

The background of the slide features a large, modern architectural space with a curved glass wall and ceiling. Several people are visible walking on different levels of the glass-enclosed area.

Cognitive Services & Conversational Platform

For Provincial Electricity Authority (PEA)

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Microsoft Cognitive Services

Give your apps a human side



Vision

From faces to feelings, allow your apps to understand images and video

Speech

Hear and speak to your users by filtering noise, identifying speakers, and understanding intent

Language

Process text and learn how to recognize what users want

Knowledge

Tap into rich knowledge amassed from the web, academia, or your own data

Search

Access billions of web pages, images, videos, and news with the power of Bing APIs

Labs

An early look at emerging Cognitive Services technologies: discover, try and give feedback on new technologies before general availability

Microsoft Cognitive Services

Give your apps a human side



Vision

Computer Vision

Content Moderator

Emotion

Face

Video

Video Indexer

Speech

Bing Speech

Speaker
Recognition

Language

Bing Spell Check

Linguistic Analysis

Text Analytics

Translator Text
& Speech

Web Language
Model

Knowledge

Academic
Knowledge

Entity Linking

Knowledge
Exploration

Recommendations

QnA Maker

Search

Bing
Autosuggest

Bing Image
Search

Bing News
Search

Bing Video
Search

Bing Web Search

Bing Entity
Search

Bing Custom
Search

Labs

Project Prague
(gesture)

Project Cuzco
(events)

Project Johannesburg
(routing)

Project Nanjing
(isochrones)

Project Abu Dhabi
(distance matrix)

Project Wollongong

CUSTOMIZATION

Custom Vision
Service

Custom Speech
Service

Language
Understanding

Custom Decision
Service

Why Microsoft Cognitive Services?



Easy

Roll your own with REST APIs

Simple to add: just a few
lines of code required



Flexible

Integrate into the language
and platform of your choice
Breadth of offerings helps you
find the right API for your app
Bring your own data for your
custom experience



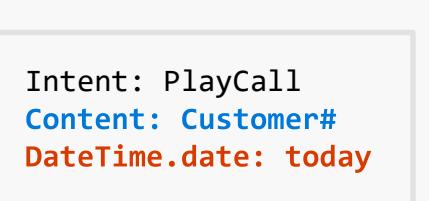
Tested

Built by experts in their field
from Microsoft Research, Bing,
and Azure Machine Learning

Quality documentation, sample
code, and community support



A variety of real-world applications

Vision	Speech	Language	Knowledge	Search
 <p>What is in the image?</p>	 <p>Give me directions to the nearest local branch.</p>	 <p>Play today's customer call recording.</p>	 <p>Top publications in customer lifecycle trends?</p>	 <p>Search for 'fraud prevention'</p>
Computer Vision	Bing Speech	Language Understanding	Knowledge Exploration	Bing News Search
 <p>Category: People; 5 faces Adult/Racy?: False/False Dominant colors: #F0F0F0, #A9A9A9, #808080 Accent color:</p>	 <p>Convert spoken audio to text Convert text to spoken audio Extract intent of user</p>	 <p>Natural Language Processing Intent: PlayCall Content: Customer# DateTime.date: today  Now Playing 11/29/2016 Customer Call</p>	<p>Here are the top results:</p> <p>Customer Relationship Management – 5 Key Trends for 2014 CRM <i>Oct 28, 2015</i> – Here are FIVE key trends in 2014 that would help marketers in rolling ... Of late, marketers are looking at customer lifecycle management (CLM)</p> <p>Predictive Customer Lifecycle Management (CLM) The purpose of Customer Life-cycle Management (CLM) is to maximize both customer retention and Predictive trend analysis provides business visibility.</p> <p>Trends 2016: The Future of Customer Service <i>Jan 5, 2016</i> – The top 10 customer service trends for 2016 that North American Consumer</p> <p>Language Around Customer Lifecycles in the Banking Industry View PDF</p>	 <p>Here is what I found:</p> <p>Information Communications Media Market News It also investigates the top three expected Fraud Detection and Prevention programs, in terms of demand in key markets...</p> <p>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...</p> <p>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...</p>



VISION

From faces to feelings, allow your apps to understand images and video

Computer Vision | Content Moderator | Emotion | Face | Video |
Video Indexer | Custom Vision Service

Computer Vision API

Analyze an image

Understand content within an image

OCR

Detect and recognize words within an image

Generate thumbnail

Scale and crop images, while retaining key content

Recognize celebrities

Thanks to domain specific models, ability to recognize 200K celebrities from business, politics, sports and entertainment around the world



Analyze image



Type of image

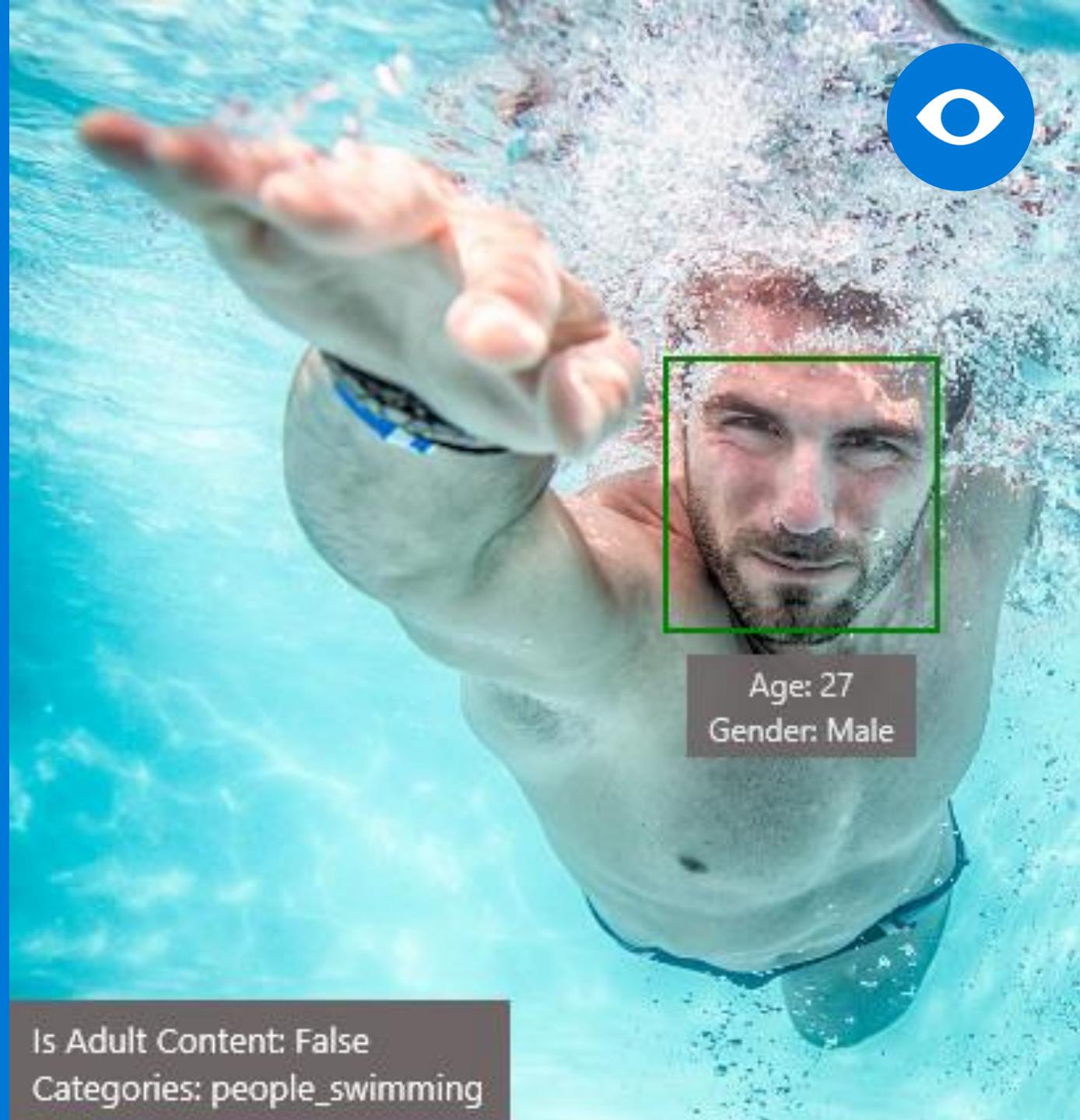
Clip Art Type	0 Non-clipart
Line Drawing Type	0 Non-Line Drawing
Black & White Image	False

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	



OCR

Life is like riding
a bicycle

To keep your
balance you
must keep moving



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"  
            }  
          ]  
        ]  
      ]  
    }  
  ]  
}
```



OCR

Good at

Scanned documents

Photos with text

Fine grained
location information



Smart thumbnail

Smart cropping off



https://oxfordportal.blob.core.windows.net



https://oxfordportal.blob.core.windows.net



Emotion API

**Recognize
emotions**

Understand content
within an image



Emotion API

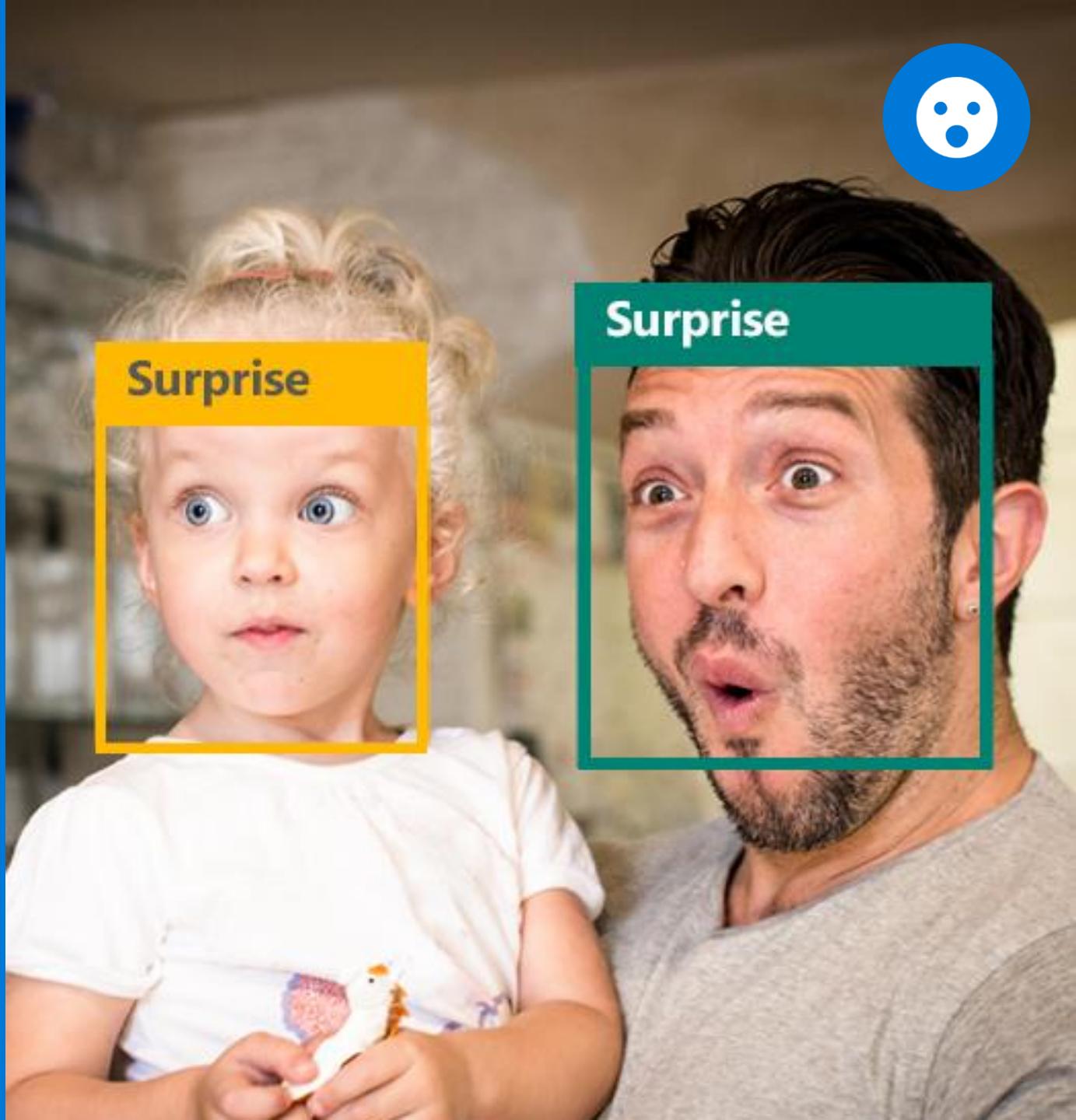


Face detection

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

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}
```



Face API

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



Face API



Detection

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

...

Feature attributes

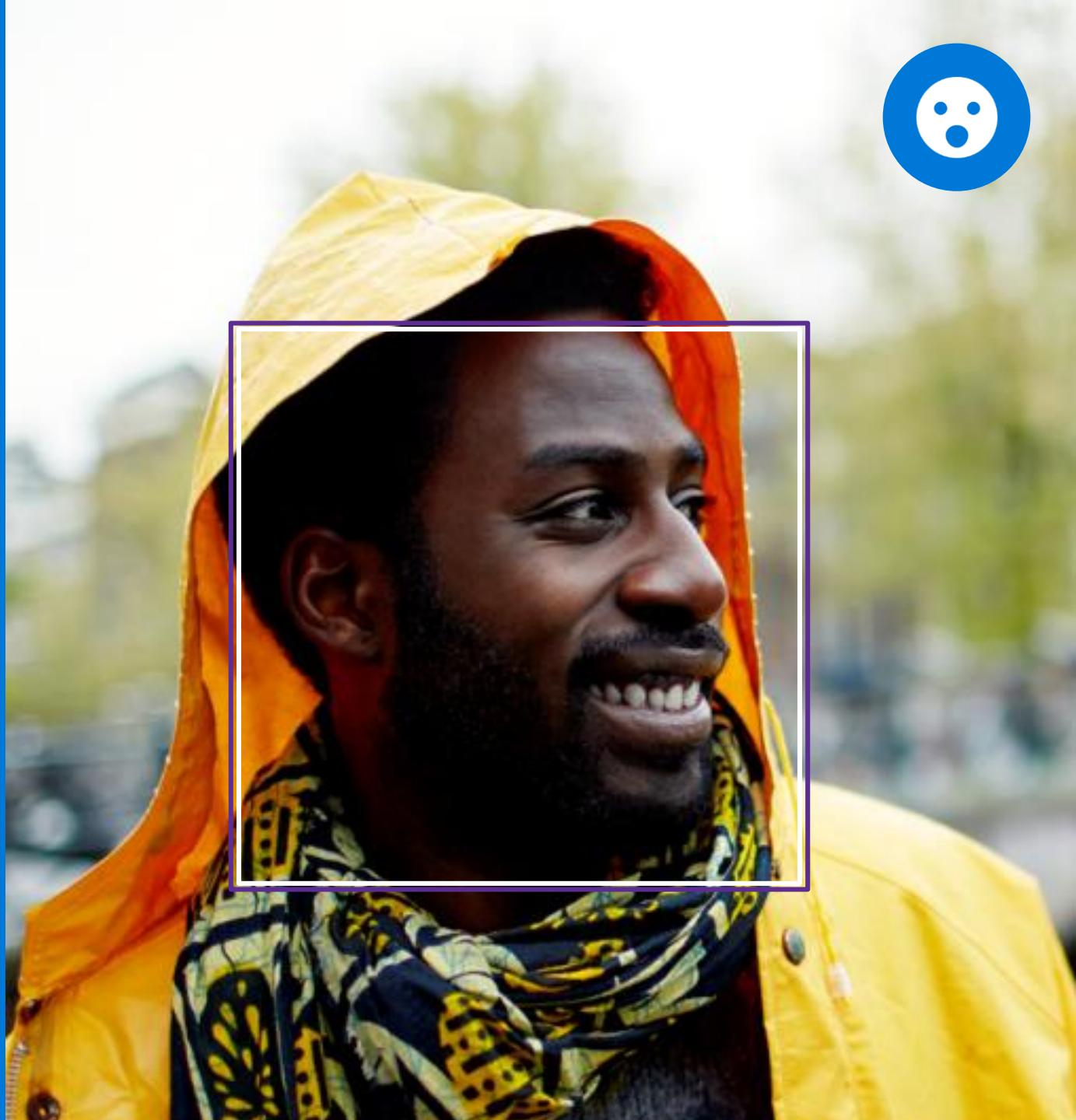
```
"attributes": { "age": 42, "gender": "male",  
"headPose": { "roll": "8.2", "yaw": "-37.8",  
"pitch": "0.0" }}
```

Grouping



Identification

Jasper Williams



Video API



Stabilization

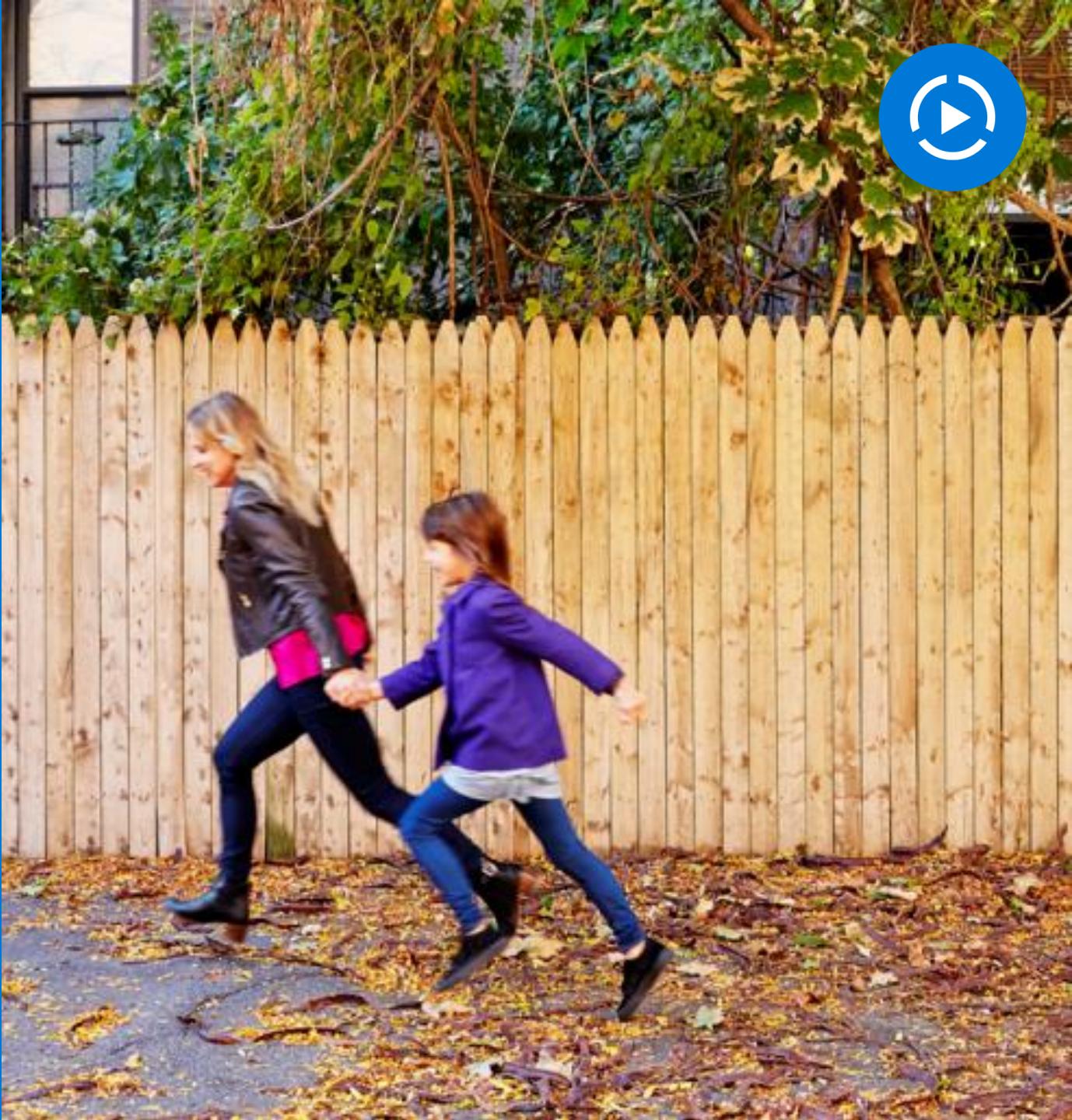
Smooth and stabilize shaky video

Face detection and tracking

Detect and track faces in videos

Motion detection

Detect when motion occurs



Stabilization



The Stabilization API provides automatic video stabilization and smoothing for shaky videos

This API uses many of the same technologies found in Microsoft Hyperlapse

Best for: Small camera motions, with or without rolling shutter effects (e.g., holding a static camera, walking with a slow speed)



Face detection and tracking

High precision face location detection and tracking

Can detect up to 64 human faces in a video (no smaller than 24x24 pixels)

Detected and tracked faces are returned with coordinates and a Face ID to track throughout the video



Time (sec)	Face ID	x, y	Width, height
0	0	0.59, 0.23	0.09, 0.16
0	1	0.38, 0.15	0.07, 0.12
1	0	0.54, 0.25	0.09, 0.15
1	1	0.23, 0.18	0.07, 0.12

Motion detection

Indicates when motion occurs against a fixed background (e.g., surveillance video)

Trained to reduce false alarms, such as lighting and shadow changes



Start time	End time	In region
1.9	3.6	0
5.2	15.1	0

Content Moderator

Machine-assisted moderation of text and images, augmented with human review tools

Image moderation

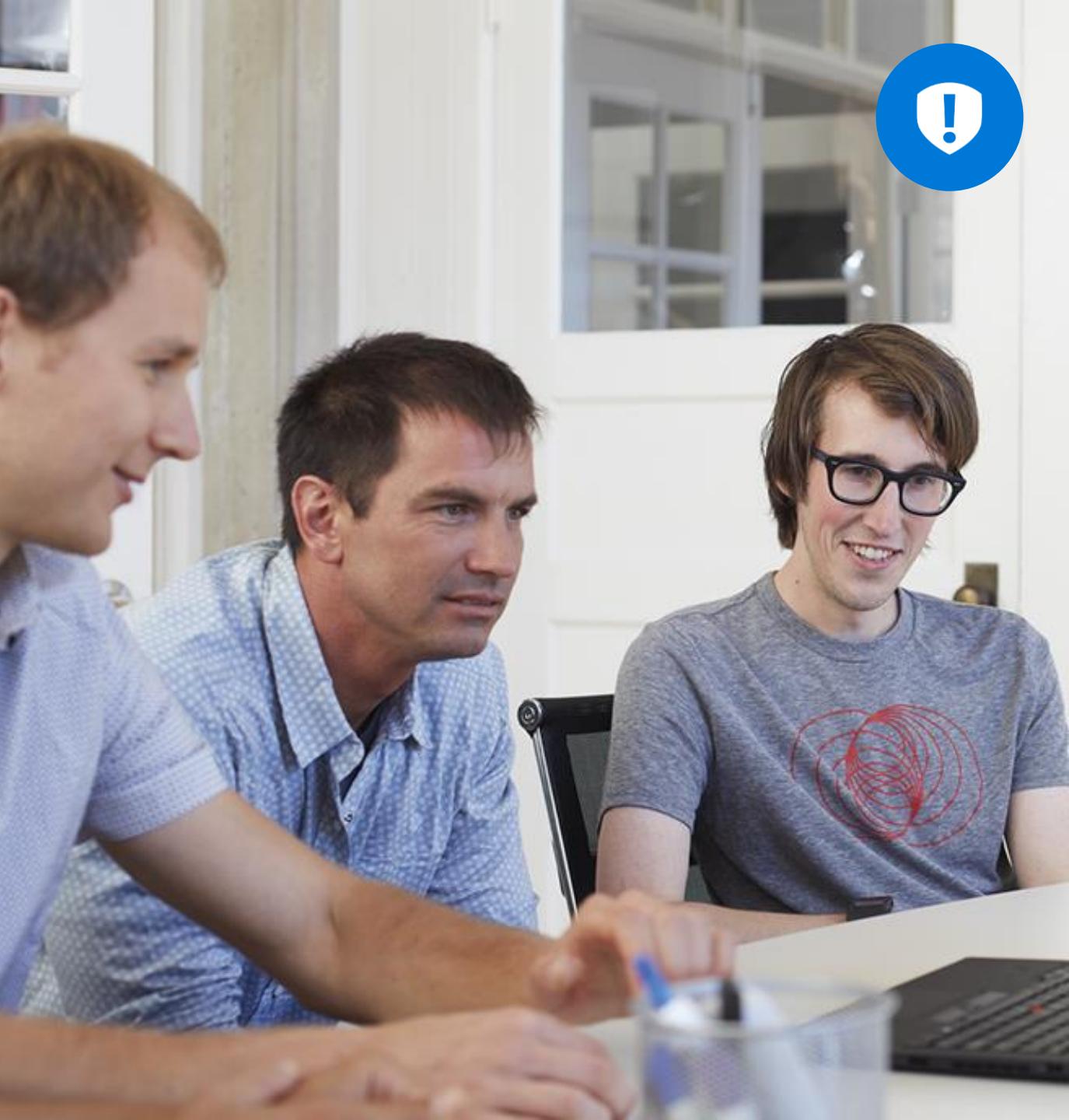
Enhance your ability to detect potentially offensive or unwanted images through machine-learning based classifiers, custom blacklists, and Optical Character Recognition (OCR)

Text moderation

Helps you detect potential profanity in more than 100 languages and match text against your custom lists automatically. Content Moderator also checks for possible Personally Identifiable Information (PII)

Video moderation (in Azure Media Services)

Enable the scoring of possible adult content in videos. Video moderation is currently deployed in preview on Azure Media Services



Custom Vision Service

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



Video Indexer

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

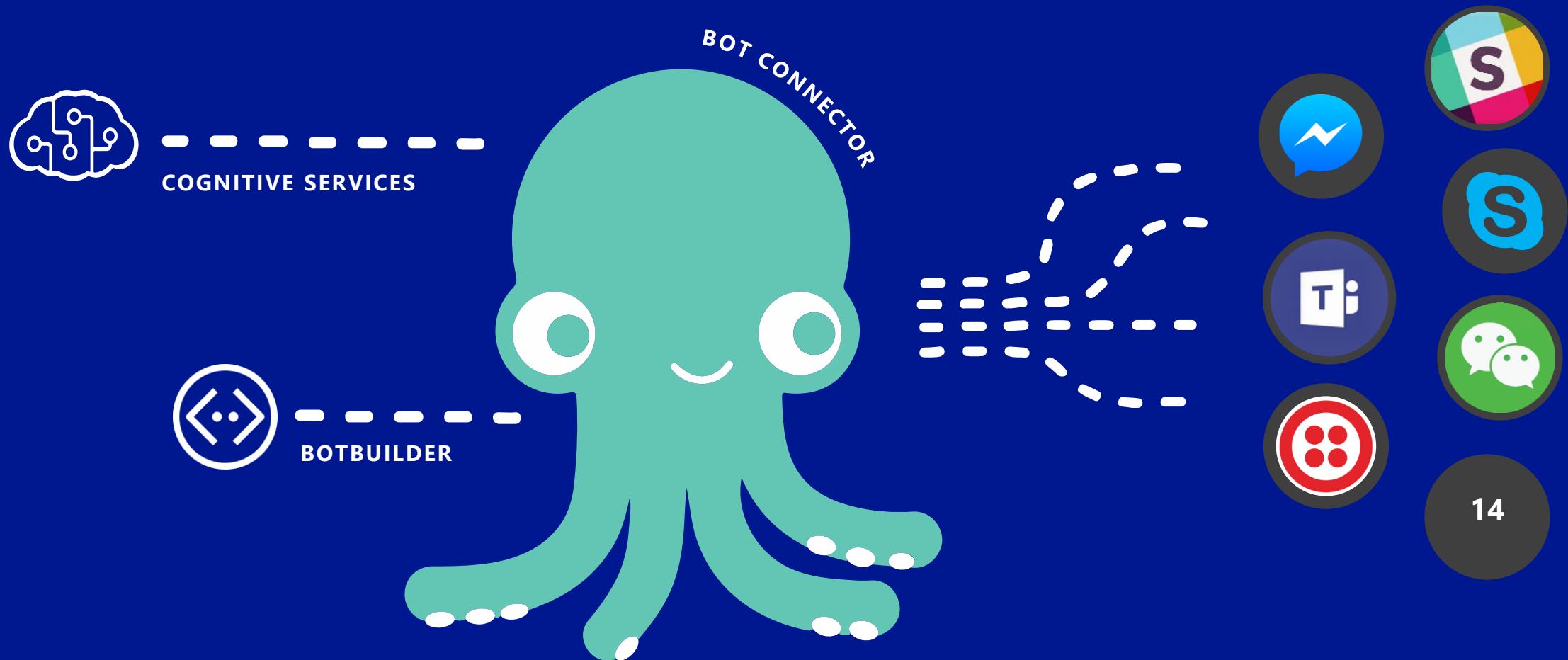
Improve engagement with your video

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



The Microsoft Bot Framework

Combined with Cognitive Services





Get started for free at
<http://azure.com/Cognitive>



Learn more on the Cortana Intelligence Suite [website](#) and Cognitive Services [website](#)



Schedule a workshop to identify areas in your business where analytics and intelligence can drive transformation



Talk with your Microsoft contact about licensing options and partners



DEVELOPER RESOURCES

Pricing

<https://azure.microsoft.com/en-us/pricing/details/cognitive-services/>

Documentation

<https://docs.microsoft.com/en-us/azure/cognitive-services/>

Client SDKs

<https://github.com/Microsoft/ProjectOxford-ClientSDK>

<https://github.com/felixrieseberg/project-oxford> (nodejs)

<https://github.com/southwood/project-oxford-python>

Example Code

<https://github.com/jsturtevant/happy-image-tester-django>

<https://github.com/jsturtevant/happy-image-tester-nodejs>

Community

<https://stackoverflow.com/questions/tagged/microsoft-cognitive>

<https://social.msdn.microsoft.com/forums/azure/en-US/home?forum=mlapi>

<https://cognitive.uservoice.com/>

