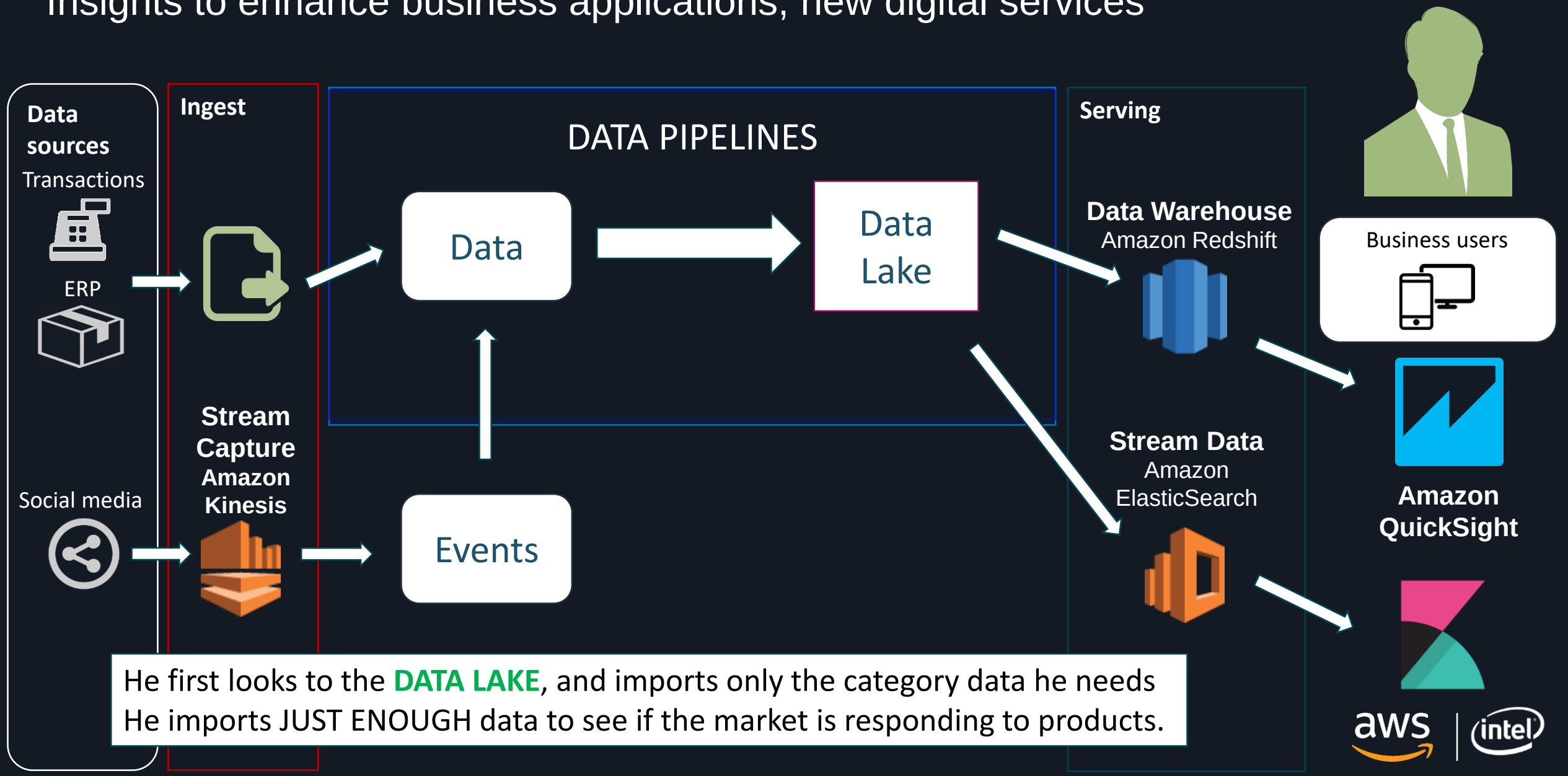

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Amazon Redshift – Modern Data Warehousing

Fast, scalable, fully managed data warehouse at 1/10th the cost

Massively parallel, scales from gigabytes to exabytes

Queries data across your Redshift data warehouse and Amazon S3 data lake

---

Fast at scale

Columnar storage technology to improve I/O efficiency and scale query performance

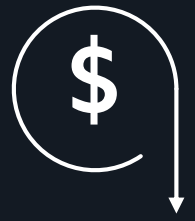
Open file formats

Analyze optimized data formats on direct-attached disks, and all open file formats in S3

Secure

Audit everything; encrypt data end-to-end; extensive certification and compliance

Cost-effective



Start at $0.25 per hour; as low as $250-$333 per uncompressed terabyte per year

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Common data pipeline configuration

Highly decoupled configurations scale better, are more fault tolerant, and cost optimized

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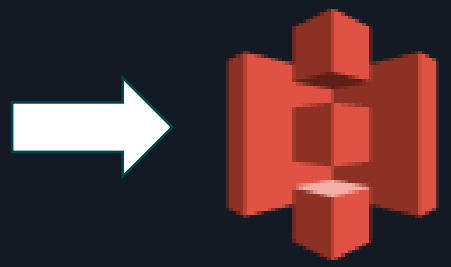
Highly decoupled configurations scale better, are more fault tolerant, and cost optimized

Raw Data
Amazon S3



Common data pipeline configuration

Highly decoupled configurations scale better, are more fault tolerant, and cost optimized

Raw Data
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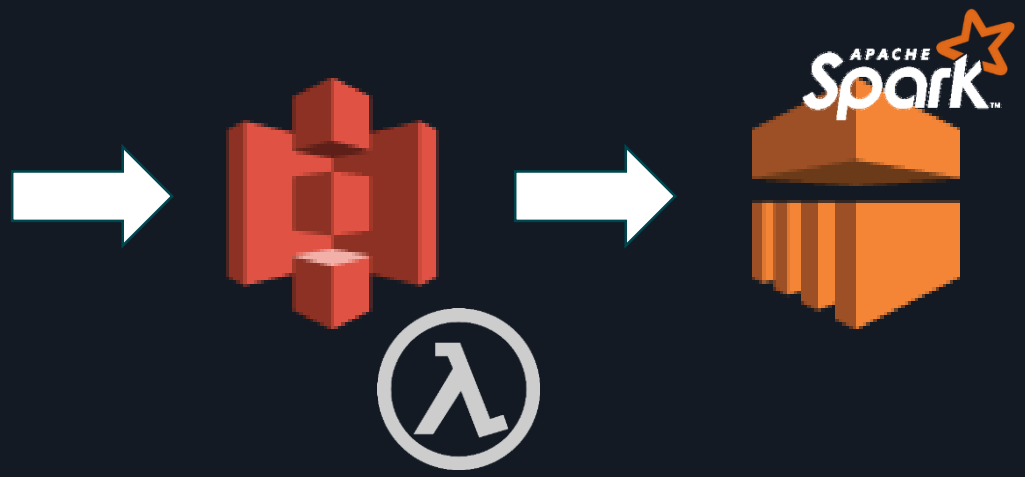
ETL (Hadoop)
Amazon EMR



Triggered Code
Amazon Lambda

Common data pipeline configuration

Highly decoupled configurations scale better, are more fault tolerant, and cost optimized

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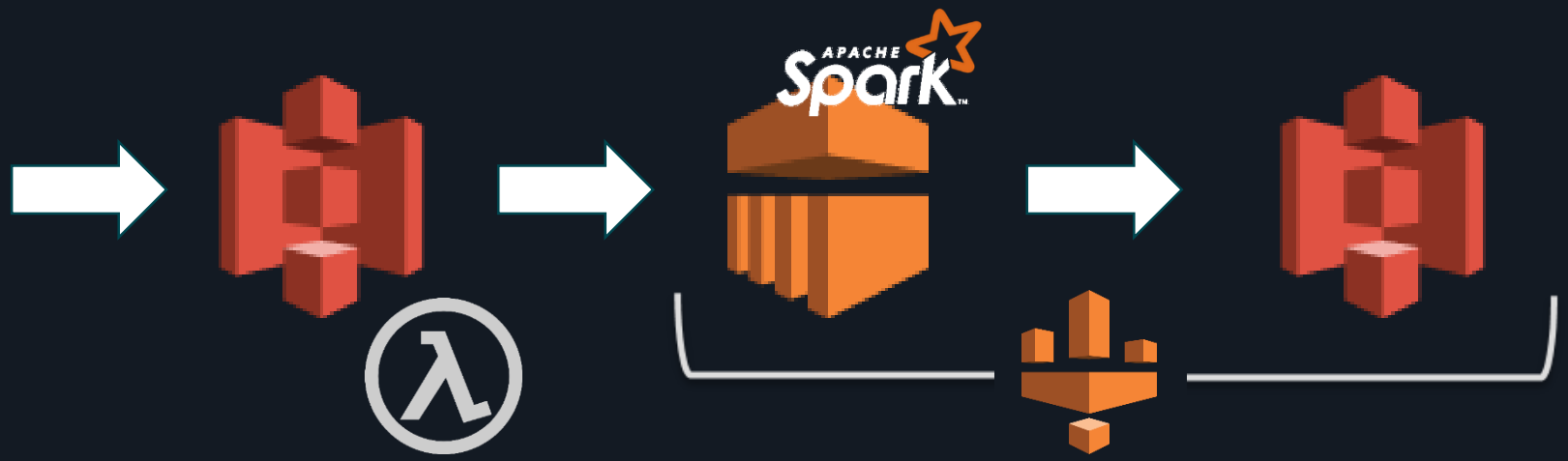
ETL (Hadoop)
Amazon EMR

Staged Data (Data Lake)
Amazon S3



Triggered Code
Amazon Lambda

ETL & Catalog Management
AWS Glue

Common data pipeline configuration

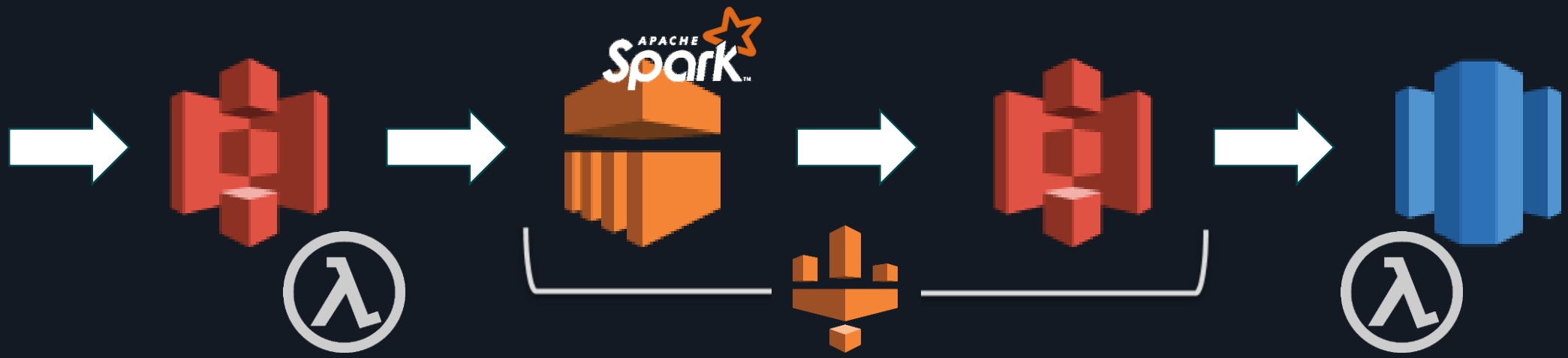
Highly decoupled configurations scale better, are more fault tolerant, and cost optimized

Raw Data
Amazon S3

ETL (Hadoop)
Amazon EMR

Staged Data (Data Lake)
Amazon S3

Data Warehouse
Amazon Redshift



Triggered Code
Amazon Lambda

ETL & Catalog Management
AWS Glue

Triggered Code
Amazon Lambda

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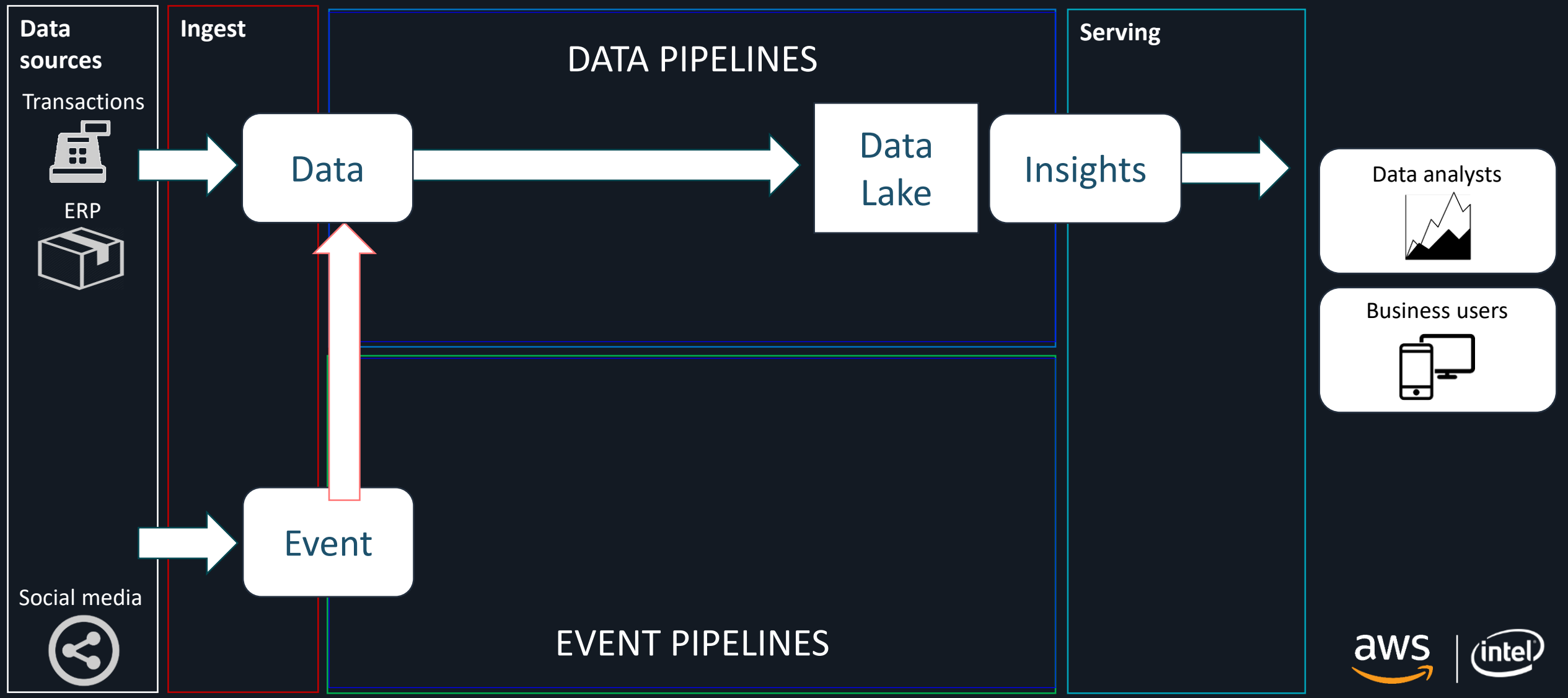
Modern data architecture

Insights to enhance business applications, new digital services



Outcome 2: Innovate for new revenues

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EarEcstasy has its first direct relationship with consumers

Bala, Head of Marketing

Krzysztof, Data Scientist

EarEcstasy has its first direct relationship with consumers

How are people using the Smart Buds?

How to understand what they listen to and when?

What kinds of people are in/decreasing usage?

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What are our customer segments, based on usage?

Can predict music preference from location and HR?

Are there additional signals in the voice commands?

Can we infer user activity, from scenes in pictures?

Krzysztof, Data Scientist

Start with a set of specific questions to answer, then work backwards to the data required

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Registration, usage [time/place] (Mobile app)

Start with a set of specific questions to answer, then work backwards to the data required

How are people using the Smart Buds?

How to understand what they listen to and when?

What kinds of people are in/decreasing usage?

Bala, Head of Marketing

Registration, usage [time/place] (Mobile app)

Media consumption (Partner API)

music

Spotify

tunein

aws | intel

Start with a set of specific questions to answer, then work backwards to the data required

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Registration, usage [time/place] (Mobile app)

LOAD TO DATA LAKE

Start with a set of specific questions to answer, then work backwards to the data required

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Are there additional signals in the voice commands?

Can we infer user activity, from scenes in pictures?

Krzysztof, Data Scientist

Registration, usage [time/place] (Mobile app)

LOAD TO DATA LAKE

HR, Voice, GPS, Images (Device data)

DATA LAKE, OR NOT?

Sandboxes - fast, cheap, low risk

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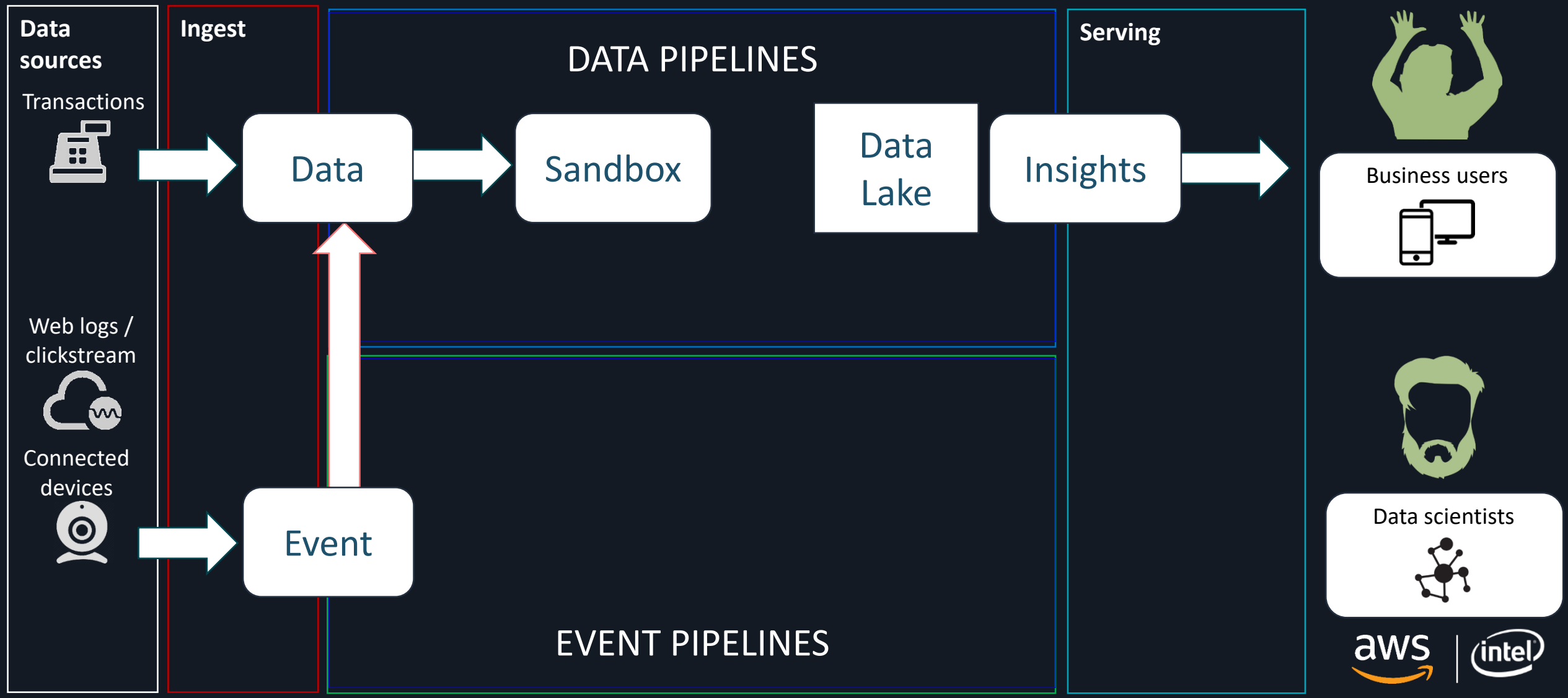
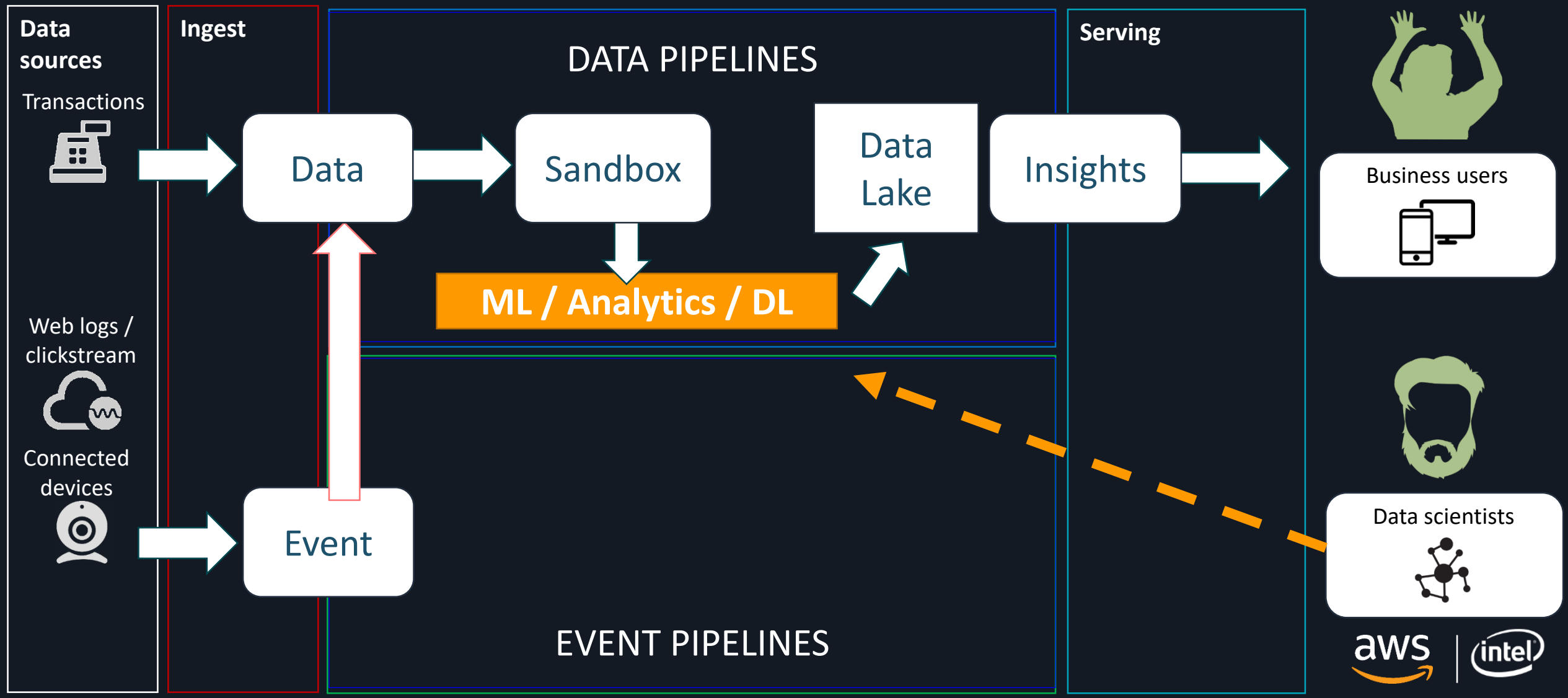
Modern data architecture

Insights to enhance business applications, new digital services



Modern data architecture

Insights to enhance business applications, new digital services



Modern data architecture

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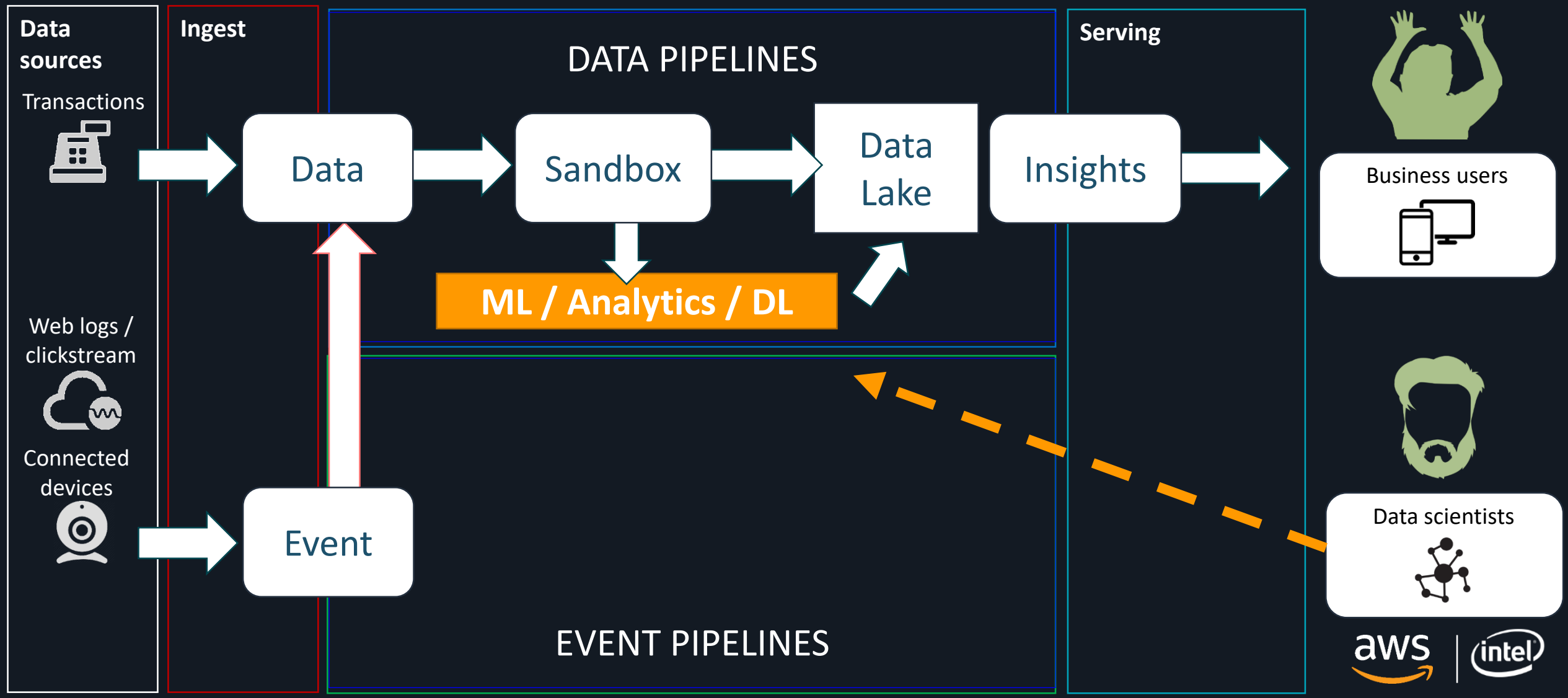
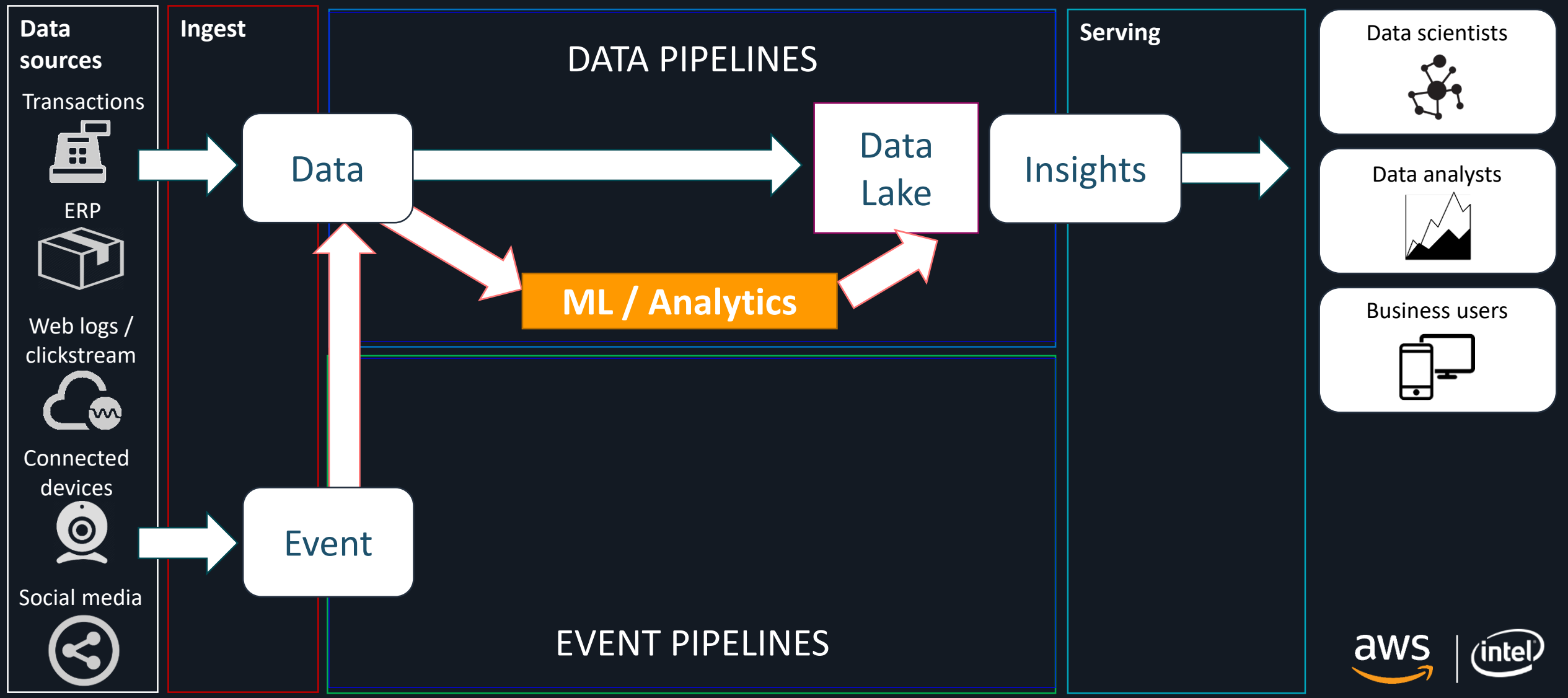


Modern data architecture

Innovate for new revenues - personalization and forecasting



Outcome 3: Real-time engagement

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EarEcstasy offers a personalized life soundtrack

Personalized, based on
past preferences,
people with similar behaviors,
and environments detected

Use EarEcstasy voice enablement to play music

Use EarEcstasy voice enablement to play music

Use EarEcstasy voice enablement to play music

I’m tired, play me some music!

Amazon Transcribe / Comprehend

Action: PLAY
Category: MUSIC
Genre: <RECOMMEND>

Request content

Use EarEcstasy voice enablement to play music

I’m tired, play me some music!

Amazon Transcribe / Comprehend

Action: PLAY
Category: MUSIC
Genre: <RECOMMEND>

Request content

Amazon Kinesis Streams

Location: <FIND GPS>
Mood: <FIND HR>

Connected device data

Use EarEcstasy voice enablement to play music

I'm tired, play me some music!

Amazon Transcribe / Comprehend

Amazon Kinesis Streams

Action: PLAY
Category: MUSIC
Genre: <RECOMMEND>

Request content

Location: <FIND GPS>
Mood: <FIND HR>

Connected device data

HISTORY

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Amazon Transcribe / Comprehend

Amazon Kinesis Streams

Action: PLAY
Category: MUSIC
Genre: <RECOMMEND>

Request content

Location: <FIND GPS>
Mood: <FIND HR>

Connected device data

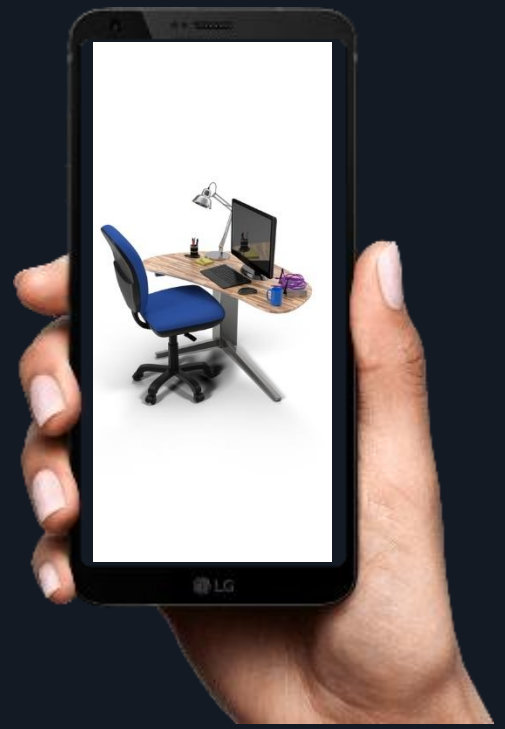
HISTORY

+

PEOPLE LIKE YOU

Twenty One Pilots!

Use the mobile app to take a picture to identify activity



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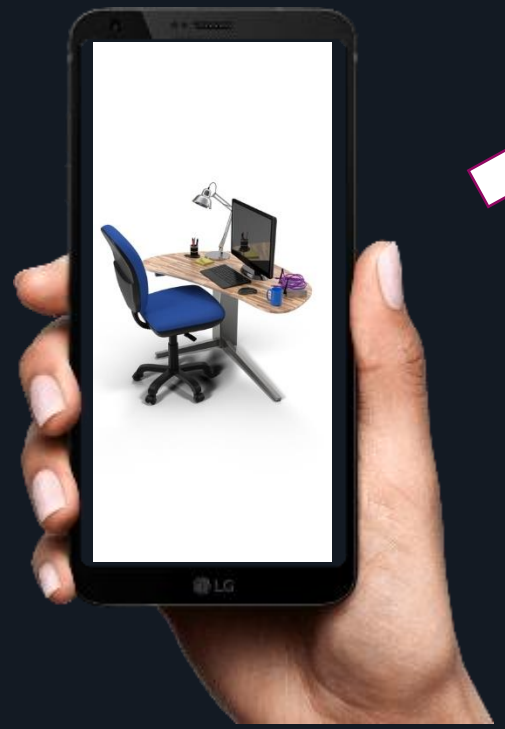
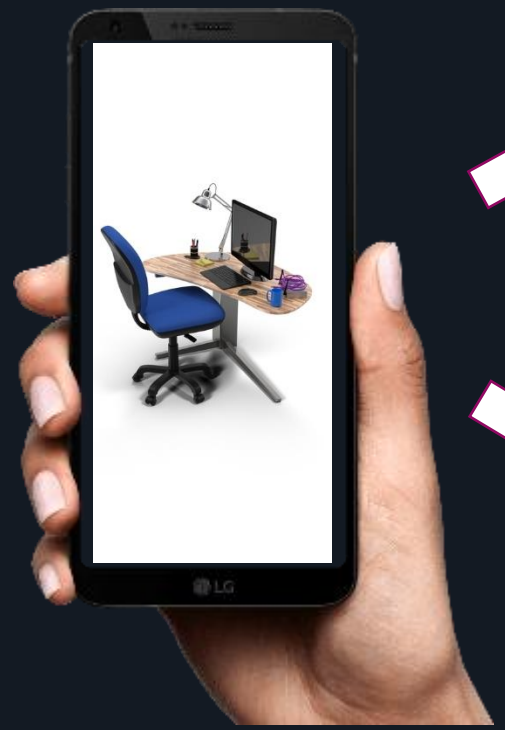


Amazon Rekognition Image

CHAIR	97%
LAPTOP	95%
LAMP	88%
DESK	82%

Object Identification

Use the mobile app to take a picture to identify activity



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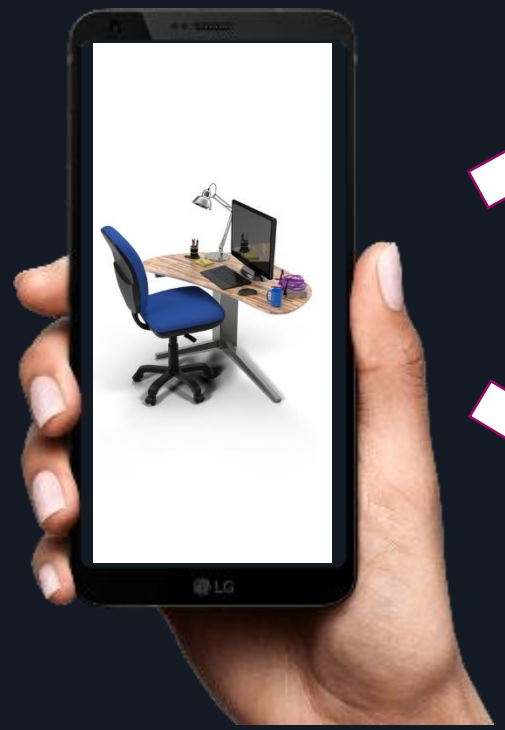
Object Identification

Amazon SageMaker

Image Classification

Use the mobile app to take a picture to identify activity



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Object Identification

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Image Classification

A QUIET OFFICE

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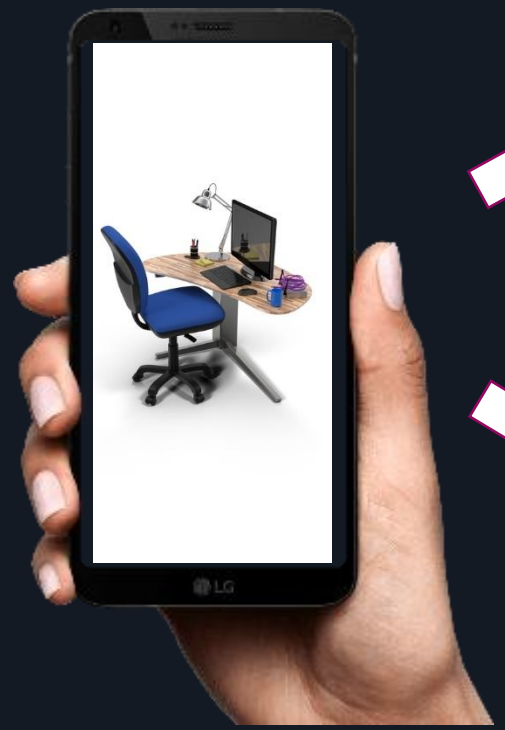

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Object Identification

Amazon SageMaker

Image Classification

A QUIET OFFICE

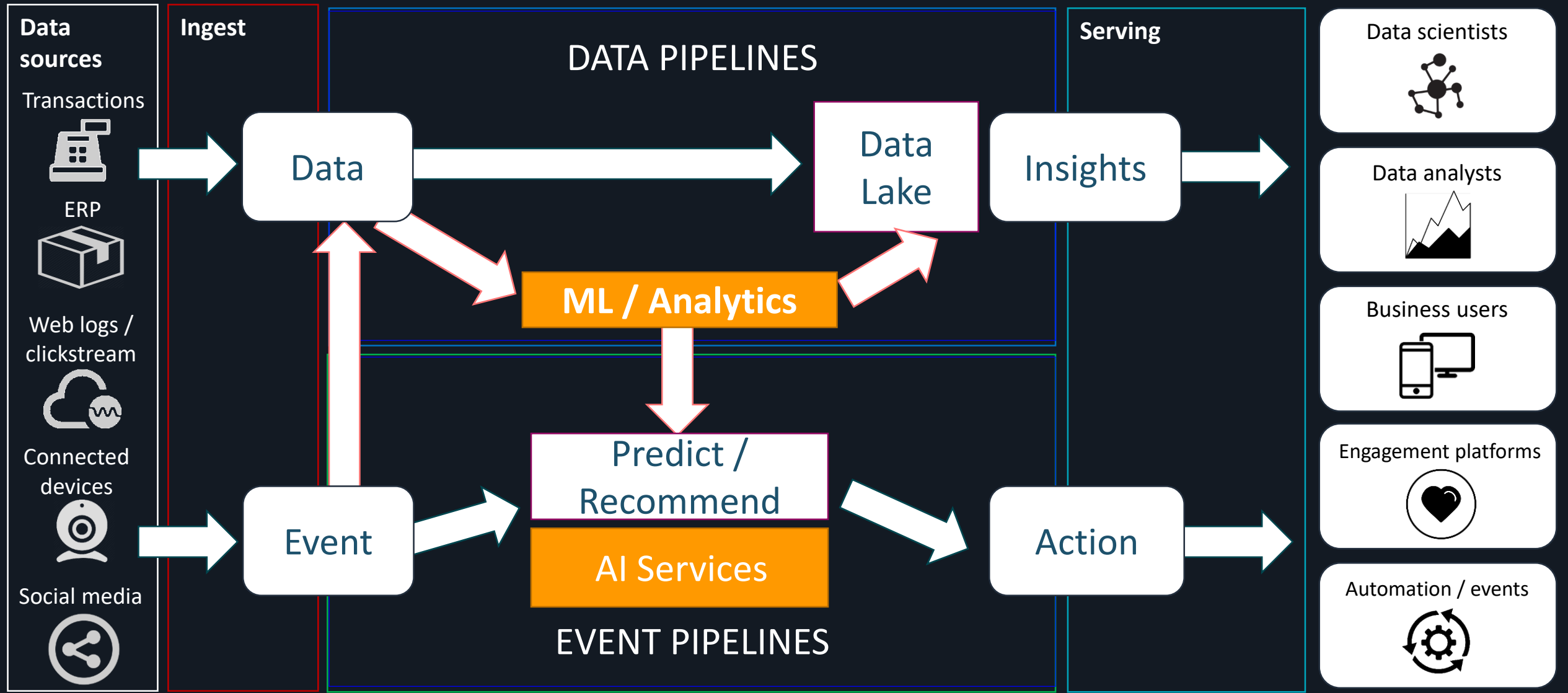
+

<HISTORY>

WORKING!

Modern data architecture

Real-time engagement and interactive customer experiences



Business Outcomes on a Modern Data Architecture

Business Outcomes on a Modern Data Architecture

Outcome 1 : Modernize and consolidate

Insights to enhance business applications and create new digital services

Business Outcomes on a Modern Data Architecture

Outcome 1 : Modernize and consolidate

Insights to enhance business applications and create new digital services

Outcome 2 : Innovate for new revenues

Personalization, demand forecasting, risk analysis

Business Outcomes on a Modern Data Architecture

Outcome 1 : Modernize and consolidate

Insights to enhance business applications and create new digital services

Outcome 2 : Innovate for new revenues

Personalization, demand forecasting, risk analysis

Outcome 3 : Real-time engagement

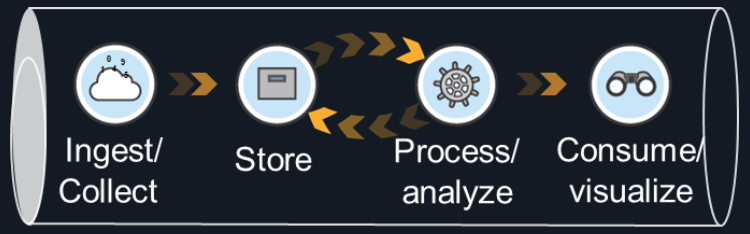
Interactive customer experience, event-driven automation, fraud detection

Ready to build better business from your ideas?

Ready to build better business from your ideas?

Short list projects that directly impact customer engagement and adoption

Ready to build better business from your ideas?

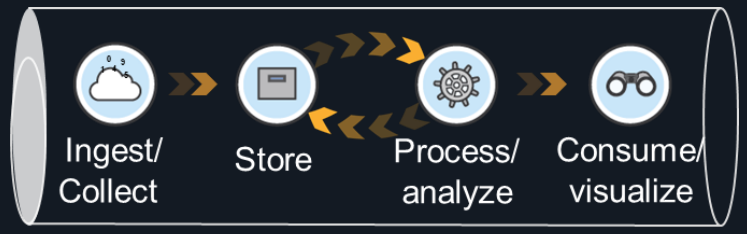


Short list projects that directly impact customer engagement and adoption

Build simple data pipelines that allow you to test new ideas, and fill your data lake

Ready to build better business from your ideas?

Short list projects that directly impact customer engagement and adoption



Build simple data pipelines that allow you to test new ideas, and fill your data lake

Ask our solution architects and professional services teams to help you build

Learn from AWS experts. Advance your skills and knowledge. Build your future in the AWS Cloud.

Digital Training

Free, self-paced online courses built by AWS experts

Classroom Training

Classes taught by accredited AWS instructors

AWS Certification

Exams to validate expertise with an industry-recognized credential

Ready to begin building your cloud skills?
Get started at: https://www.aws.training/

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With deep expertise on AWS, APN Partners can help your organization at any stage of your Cloud Adoption Journey.

AWS Managed Service Providers

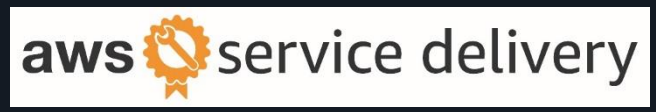
APN Consulting Partners who are skilled at cloud infrastructure and application migration, and offer proactive management of their customer's environment.

AWS Competency Partners

APN Partners who have demonstrated technical proficiency and proven customer success in specialized solution areas.

AWS Marketplace

A digital catalog with thousands of software listings from independent software vendors that make it easy to find, test, buy, and deploy software that runs on AWS.



AWS Service Delivery Partners

APN Partners with a track record of delivering specific AWS services to customers.

Ready to get started with an APN Partner?
Find a partner: https://aws.amazon.com/partners/find/
Learn more at the AWS Partner Network Booth

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Track	Migration and Workloads	Database and Storage	Big Data and Analytics	AI and Machine Learning	IoT	Build on AWS I	Build on AWS II	Building Practices with AWS	Build Your Own Architecture	Live Coding
30 mins	Migrate Away That Technical Debt (Level 200)	AWS Purpose-Built Database Strategy: The Right Tool for The Right Job (Level 200)	Build Business Outcomes with a Modern Data Architecture (Level 200)	Demystifying Machine Learning on AWS (Level 200)	Drive Successful Business Outcomes with IoT on AWS (Level 200)	Streamline Your Serverless Development with AWS Codestar and AWS Cloud9 (Level 200)	AWS Security for Builders: Best Practices (Level 200)	TechShift: Migrating and Replatforming Your Software on AWS (Level 200)	Step by Step Guide to Build Your Own Video On-Demand Architecture (Level 200) 1. Ingest Your Data 2. Scheduling and Transcoding Data 3. Content Delivery and Scaling 4. Search and Recommendations Using Machine Learning Services 5. Bring Smarts to Your Media Player Using Real-Time Analytics 6. Best Practices on Going Global	Machine Learning in Production with Twitter Bots (Level 400)
30 mins	Optimize Cost and Efficiency on AWS: Tips and Tools (Level 200)	Build High-Performance Apps with In-Memory Data (Level 200)	Serving Business Insights with the AWS Analytics Suite (Level 200)	Detect Anomalies in Your Data with Amazon SageMaker (Level 300)	Connecting Devices to AWS IoT Core (Level 300)	Run Containers without Managing Servers or Clusters with AWS Fargate (Level 300)	Improving Release Velocity with Continuous Delivery on AWS (Level 300)	The 4 Secrets of Successful SaaS Companies (Level 200)		
30 mins	SAP on AWS: Big Businesses, Big Workloads, Big Data (Level 200)	Supercharge Your Apps with Amazon Neptune Graph Database (Level 200)	Designing Data Lakes: Best Practices (Level 200)	Extract Data from Images and Videos with Amazon Rekognition (Level 300)	Leveraging IoT at the Edge and Industrial Workloads (Level 300)	Comparing Container Options for Microservices on AWS (Level 200)	Taking Your Progressive Web App to the Next Level With AWS AppSync and GraphQL (Level 300)	Building Scalable Migration Practices for Enterprise Applications (Level 200)		Build Serverless Data-Driven Web Apps Using React, GraphQL, and AWS AppSync (Level 400)
30 mins	Migrate Microsoft Applications to AWS like an Expert (Level 200)	Migrate Large-Scale Datasets to AWS (Level 200)	Data Pipelines with AWS Glue (Level 200)	Manage Deep Learning Models at Scale with Amazon SageMaker (Level 300)	Managing Complexities of IoT Workloads at Scale (Level 300)	Self-Defending Borders: A Developer's Approach to Security (Level 300)	Build an Omni-Channel Experience with Amazon Connect and Amazon Lex (Level 200)	Building a Big Data and Analytics Practice: From Zero to Hero in 5 Steps (Level 200)		
30 mins	VMware Cloud on AWS: Next Generation Hybrid Cloud Architecture (Level 200)	Protect Your Data Assets with AWS (Level 200)	Enterprise Data Warehouse Offload and Migration (Level 200)	Better Customer Experiences with Chatbots and Conversational Interfaces (Level 300)	Putting It All Together: Building an IoT Solution (Level 200)	Deliver Software Quickly and Safety with Serverless Applications (Level 300)	Build High Quality Mobile Apps in Minutes with AWS (Level 200)	Build a Next-Generation MSP Practice with AWS (Level 100)	Succeed in the Cloud with AWS Training (Level 100)	

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