



Needle in the Live Video Cloud haystack

AI/ML for mass live acquisition

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What you will learn

Live Video Cloud at Make.TV

Mass live acquisition with AI/ML

Real-time video and data streams

Deep learning-based image and video analysis

Next steps

aws SUMMIT

make.tv

Needle in the Live Video Cloud haystack

AI/ML for mass live acquisition

We develop **cloud-based products** **for broadcasters and publishers**

in the fields of News, Sports,
Esports, and Entertainment.

News

SRF • RTL2 • BR • SWR

Sports

MLB • FOX Sports • PlayOn!

Entertainment

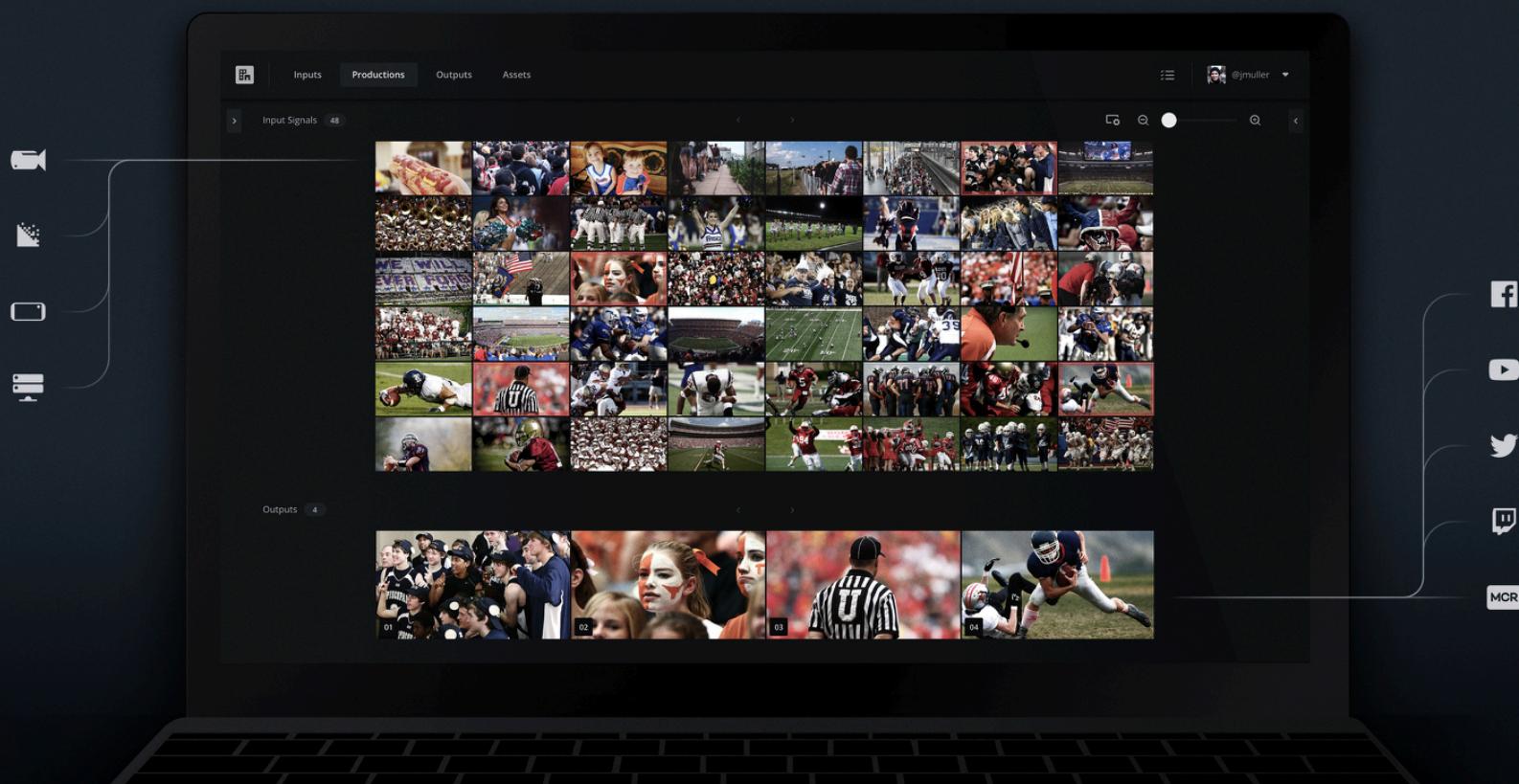
Viacom Int. • NBCUniversal

Esports

Warner Bros. • ESL • DreamHack

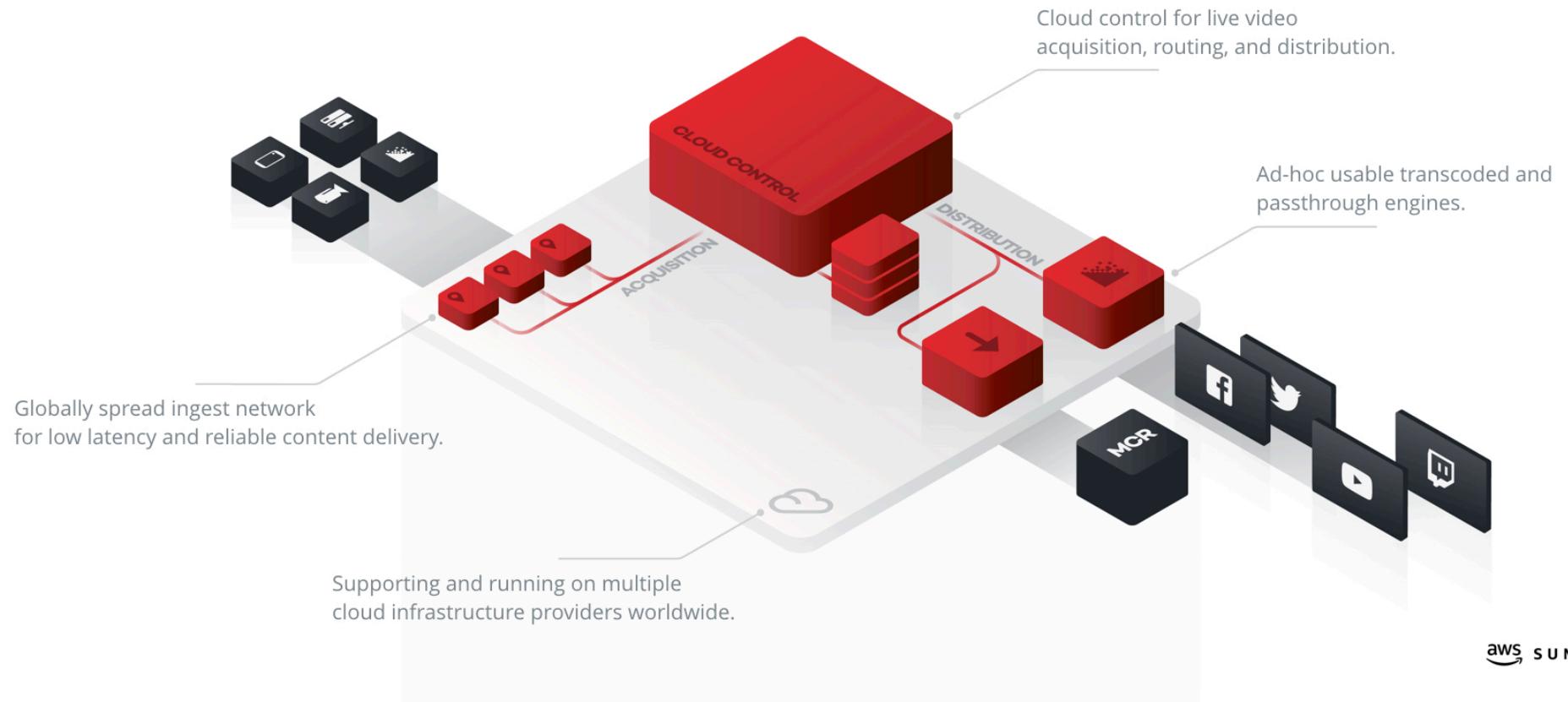
Live Video Cloud

Cloud control for live video.



Designed for evolving needs.

Running on Azure, AWS, and Google Cloud.



UGC =  + 



Audience participation
for cycling events.

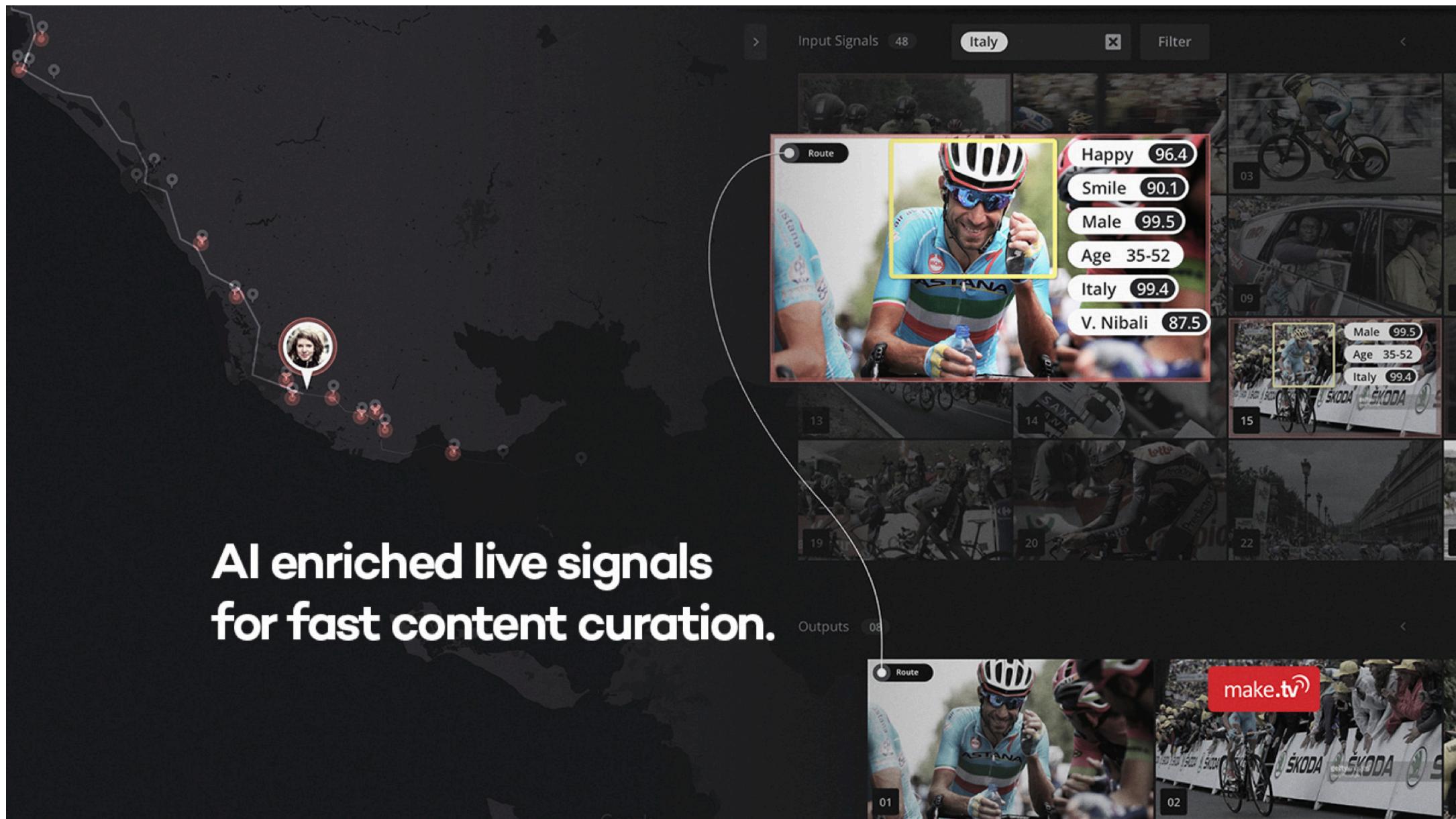
E.g.: **Tour de France**.

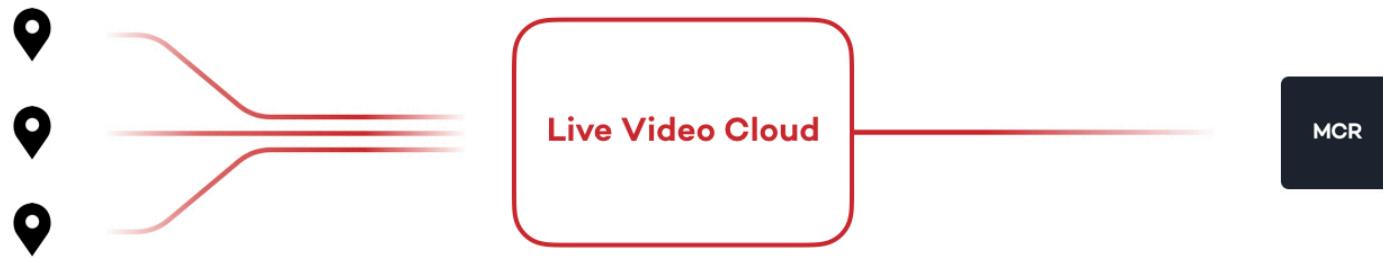
A conceptual journey.

make.tv

aws SUMMIT

**AI enriched live signals
for fast content curation.**





Ingest

UGC contribution from multiple locations via app or WebRTC capable mobile browser.

Curation

Operator screens and selects relevant content for use in production.

Production

Feeds are delivered to local infrastructure like a Master Control Room.



Inputs

Productions

Outputs

Assets



@jmuller

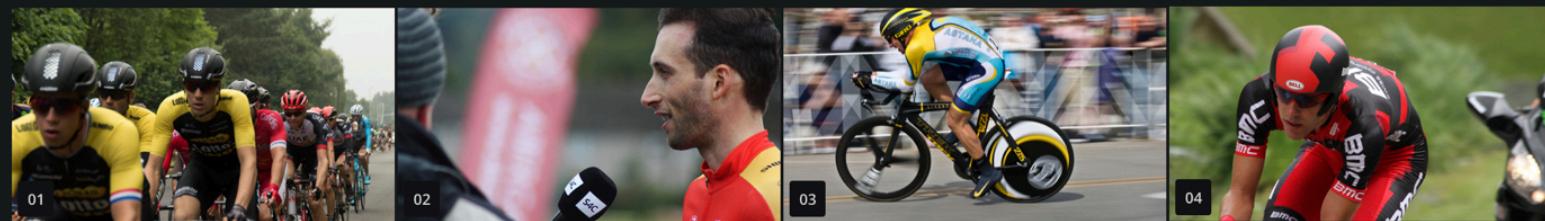
Input Signals 48

Search...



Outputs 08

< >





Inputs

Productions

Outputs

Assets



@jmuller

Input Signals 48

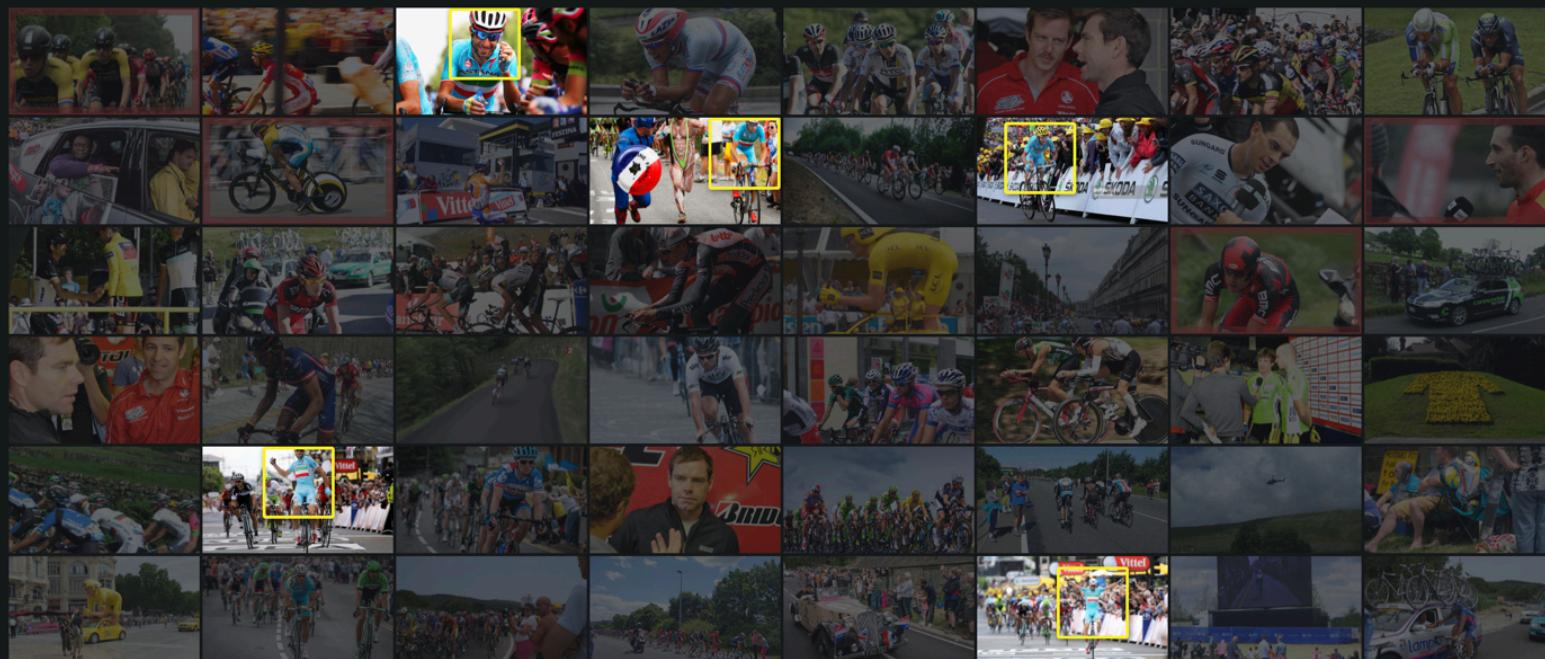
Italy

Filter

< >

eye Q +

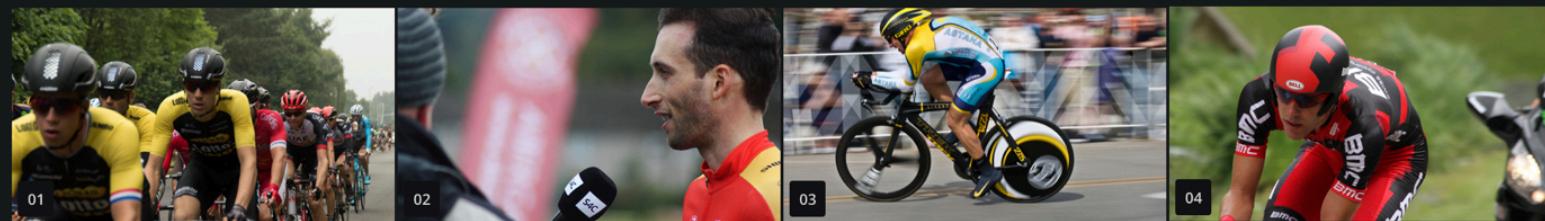
<



Outputs 08

< >

▼





Inputs

Productions

Outputs

Assets



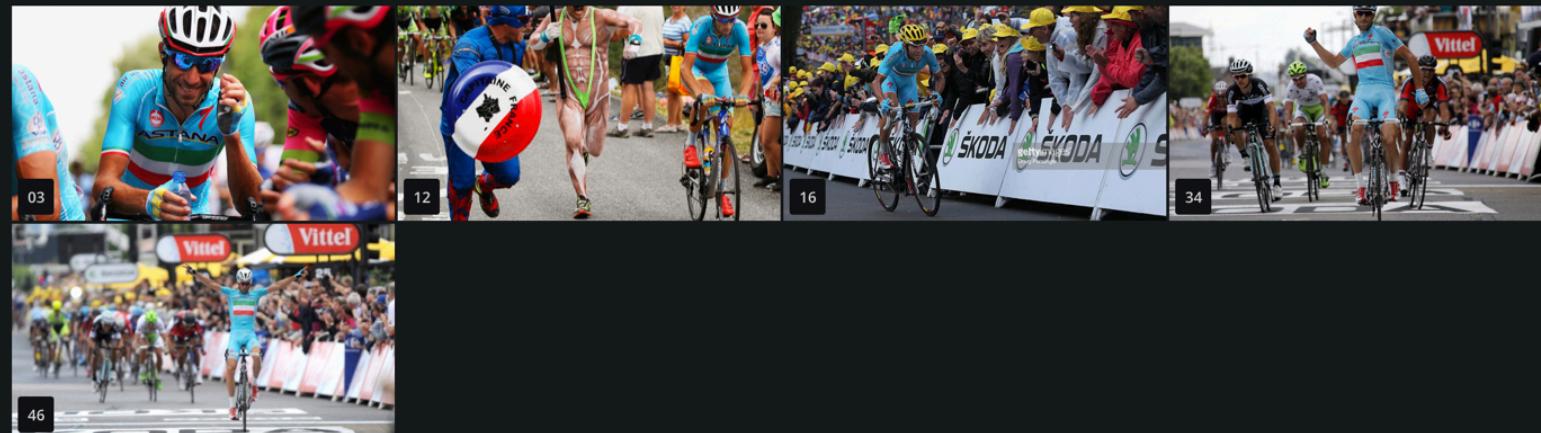
@jmuller

> Input Signals 48

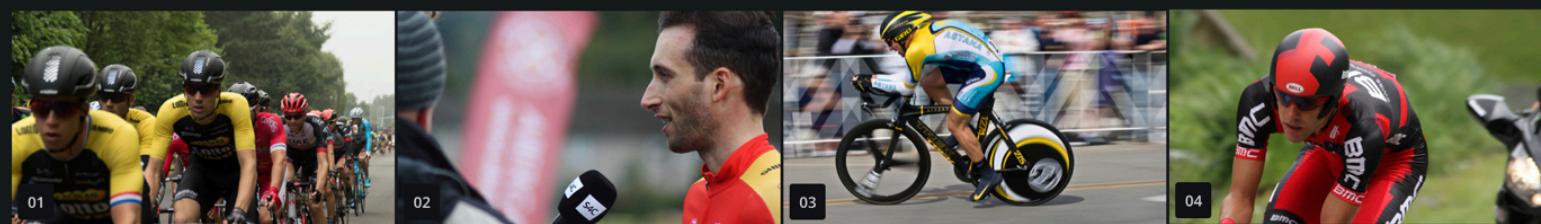
Italy



Reset



Outputs 08





Inputs

Productions

Outputs

Assets



@jmuller

> Input Signals 48

Search...



Outputs 08



03 / Marcus Johnson @ DSLR

AWS Rekognition

Emotions Happy 96.4
Confused 9.8
Angry 1.8

Face Smile 99.4
Sunglasses 88.5
Mouth open 79.1

Demography Male 99.5 Age 35-52

Quality Brightness 41.6
Sharpness 99.9

Team Italy 99.4 V. Nibali 87.5

show less

Quality

Bitrate 5.174 kbit/s

Framerate 25 fps

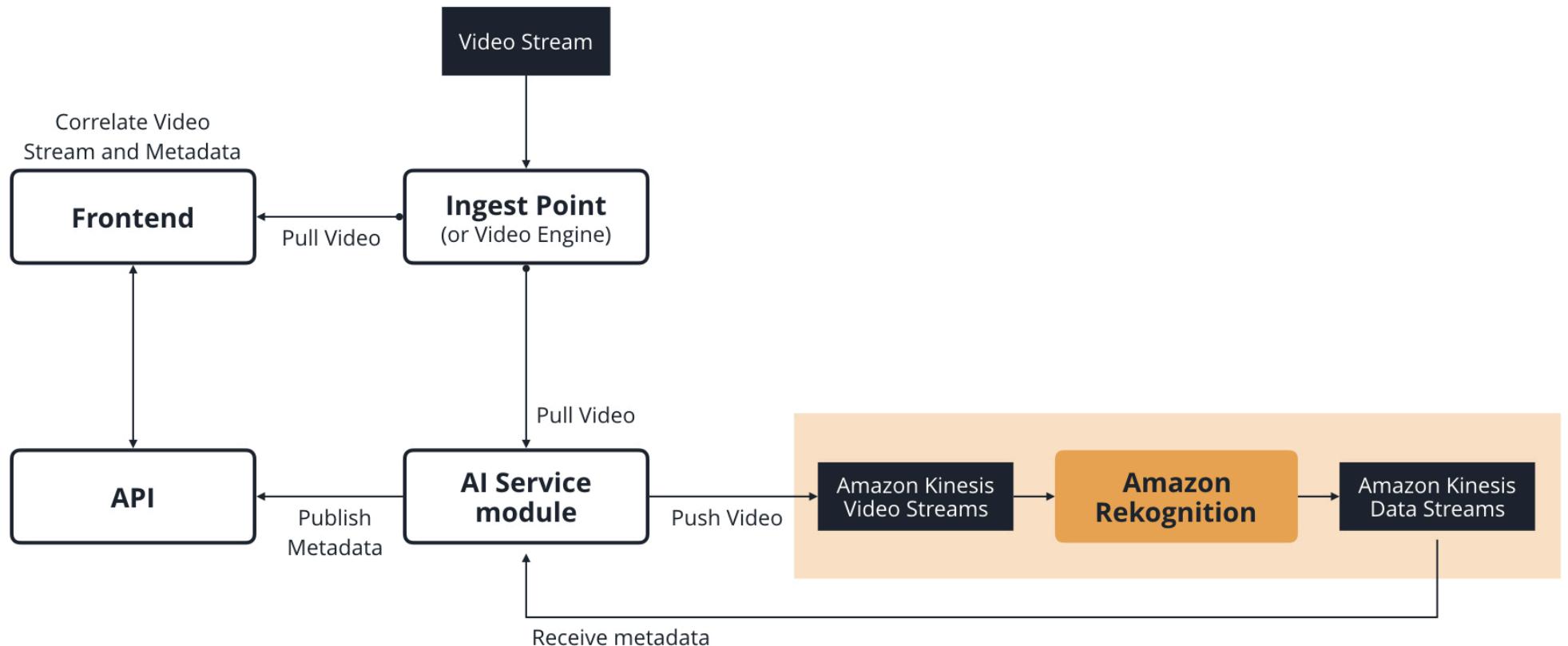
Video 1920 x 1080 px @ 25 fps,
H.264

Audio ACC, stereo, 48.0 kHz

Contribution

AI/ML enriched signal metadata is a crucial factor to make mass content acquisition usable live.

Block inappropriate content,
filtered views, real-time graphics,
automatically curated channels.





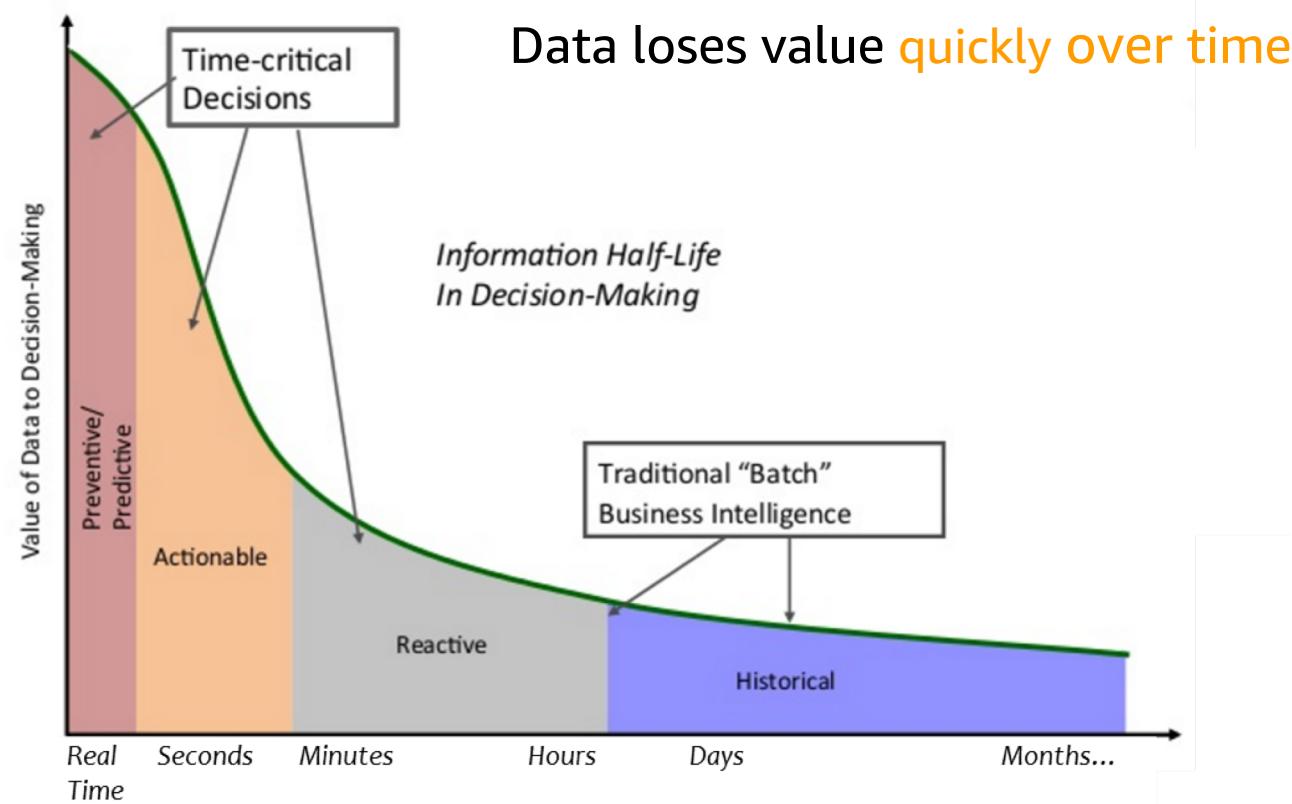
Easily collect, process, and analyze
video and data streams in real time



Amazon Kinesis

Easily collect, process, and analyze
video and data streams in real time

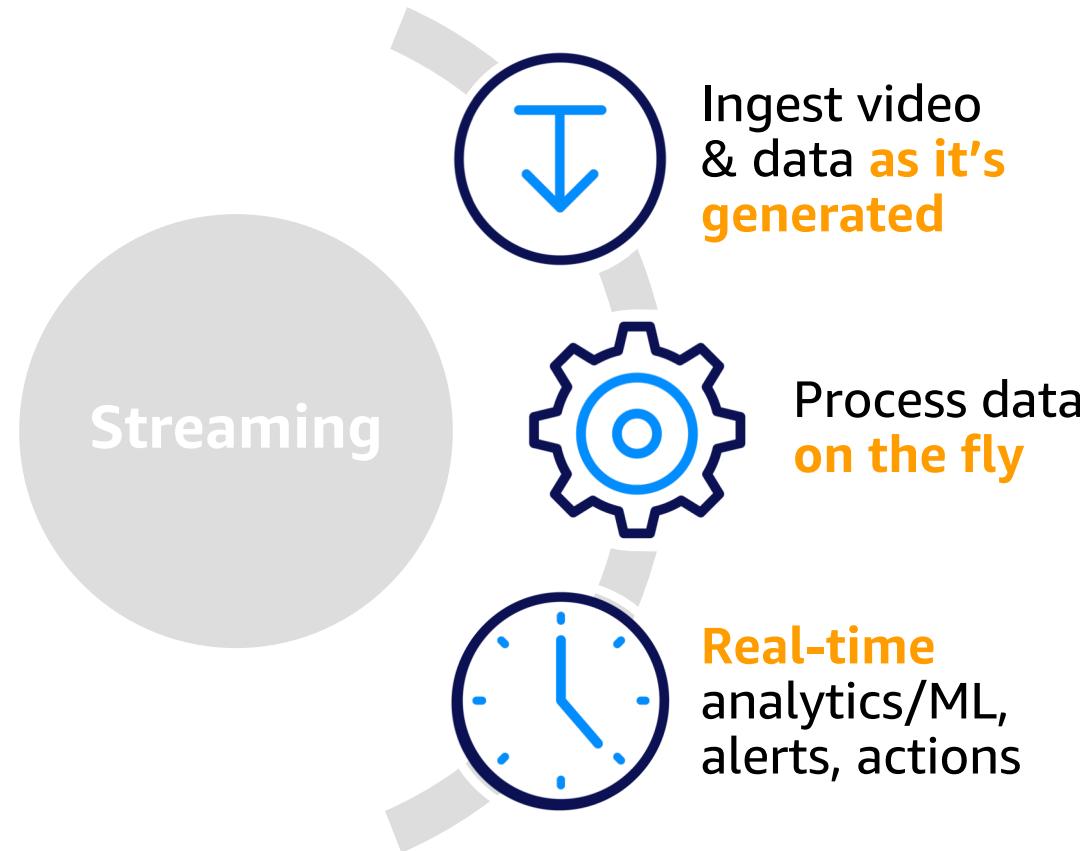
Timely Decisions Require New Data in Minutes



Source: Perishable Insights, Mike Gualtieri, Forrester

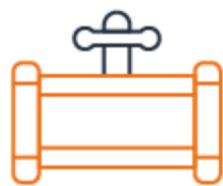
Stream New Data in Seconds

Get actionable insights quickly



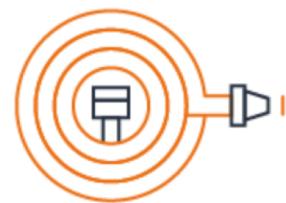
Streaming with Amazon Kinesis

Easily collect, process, and analyze data and video streams in real time



Kinesis Data Streams

Capture, process, and store data streams



Kinesis Data Firehose

Load data streams into AWS data stores



Kinesis Data Analytics

Analyze data streams with SQL

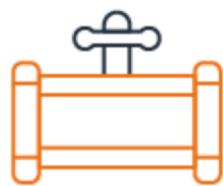


Kinesis Video Streams

Capture, process, and store video streams

Streaming with Amazon Kinesis

Easily collect, process, and analyze data and video streams in real time



Kinesis Data Streams

Capture, process, and store data streams



Kinesis Data Firehose

Load data streams into AWS data stores



Kinesis Data Analytics

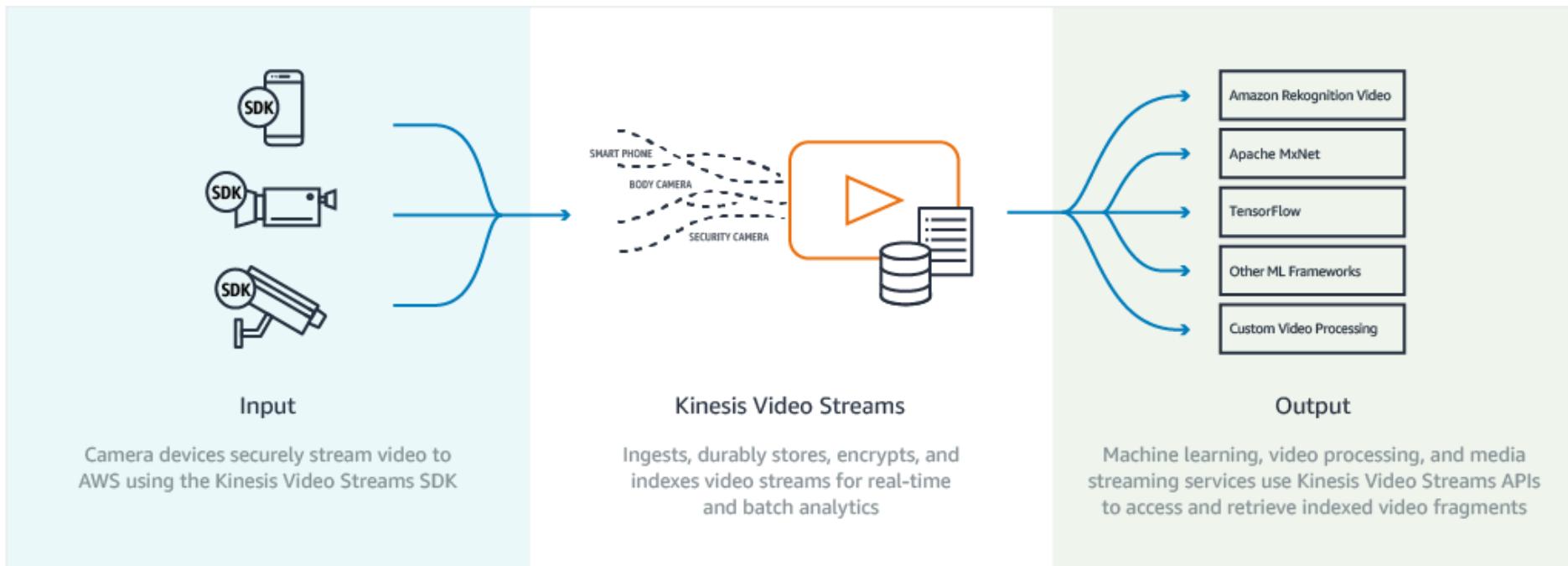
Analyze data streams with SQL



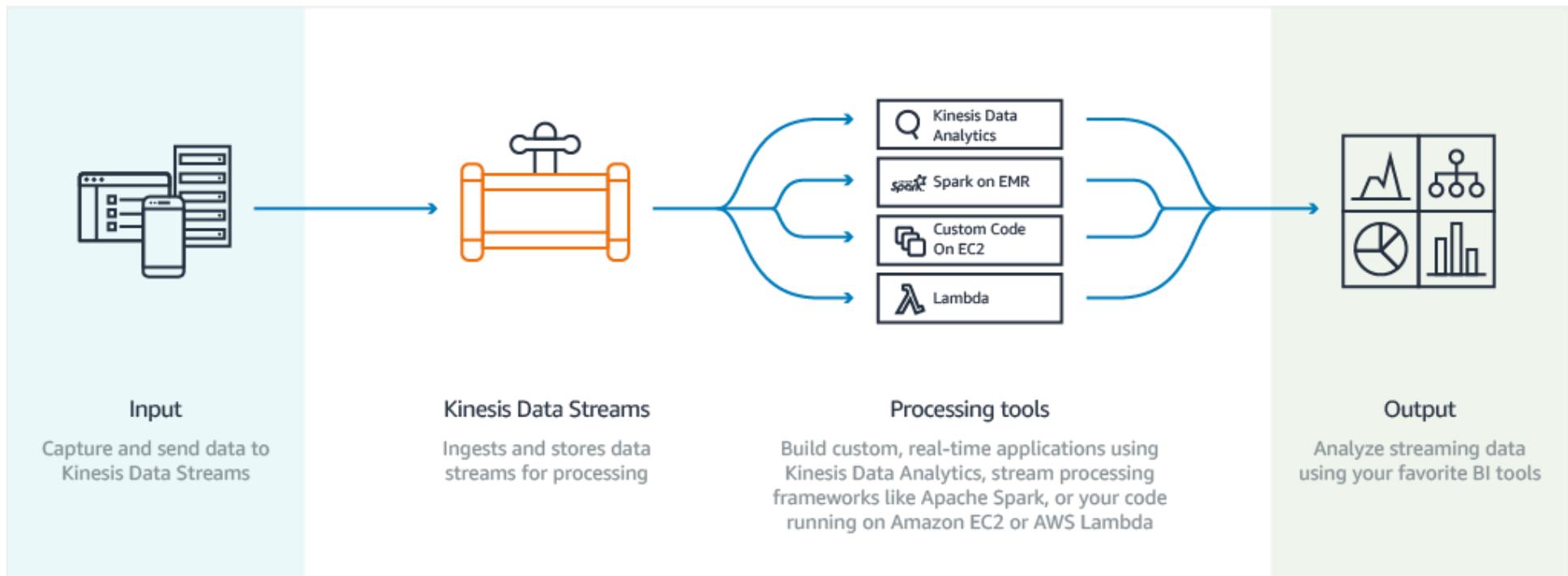
Kinesis Video Streams

Capture, process, and store video streams

Amazon Kinesis Video Streams



Amazon Kinesis Data Streams





Deep learning-based image and video analysis



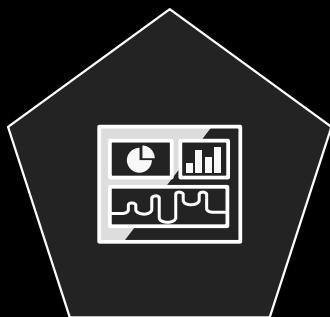
Amazon Rekognition

Deep learning-based image and video analysis

Amazon Rekognition

Easy-to-use deep learning-based computer vision analysis

aws SUMMIT



Fully
managed
service

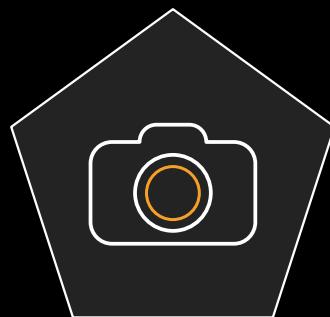
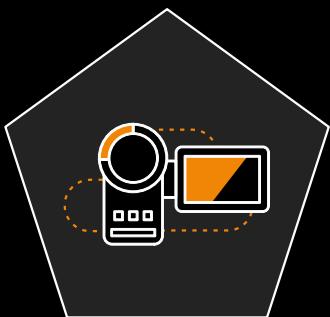


Image
analysis



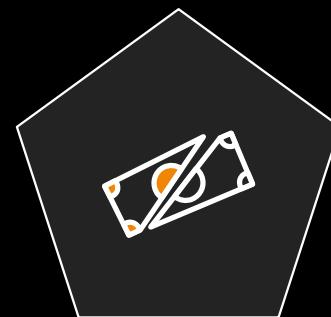
Video
analysis



Easy-to-use
API



Real-time
and batch
analysis



Low cost

Amazon Rekognition Image

aws SUMMIT

Detect objects, scenes, and faces, extract text, recognize celebrities, and identify unsafe content in images



Object and Scene
Detection



Facial
Analysis



Face
Recognition



Unsafe Image
Detection



Celebrity
Recognition



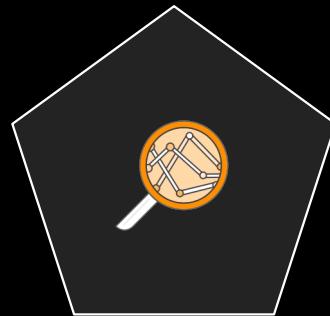
Text in Image



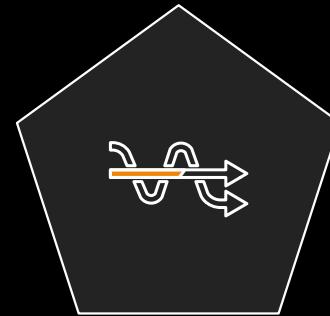
Face
Comparison

Video Analysis

Limitations of traditional solutions



Temporal information lost



Motion context lost



Manually intensive



Slow and error-prone



Expensive

Amazon Rekognition Video

aws SUMMIT

Analyze activity, recognize, and track people in stored and live video



Object and activity detection



Tracking



Real-time live stream



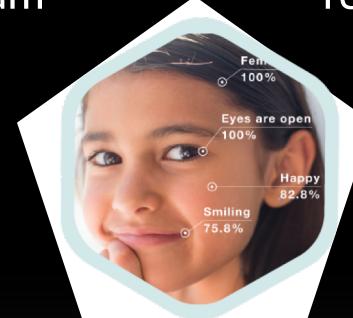
Celebrity recognition



Unsafe video detection



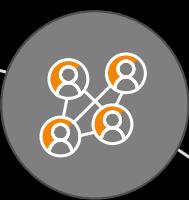
Face recognition



Facial Analysis

Amazon Rekognition Video

Sports events



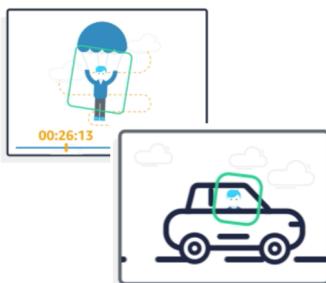
Recognize an athlete across a collection
of millions in real time across hundreds of cameras



Track an athlete across a video

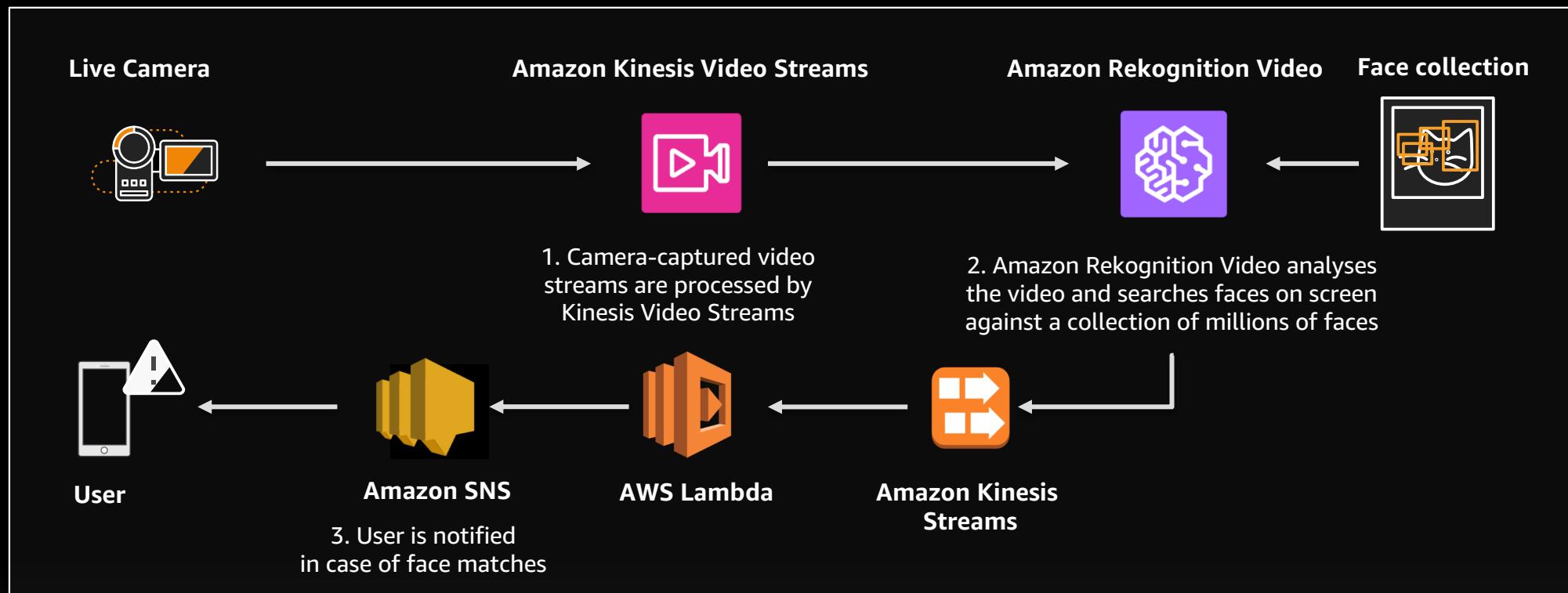


Create alerts by detecting objects and activities
of interest, such as bicycle, running, etc.



Amazon Rekognition Video

Use case: Follow sports events



Amazon Rekognition Customers



influicity

THE TAKE

C-SPAN

Artfinder

realtimes



Openinfluence

The Washington Post



SmugMug



zmags

CITY OF
ORLANDO

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Conclusions and next steps

- Invest your resources in building value for your business
- Try it
- Amazon Kinesis: Real-time video+data streams
- Amazon Rekognition: Image and video analysis
- Media Analysis Solution on AWS Answers

Connect

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GO BUILD

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