



Making AI Real for Your Business

Amplifying Human Ingenuity

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22-Jun-2023

Agenda



What Are the Business Challenges & Customer Pain Points



Applied AI Services - Vision



How Applied AI Solve Business problems & Business Use Cases



Reference Architecture & Demo



Customer Stories/Evidence



Veraqor Offers

Business Problems & Challenges

- Poor customer experiences
- Lack of customer satisfaction
- Decrease revenue
- Product discovery optimization
- No real-time insights
- Lack of search & information retrieval
- Social distancing and people counting
- Translation & transcript
- Below par people safety & health

Strong Momentum for AI Adoption and Interest

270%

**Growth of enterprise AI
over the past 4 years**

90%

**Technology executives
say need to adopt AI/ML**

But Harder to Implement than Expected

**Orchestrate multiple
AI models**

**Customize scenario-
specific models**

**Connect with data
sources and apps**

Azure AI

Azure Applied AI Services



Azure Video Analyzer



Azure Metrics Advisor



Azure Bot Service



Azure Form Recognizer



Azure Cognitive Search



Azure Immersive Reader

Azure Cognitive Services



Language



Vision



Decision



Speech

Azure Machine Learning



Azure Machine Learning

Cognitive Services Capabilities

Infuse your apps, websites, and bots with human-like intelligence



Vision

- Object, scene, and activity detection
- Face recognition and identification
- Celebrity and landmark recognition
- Emotion recognition
- Text and handwriting recognition (OCR)
- Customizable image recognition
- Video metadata, audio, and keyframe extraction and spatial analysis,
- Explicit or offensive content moderation



Speech

- Speech transcription (speech-to-text)
- Custom speech models for unique vocabularies or complex environment
- Text-to-speech
- Custom Voice
- Real-time speech translation
- Customizable speech transcription and translation
- Speaker identification and verification



Language


- Language detection
- Named entity recognition
- Key phrase extraction
- Text sentiment analysis
- Multilingual and contextual spell checking
- Explicit or offensive text content moderation
- PII detection for text moderation
- Text translation
- Customizable text translation
- Contextual language understanding
- Q&A Extraction from unstructured text
- Knowledge Base creation




Decision

- Detect potential offensive and unwanted images
- Filter possible profanity and undesirable text
- Moderate adult and racy content in videos
- Use built-in review tool for best results
- Deliver rich personalized experiences in your apps
- Deploy anywhere, from the cloud to the edge
- Understand and easily manage the reinforcement learning loop
- Monitor business health in real-time
- Conduct IoT-remote monitoring
- Leverage interactive data analytics

A Variety of Real-world Applications


Vision 

What is in the image or video ?




Category	People; 5 faces
Adult/Racy?	False/False
Dominant colors	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Accent color	<input type="checkbox"/>

Computer Vision

Speech 

Give me directions to the nearest local branch.




Convert spoken audio to text

Convert text to spoken audio

Extract intent of user


Speech Services

Language 

Play today's customer call recording.

Natural Language Processing


Intent: PlayCall
Content: Customer#
DateTime.date: today



Now Playing

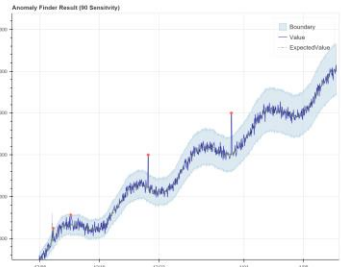
11/29/2016 Customer Call

Language Understanding

Decision 


Is this transaction fraudulent?

Here is what I found:



Based on previous normal transaction patterns, this appears to be out of the ordinary and likely fraudulent.

Anomaly Detector

Search 

Search for news on 'fraud prevention'

Here is what I found:

Information Communications Media Market News
It also investigates the top three expected **Fraud** Detection and **Prevention** programs, in terms of demand in key markets...

The Big Question: In-House or Outsourced Fraud Protection?
First, let's point out that there is not one absolute answer—there are "pros" and "cons" to each. Those who favor in-house...

How to Protect Your Business from Online Fraud this Holiday Season
Michael heads fraud prevention tool. Online and mobile shopping are expected to continue growing apace...

Bing News Search

...Transforming Organizations Worldwide

Reduce time and costs

Automate processes

Improve customer support



80%

Cost reduction by
streamlining transcription



54M

Prescriptions per month
automatically processed



60%

Reduction in search time
for customer queries

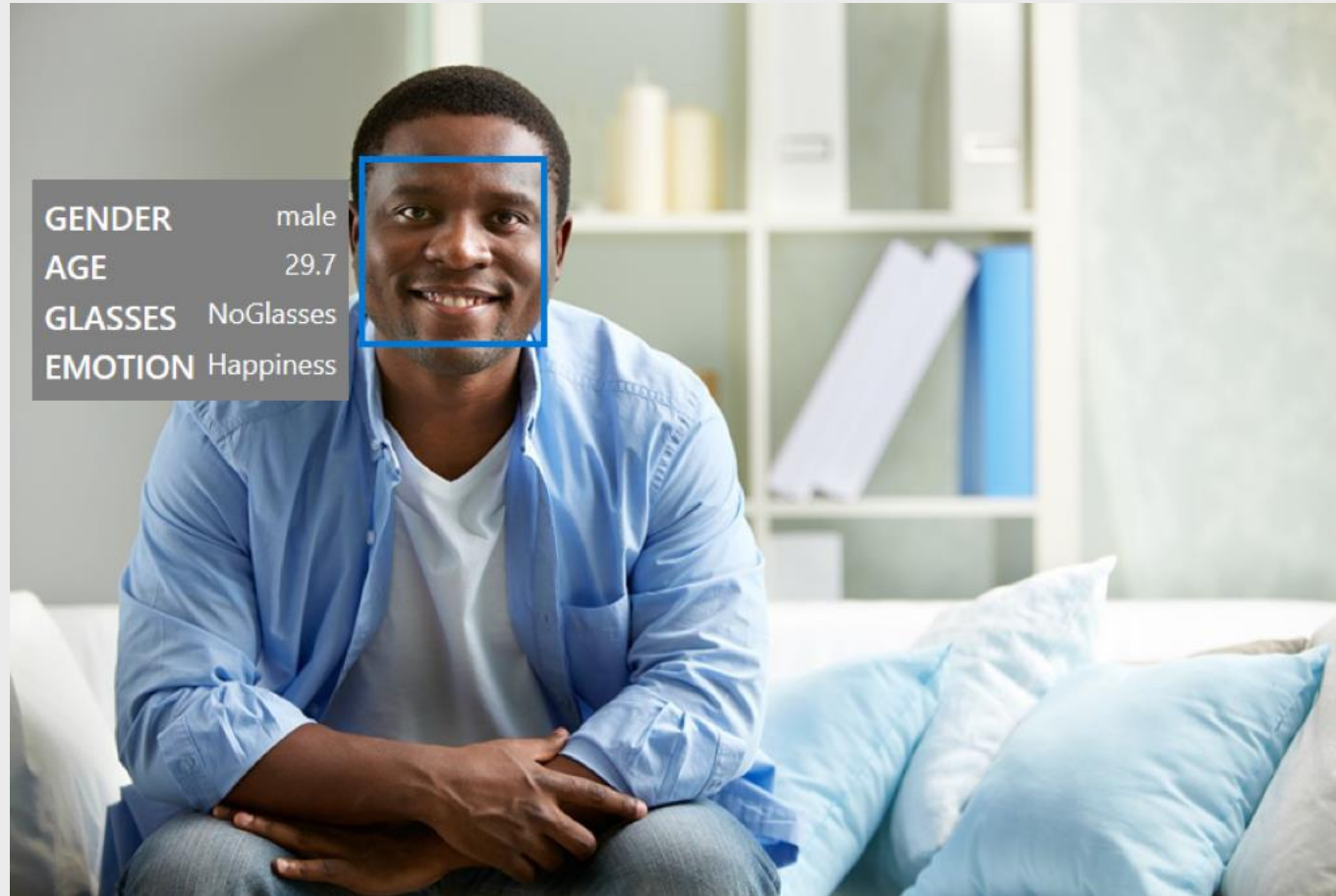
KPMG

NHS

IHC

Vision

Image-processing algorithms to smartly identify, caption and moderate your pictures.



Vision



Speech



Language



Decision



Search

Vision



Vision



Computer Vision

Distill actionable information from images



Face

Detect, identify, analyze, organize, tag faces in photos, and even recognize emotions



Ink Recognizer

Recognizes digital ink content, such as handwriting, shapes, and ink document layout



Custom Vision

Customizable web service that learns to recognize specific content in imagery



Speech



Language



Decision



Search



Form Recognizer

Document extraction service that understands your forms



Video Indexer

Process and extract smart insights from videos



Spatial analysis

Analyze live video and understand people's movement in physical space.

Analyze image

Type of image

Clip Art Type	0 Non-clipart
Line Drawing Type	0 Non-Line Drawing
Black & White Image	False

Content of image

Categories	[{ "name": "people_swimming", "score": 0.099609375 }]
Adult Content	False
Adult Score	0.18533889949321747
Faces	[{ "age": 27, "gender": "Male", "faceRectangle": { "left": 472, "top": 258, "width": 199, "height": 199 } }]

Image colors

Dominant Color Background	White
Dominant Color Foreground	Grey
Dominant Colors	White
Accent Color	



Is Adult Content: False
Categories: people_swimming

OCR

JSON:

```
{  
  "language": "en",  
  "orientation": "Up",  
  "regions": [  
    {  
      "boundingBox": "41,77,918,440",  
      "lines": [  
        {  
          "boundingBox": "41,77,723,89",  
          "words": [  
            {  
              "boundingBox": "41,102,225,64",  
              "text": "LIFE"  
            },  
            {  
              "boundingBox": "356,89,94,62",  
              "text": "IS"  
            },  
            {  
              "boundingBox": "539,77,225,64",  
              "text": "LIKE"  
            }  
          ]  
        }  
      ]  
    }  
  ]  
}
```

...



Face

Face detection

Detect faces and their attributes within an image

Face verification

Check if two faces belong to the same person

Similar face searching

Find similar faces within a set of images

Face grouping

Organize many faces into groups

Face identification

Search which person a face belongs to

Recognize emotions

Understand content within an image



Face

Detection

```
"faceRectangle": {"width": 193, "height": 193, "left": 326, "top": 204} ...
```

Feature attributes

```
"attributes": { "age": 42, "gender": "male", "headPose": { "roll": "8.2", "yaw": "-37.8", "pitch": "0.0" }}
```

Grouping



Identification

Jasper Williams

Emotion Scores

```
"scores": { "anger": 5.182241e-8, "contempt": 0.0000242813, "disgust": 5.621025e-7, "fear": 0.00115027453, "happiness": 1.06114619e-8, "neutral": 0.003540177, "sadness": 9.30888746e-7, "surprise": 0.9952837}
```



Custom Vision

A customizable web service that learns to recognize specific content in imagery

Upload images

Upload your own labeled images, or use Custom Vision Service to quickly tag any unlabeled images

Train

Use your labeled images to teach Custom Vision Service the concepts you want it to learn

Evaluate

Use simple REST API calls to quickly tag images with your new custom computer vision model

Active learning

Images evaluated through your custom vision model become part of a feedback loop you can use to keep improving your classifier



Custom Vision

Unlock video insights

Upload your video and go

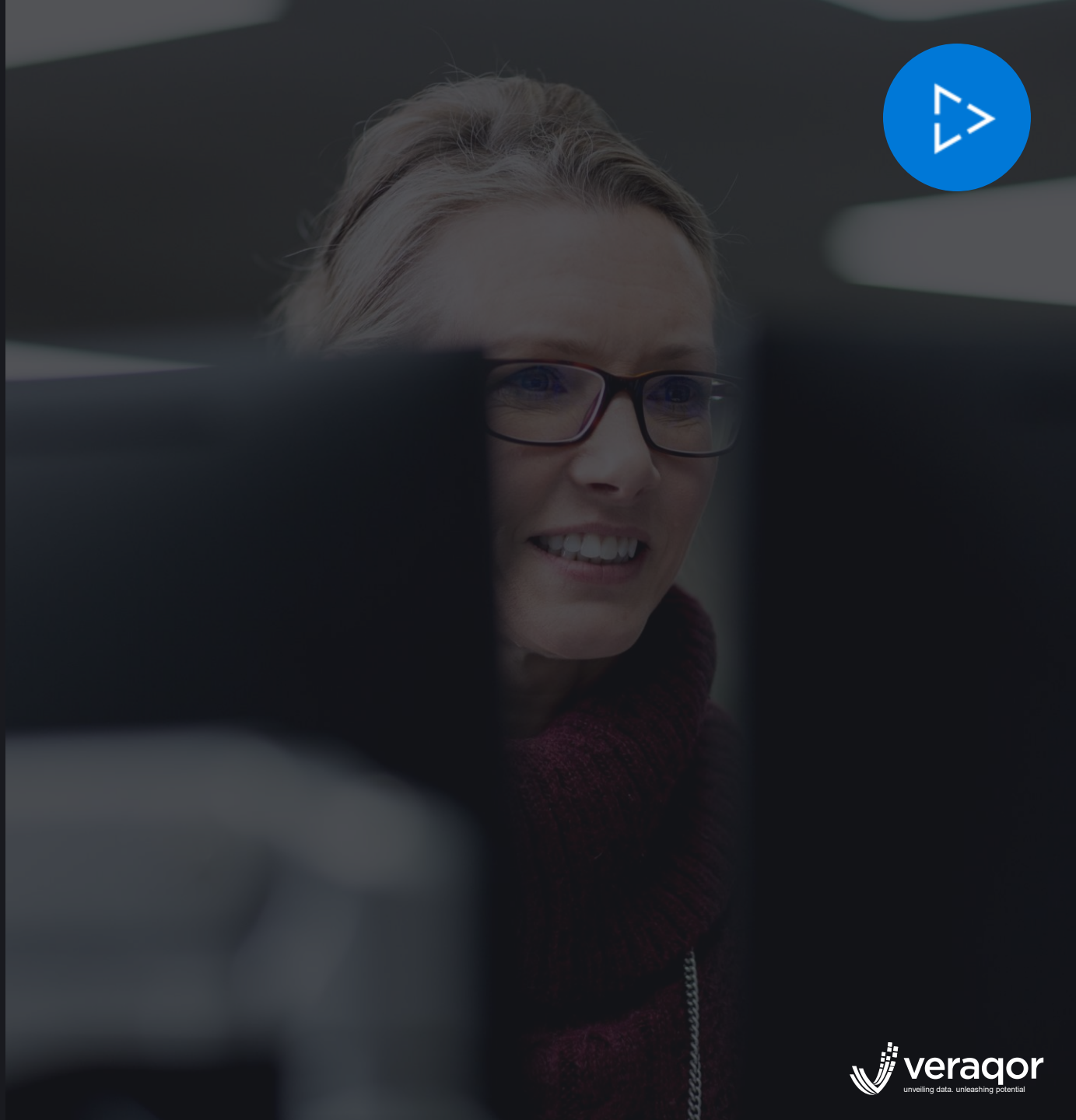
Start turning your video into insights right away. No more tedious and error-prone manual indexing. And no need for specialized expertise. With Video Indexer, just upload your video, and start finding insights right away, without writing a single line of code.

Make your content more discoverable

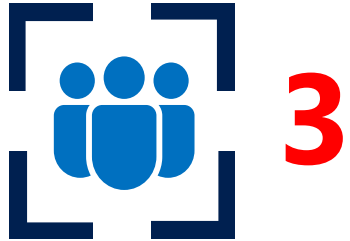
Quickly and easily extract insights from videos using artificial intelligence. Enhance content discovery experiences such as search results by detecting spoken words, faces, characters, and emotions.

Improve engagement with your video

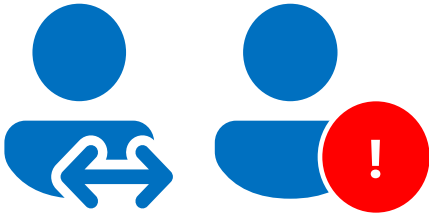
Metadata extracted by Video Indexer can be used to build powerful engagement experiences with recommendations, highlight clips, and interactive videos.



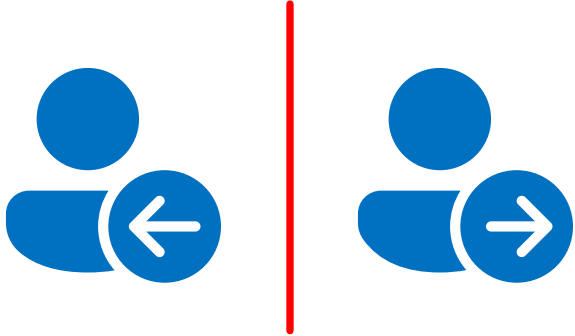
Example Use Cases



People
Counting

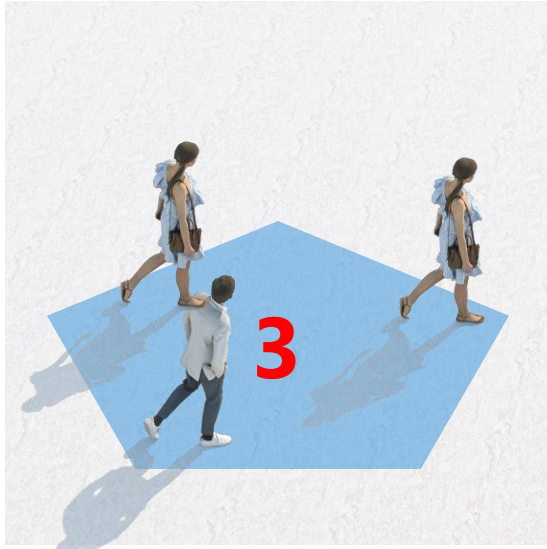


Social
Distancing



Entry/Exit

People Counting



**Person Count in
a Polygon**

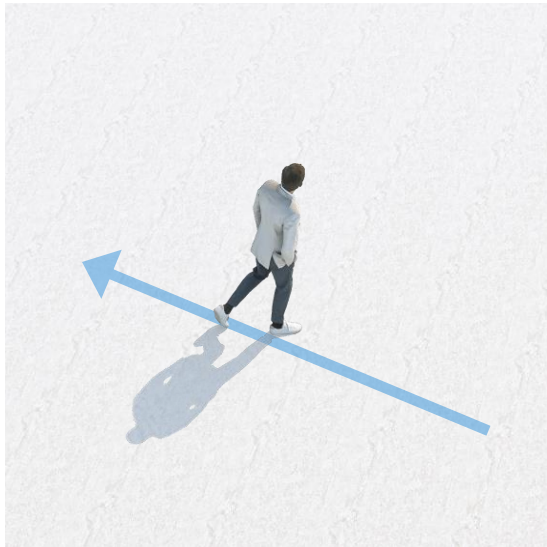
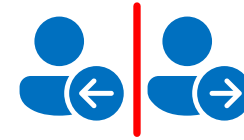
Configuration

```
"zones":  
[{"name": "storeFrontCamera"  
  "polygon": [[0.3,0.3], [0.3,0.9],  
  [0.6,0.9], [0.6,0.3], [0.3,0.3]],  
  "threshold": 50.00,  
  "events": [{  
    "type": "count",  
    "config": {  
      "trigger": "event",  
      "output_frequency": "1"}  
  }  
}]
```

AI Insight - Event

```
"events": [{  
  "id": "b013c2059577418caa826844223bb50b",  
  "type": "personCountEvent",  
  "detectionIds": [  
    "bc796b0fc2534bc59f13138af3dd7027",  
    "60add228e5274158897c135905b5a019",  
    "714fe21a35673167d90a235807c5b017"  
  ],  
  "properties": {personCount: 3},  
  "zone": "storeFrontCamera",  
  "trigger": "event"  
}],  
"detections": [{  
  "type": "person",  
  "id": "bc796b0fc2534bc59f13138af3dd7027",  
  "region": {  
    "type": "RECTANGLE",  
    "points": [{"x":..., "y":...},  
              {"x":..., "y":...}],  
  }  
}]
```


Entry/Exit



**Person Crossing
Directional Line**

Configuration

```
"lines": [{  
  "name": "doorCamera"  
  "line": {  
    "start": {"x": 0, "y": 0.5},  
    "end": {"x": 1, "y": 0.5}},  
  "threshold": 50.00,  
  "events": [{  
    "type": "linecrossing",  
    "config": {  
      "trigger": "event"}}  
  ]}]}
```

AI Insight - Event

```
"events": [{  
  "id": "3733eb36935e4d73800a9cf36185d5a2",  
  "type": "personLineEvent",  
  "detectionIds": [  
    "90d55bfc64c54bfd98226697ad8445ca"  
  ],  
  "properties": {  
    "trackingId":  
      "90d55bfc64c54bfd98226697ad8445ca",  
    "status": "CrossRight"},  
  "zone": "doorCamera",  
  "trigger": "event"  
}],  
"detections": [{  
  "type": "person",  
  "id": " 90d55bfc64c54bfd98226697ad8445ca"  
...}]}
```

Digital Asset Management use cases



Improve search



Deliver contextual
advertisements



Support accessibility

Image Analysis APIs

REST API

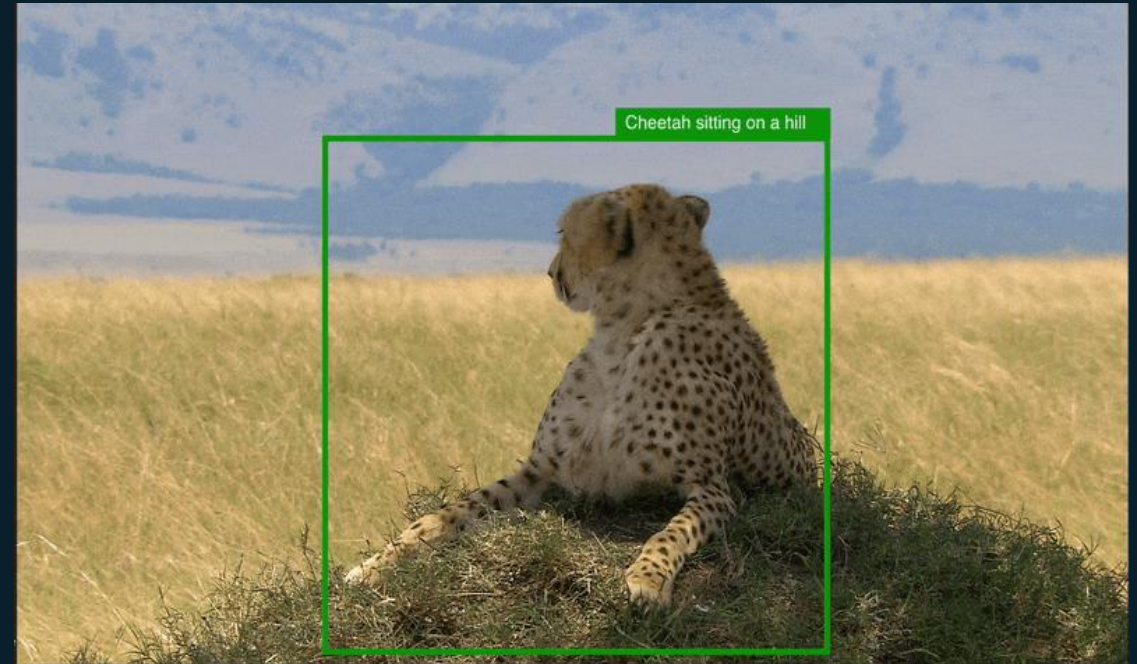
<https://{endpoint}/computervision/imageanalysis:analyze?features=caption>

<https://{endpoint}/computervision/imageanalysis:analyze?features=densecaptions>



a woman in a canoe touching water with a man in the front







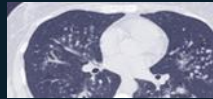






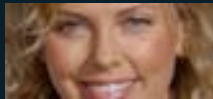


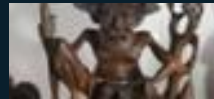













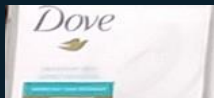




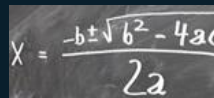
Image captions



Dense captions

Open World Recognition

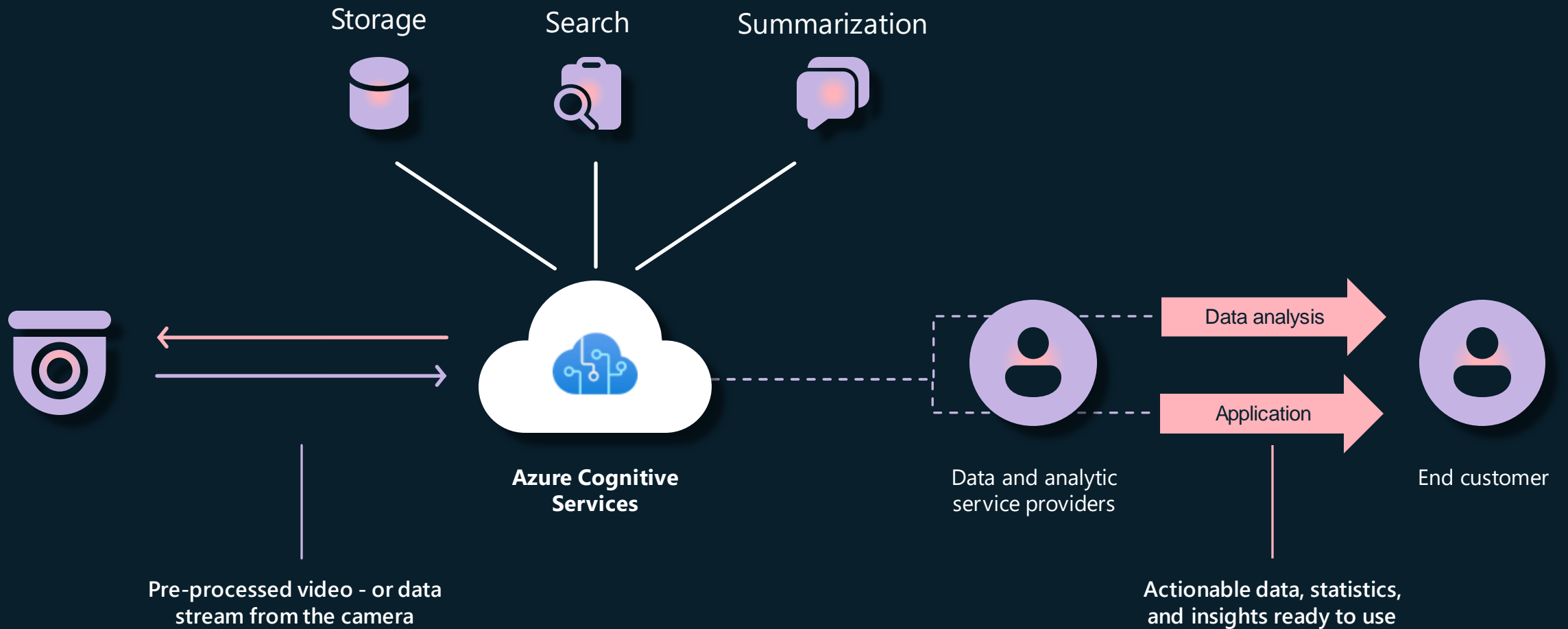
Recognized object categories: 10k → 400k → millions...

Species	Landmark	Logo	Products	Celebrity	Movie	Medical	Artworks	Documents
								
American white ibis	Mt. Rainier Washington	Microsoft	Capri Sun Fruit Punch case	Jean Reno	The Return of the Jedi	Chest CT	Romanian glassware	Free body diagram
								
Sunflower hearts	Griffith observatory	Honda logo	Campbells Well Yes Minestrone w/ Kale soup	Charlize Theron	On Strange Tides, Pirates of the Caribbean	Abdominal organs	Wooden statue	Dock receipt
								
Shamu show	BMW headquarters	USPS tracking	Barefoot Contessa cookbook	Dwade	Avengers Trails	Monoblasts	Along the river during the Quigming Festival	Gartner hype curve
								
Roebuck deer	Snoqualmie ridge	Starbucks	Dove Sensitive Skin Beauty Bar	Elon Musk	The Lion King movie	Virus	Irises painting	Ecuaciones algebraicas

Demo

<https://portal.vision.cognitive.azure.com/gallery/featured>

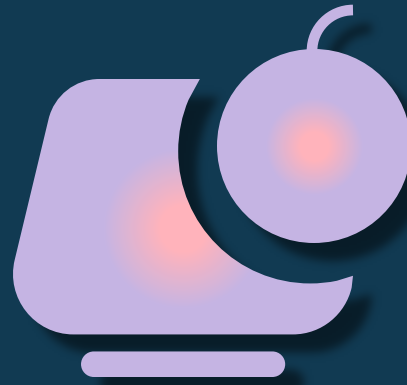
Video Frame Locator & Summarization



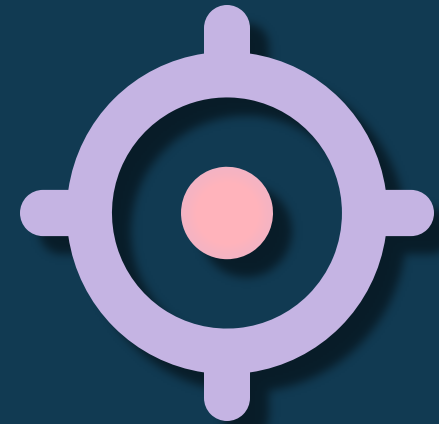
Retail use cases



Loose produce
recognition



Shelf Restocking



Planogram compliance

Fine grained custom recognition

Few shot learning

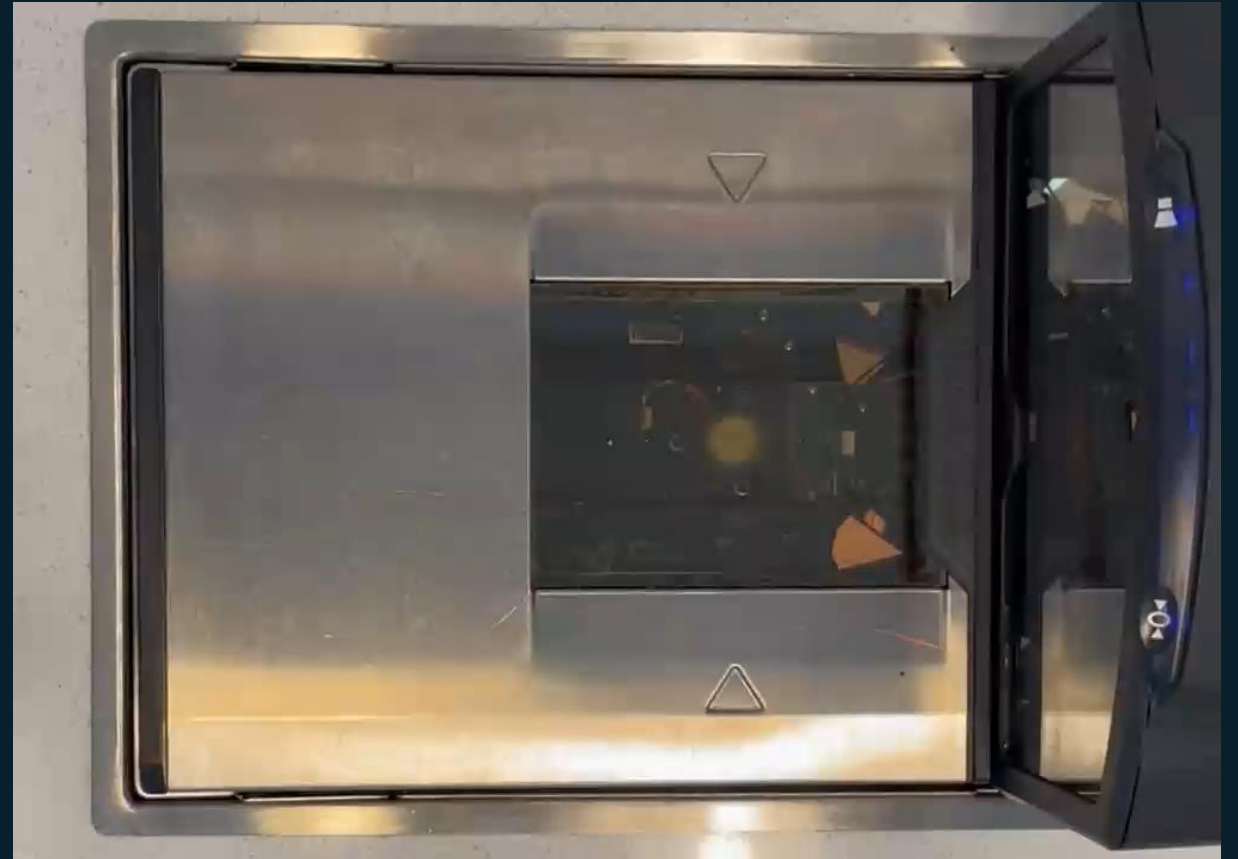
Sugar Bee apple



Honeycrisp apple



Gala apple



Model customization

Fast path for customization for specific use cases

Few Shot learning and model bootstrapping with single image per label



Active Learning Loop with production data



Continuous learning for new use cases



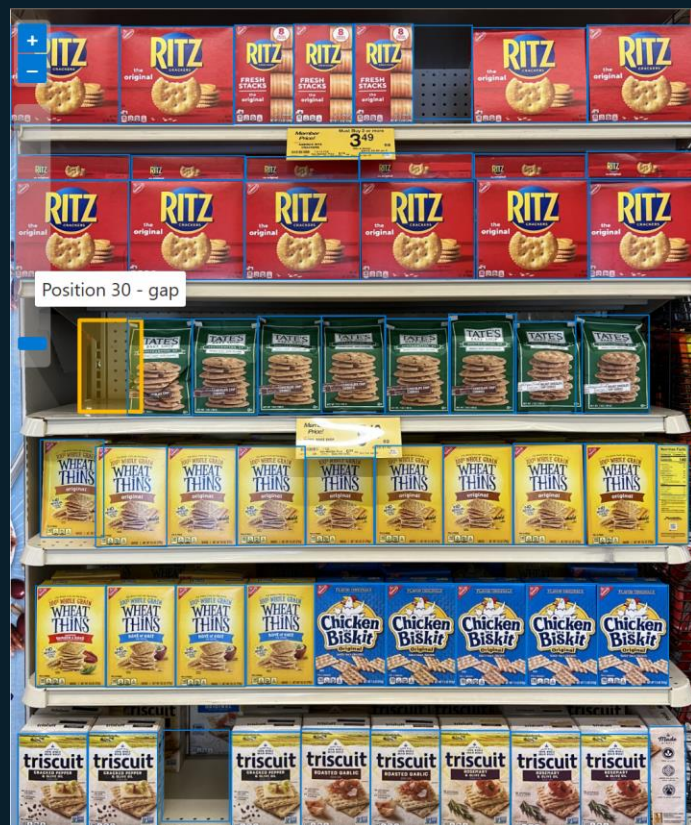
Custom Model

Product Recognition APIs

Product Recognition

<https://{endpoint}/computervision/operations/shelfanalysis-productunderstanding:analyze>

<https://{endpoint}/computervision/operations/shelfanalysis-productunderstanding:analyze?product-classifier-model-name=custommodel>



*



*

Retail

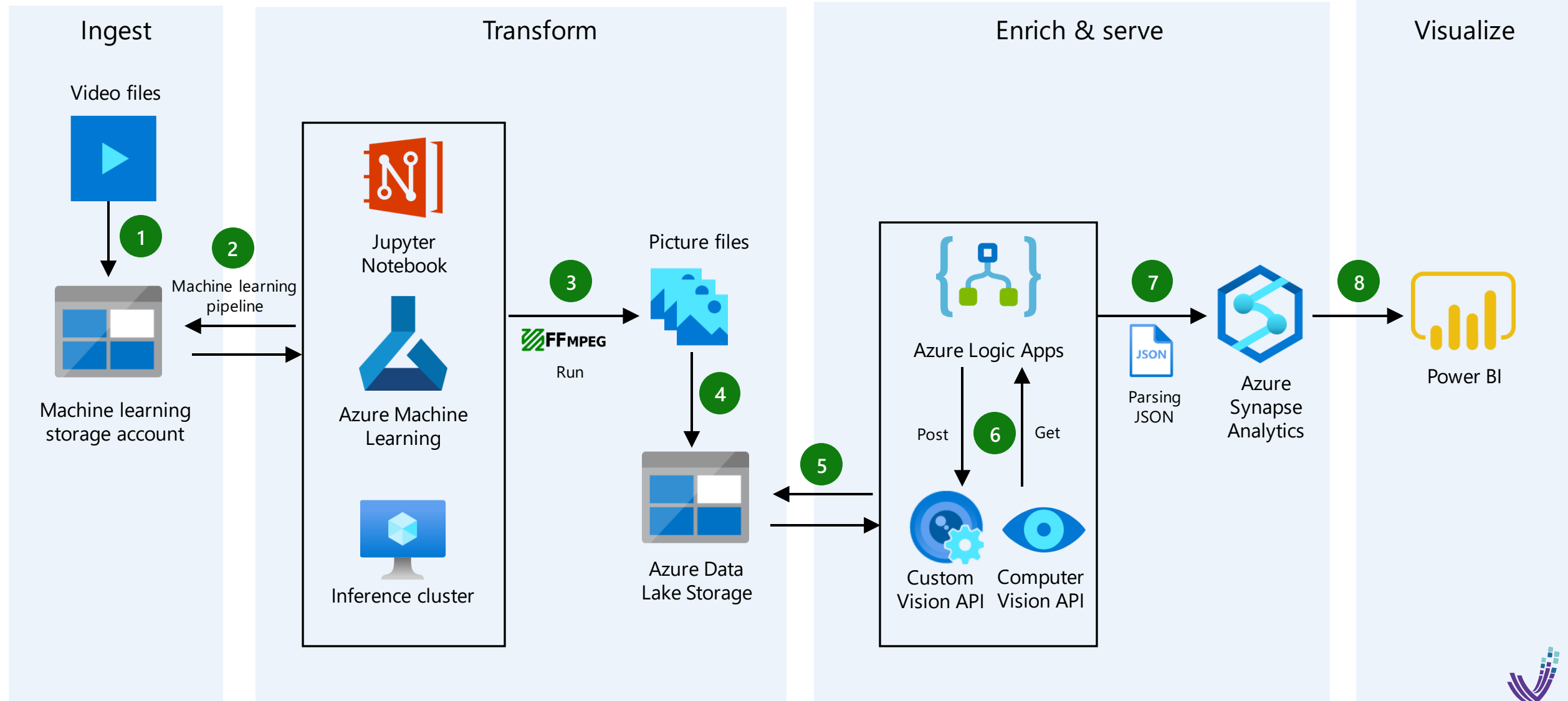
Improve customer satisfaction and protect customer health. Increase revenue and optimize space usage.



Dynamics Connected Store



Analyze video content with Computer Vision and Azure Machine Learning





Customer:
Minsur, S.A.

Industry:
Energy

Size:
Large (1,000 – 9,999 employees)

Country:
Peru

Products and services:
Microsoft Azure
Azure Cognitive Services (AI)
Azure Machine Learning

[Read full story here](#)



“The corrections to advance the learning of the video analytics solution are very fast and simple, taking no more than four days to implement them.”

—Angel Perez, Application Manager, Minsur, S.A.

Situation:

Minsur operates one of the largest tin mines in the Western Hemisphere, found in Puno, Peru. The company sought to generate value by transforming mineral resources sustainably, applying treatment foam to make water reusable for agricultural use.

Solution:

The company created an intelligent solution to make the visual control process of the treatment foam in its San Rafael mine safer and more effective. They combined Microsoft Azure video analytics and Azure Cognitive Services to achieve this goal.

Impact:

The new AI-powered solution helps Minsur employees detect new, unforeseen scenarios. The technology will continue to enable Minsur to face the challenges of optimization, safety, agility and efficiency that world-class mining companies require.

Machine translation speaks Volkswagen – in 40 languages

Challenge

The Volkswagen Group serves customers all over the world and delivers a huge range of documents in more than 40 languages. Up to a billion words must be translated within the Group every year, and the volume is rising sharply. That means that existing translation systems need to be enhanced and expanded.

Solution

Volkswagen has turned to Azure's Cognitive Services and the Translator API to create a faster, more precise, and more cost-effective solution. Thanks to the use of a neural network, not only will quality and speed experience a boost, but the evaluation of big data will also become possible.

Benefits

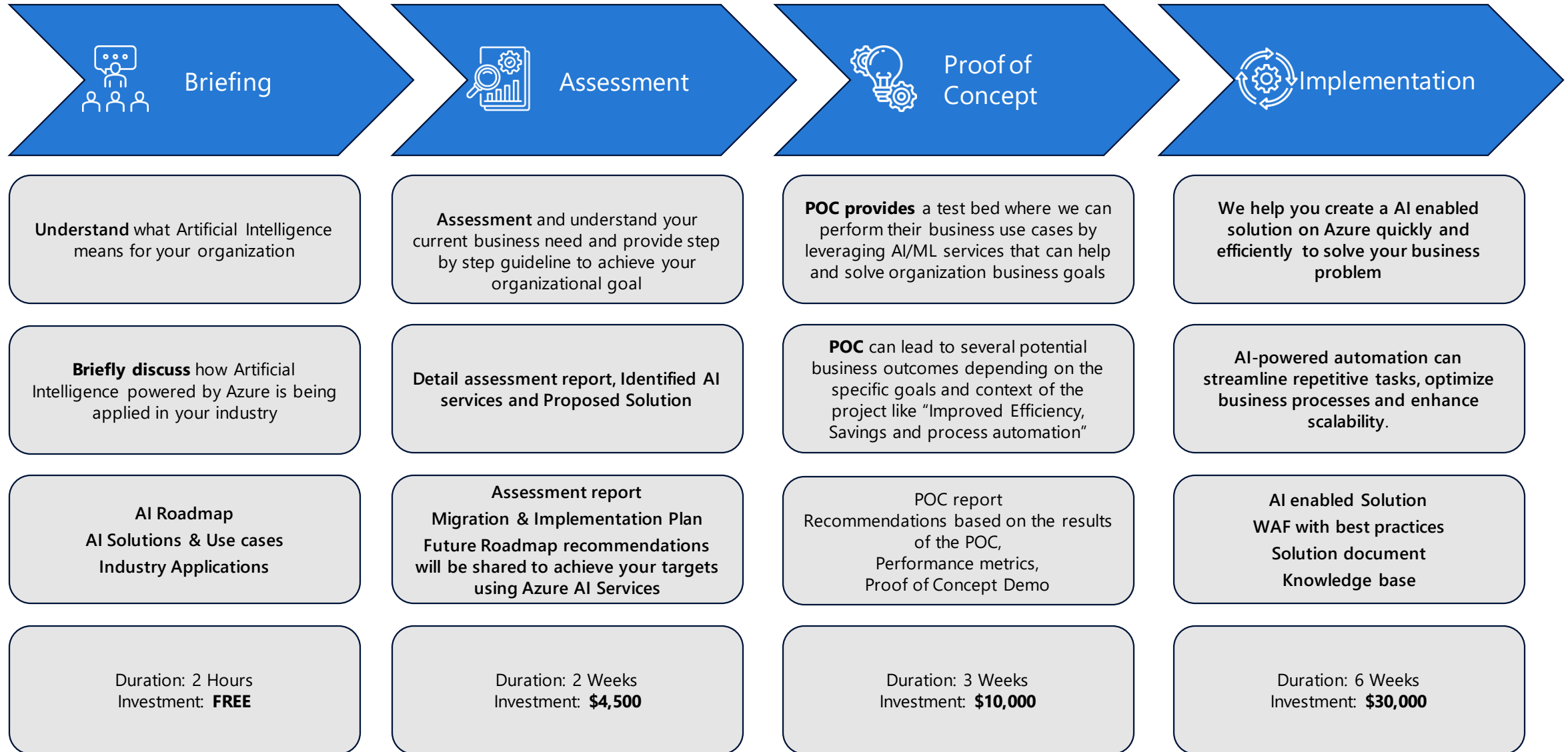
- Due to privacy protection standards, all data – translation memories, documents to be translated, trained machine learning models – is stored in the European Union
- Access to the translation portal now also via smartphone
- Evaluation of big data generated worldwide, such as vehicle information, thanks to translation into a standardized language

VOLKSWAGEN
GROUP

“Ultimately, we expect our Azure environment to provide the same data security our internal translation portal has offered thus far.”

— Tibor Farkas, Head of IT Cloud, Volkswagen AG

How Can Veraqor Help?



What Can We Do For You?

Business Outcome Strategy Workshop & Roadmap

Understanding the complexities and best practices to get you where you want to be. A complimentary 2-hour advisory session to assess your current state and provide the guidance you need.

Deeper Solution Session & Briefing

See what Veraqor can do for you! An hour-long envisioning workshop explores the impact of digital transformation and innovation to help customers with vision-setting, strategy, roadmaps, and organizational alignment.

Architectural Design Sessions

This custom 2-hour session focuses on your technical solution objectives and aligns them with specific components of solutions to help you not only meet your goals but also capitalize on them.

Industry Best Practices, Tools & Frameworks

This custom 1-hour session focuses on guidance of best practices working directly with our specialized architects on innovative new capabilities and well-architected framework.

Complimentary Offers for Customers

Thank you!

Please spare a moment to fill out the survey
after this webinar.

Need help? Please write to:
mtu@veraqr.io

