



Enterprise Cloud Migration Stories

Justin Yoo
Senior Cloud Advocate





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Who Am I?

Senior Cloud Advocate



Who Am I?

Justin Yoo

Senior Cloud Advocate

- [!\[\]\(633dd45d48d71eb51a85c6dd83ee51e9_img.jpg\) @justinchronicle](https://twitter.com/justinchronicle)
- [!\[\]\(bdddf9191a284aa0945448444083c5b0_img.jpg\) @alientcube.community](https://facebook.com/alientcube.community)
- [!\[\]\(944943bcf87a12c5b9337bf7ed1ef546_img.jpg\) alientcube.org](https://alientcube.org)

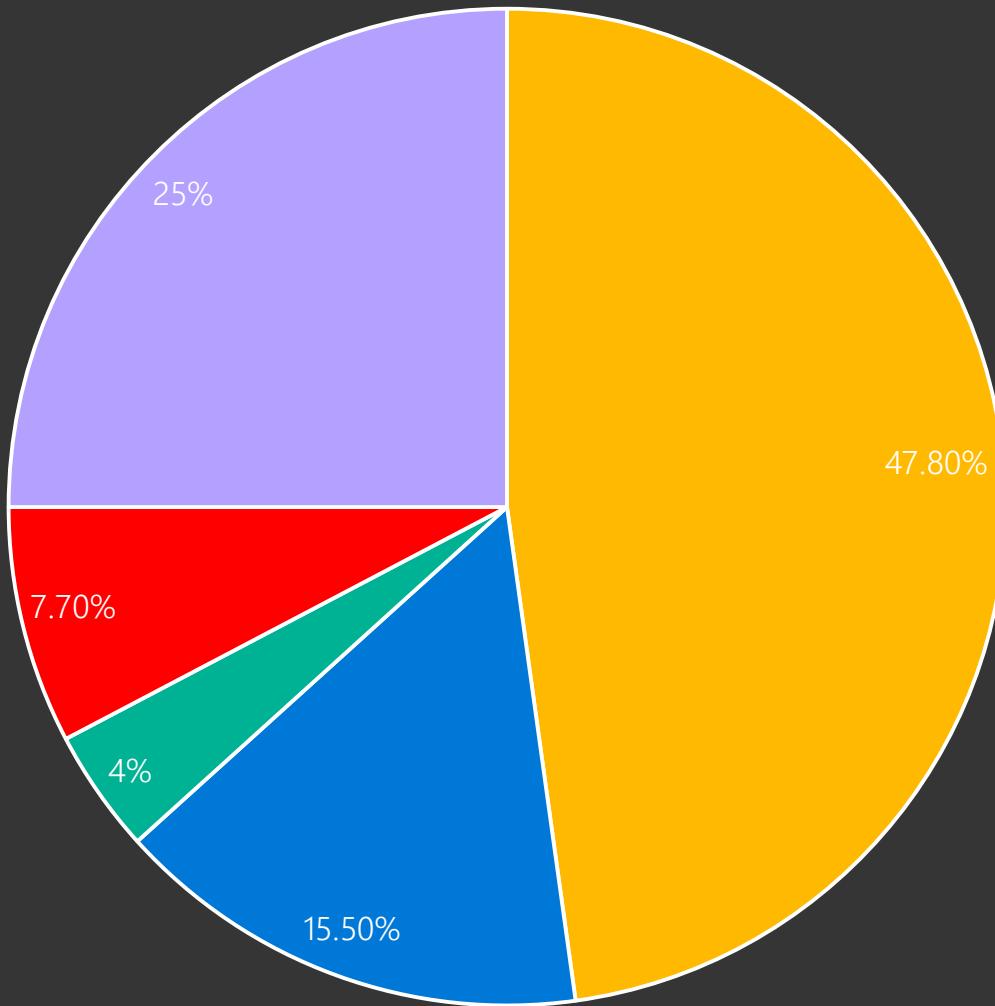


What is “cloud”?

What does “cloud” mean to you?

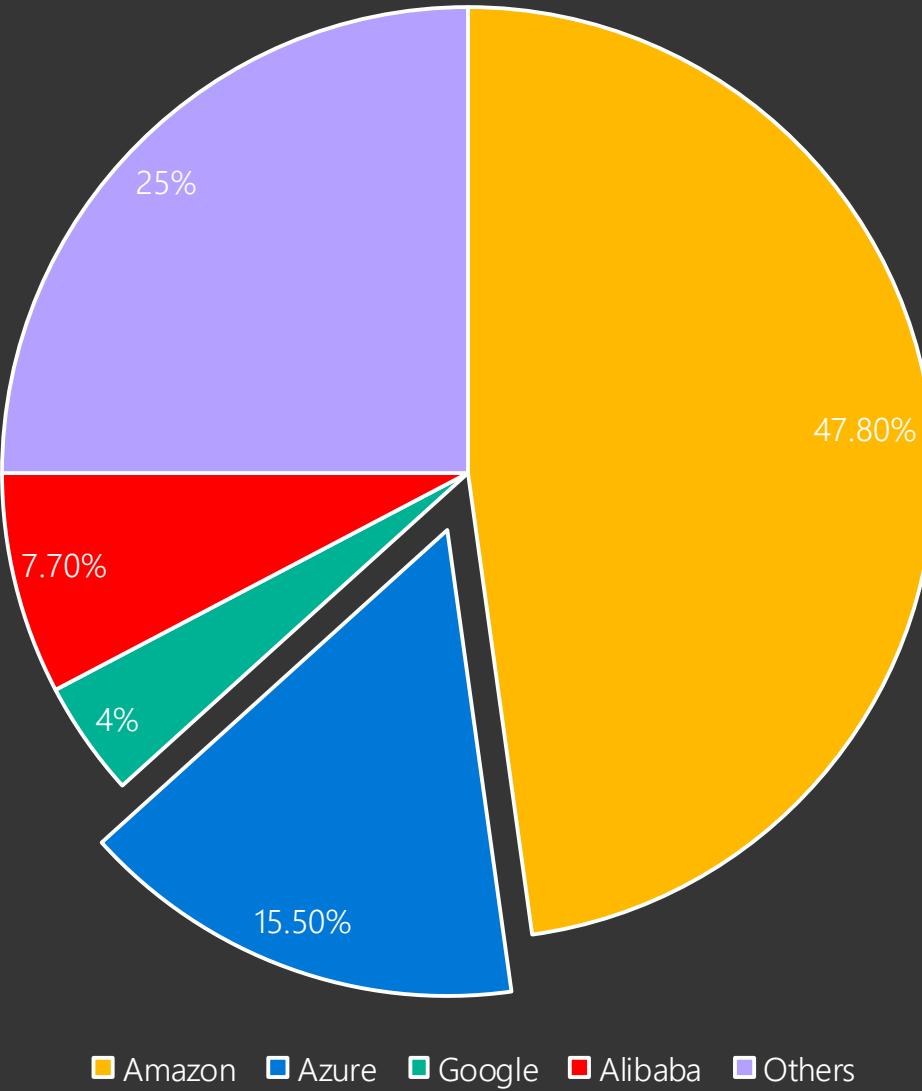
Have you used “cloud” before?

Market Share 2019



<https://aka.ms/SNU/cloud-market-share-2019>

Market Share 2019



<https://aka.ms/SNU/cloud-market-share-2019>

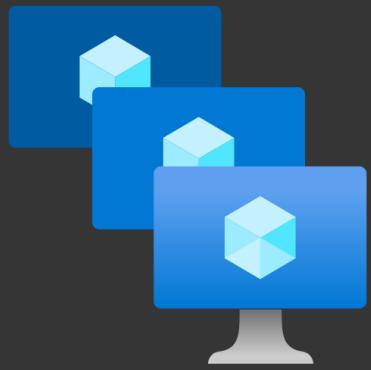
”

95% of Fortune 500
companies use Azure

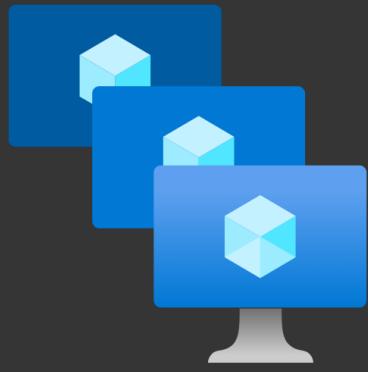
<https://aka.ms/SNU/fortune-500-azure>

Types of Cloud

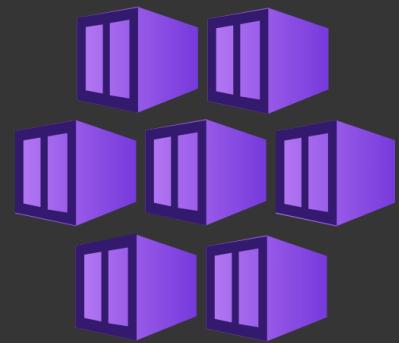




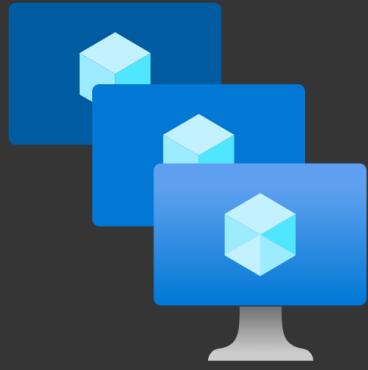
IaaS



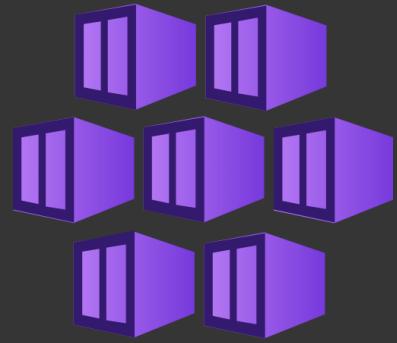
IaaS



CaaS



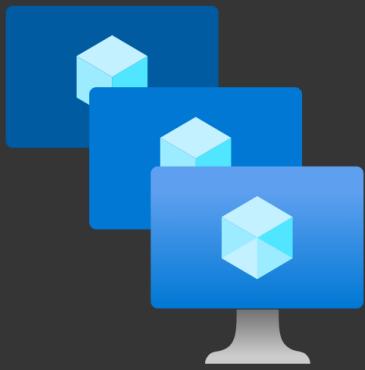
IaaS



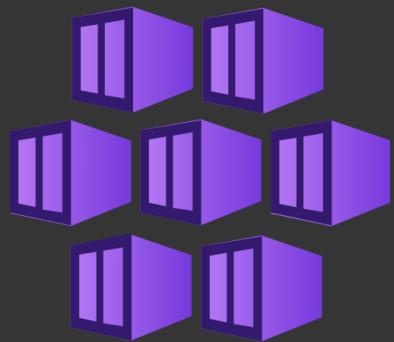
CaaS



PaaS



IaaS



CaaS



PaaS

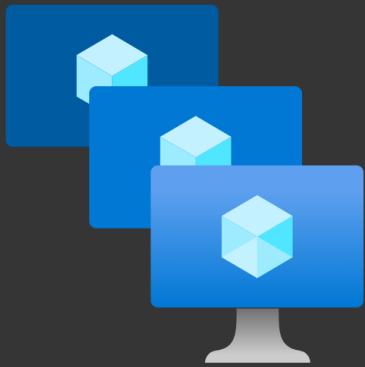


FaaS

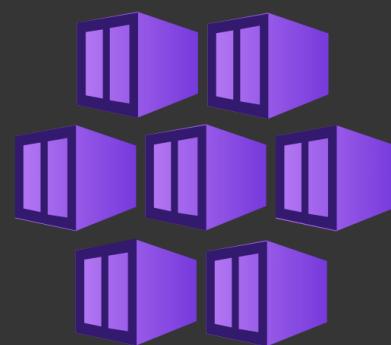
← Management Focus →

Infrastructure

Codes



IaaS



CaaS



PaaS



FaaS



IaaS

CaaS

PaaS

FaaS

Which one to choose?



It depends, really



Business value to pursue
Time/money to spend

A Start-up



Mark started a RegTech business

Funded \$30K

Setup VMs + networks
Developed applications

Worked great!



Oops server burst out



More servers!



Server busted again!



Mo... more servers?



Money run out!



MVP not done yet



What went wrong?

What if started with PaaS?

Cheaper!



Application only!



Focus on business value!



A Hotel Resort



100s of legacy applications

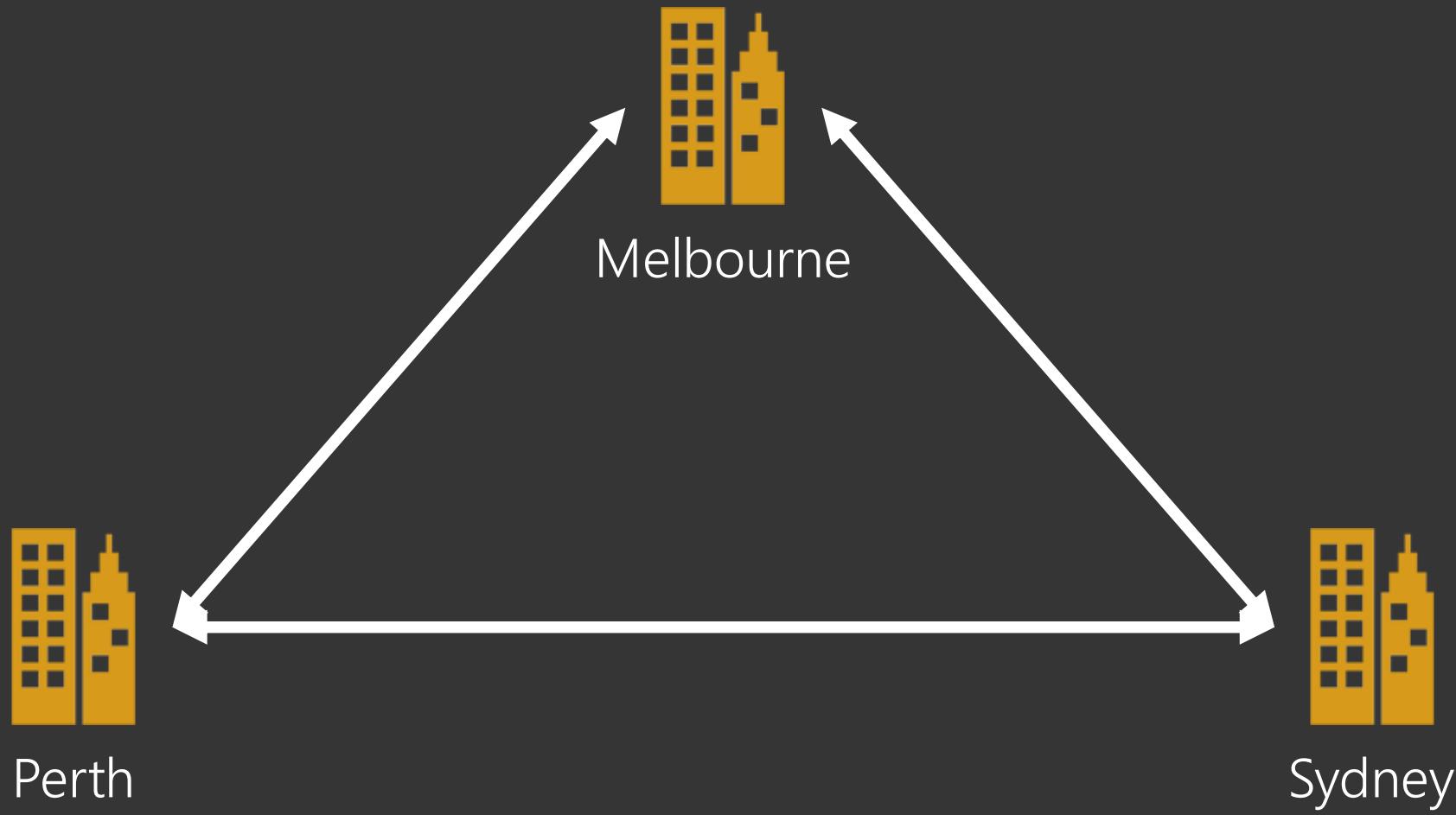
As old as 20 years

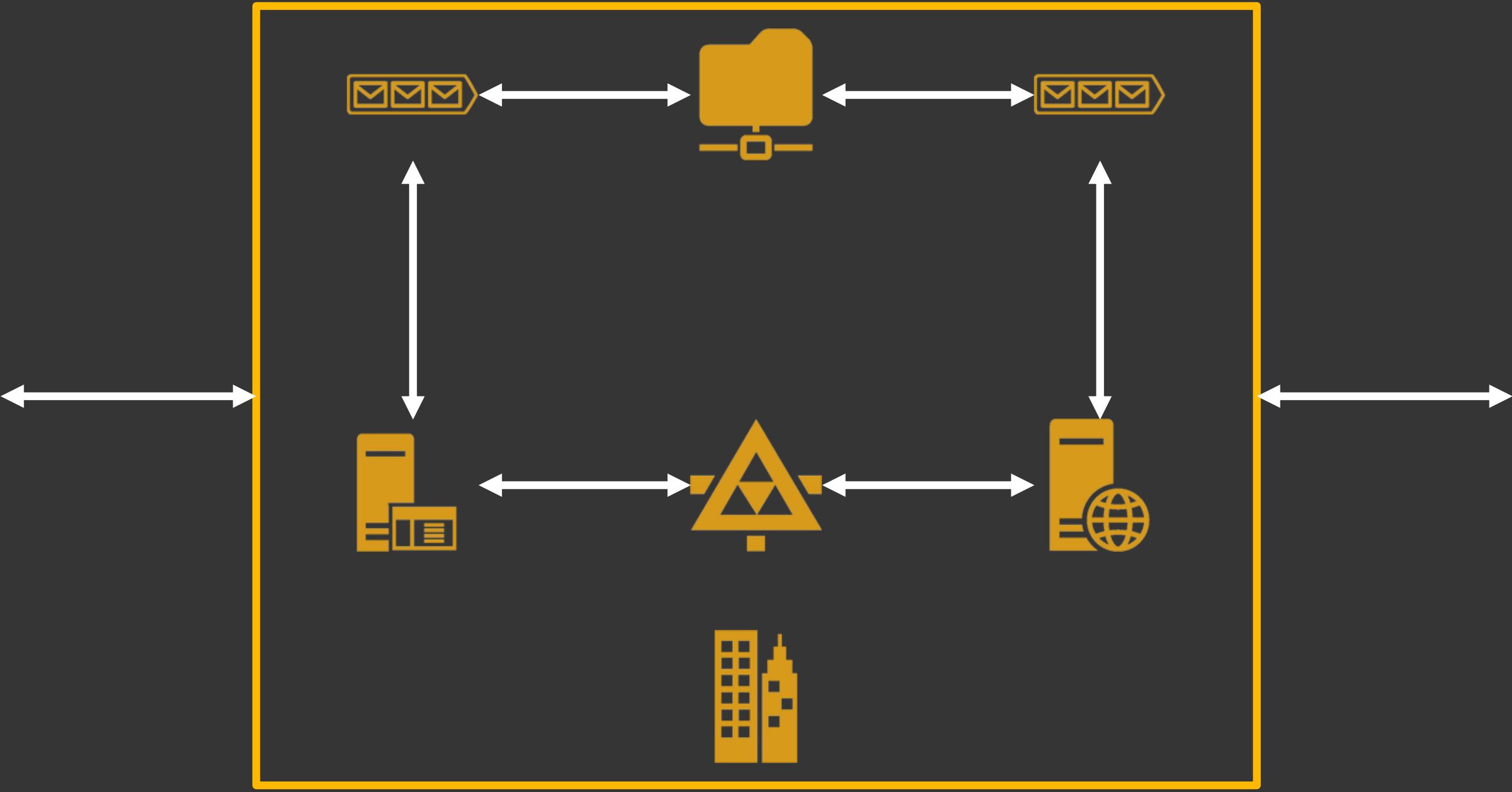
No source code maintained

Patch-driven development



Melbourne





Java, .NET, Python, PHP, ...

Maintenance burden

Big-bang migration



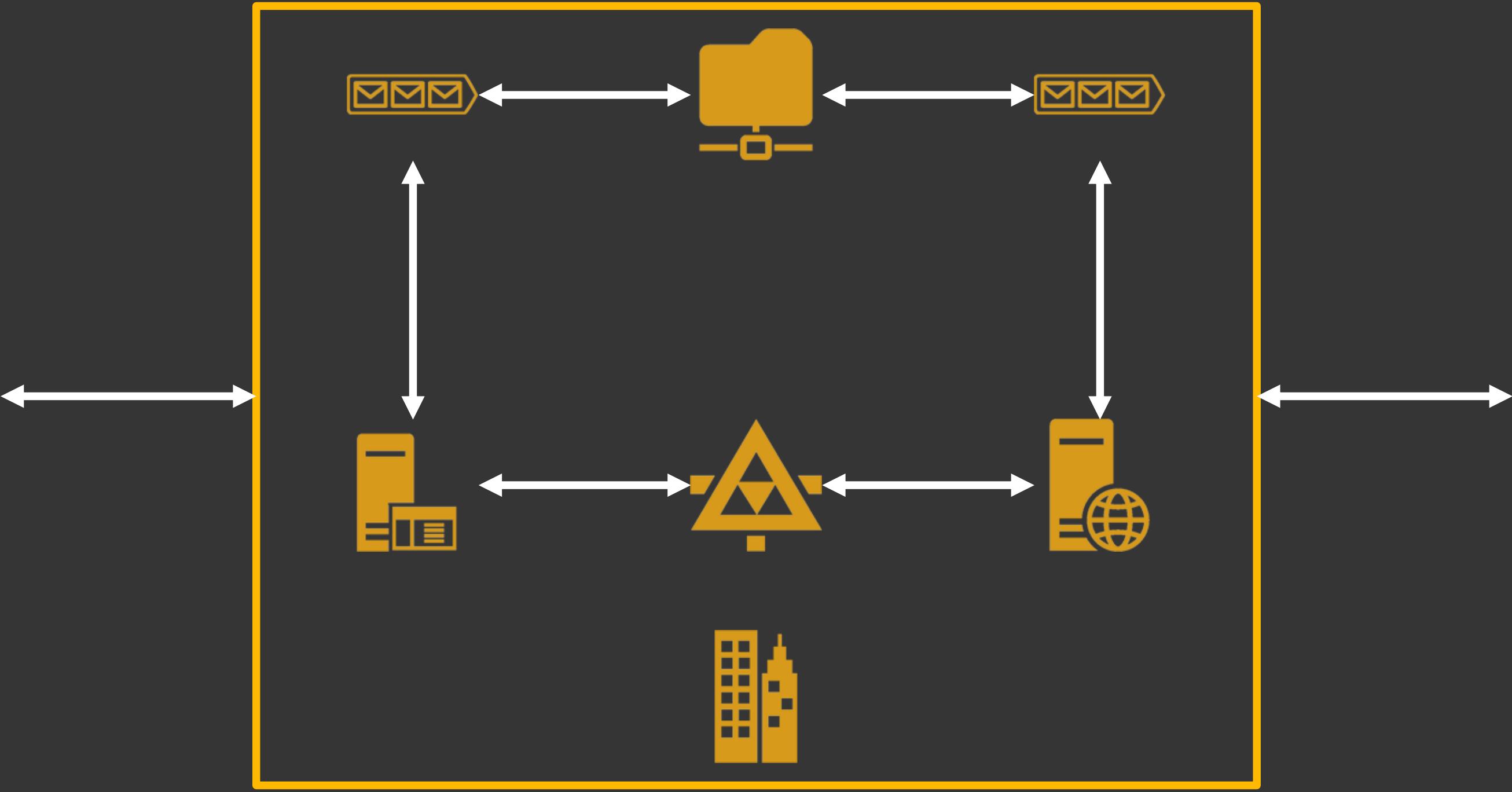
Integration pipeline only

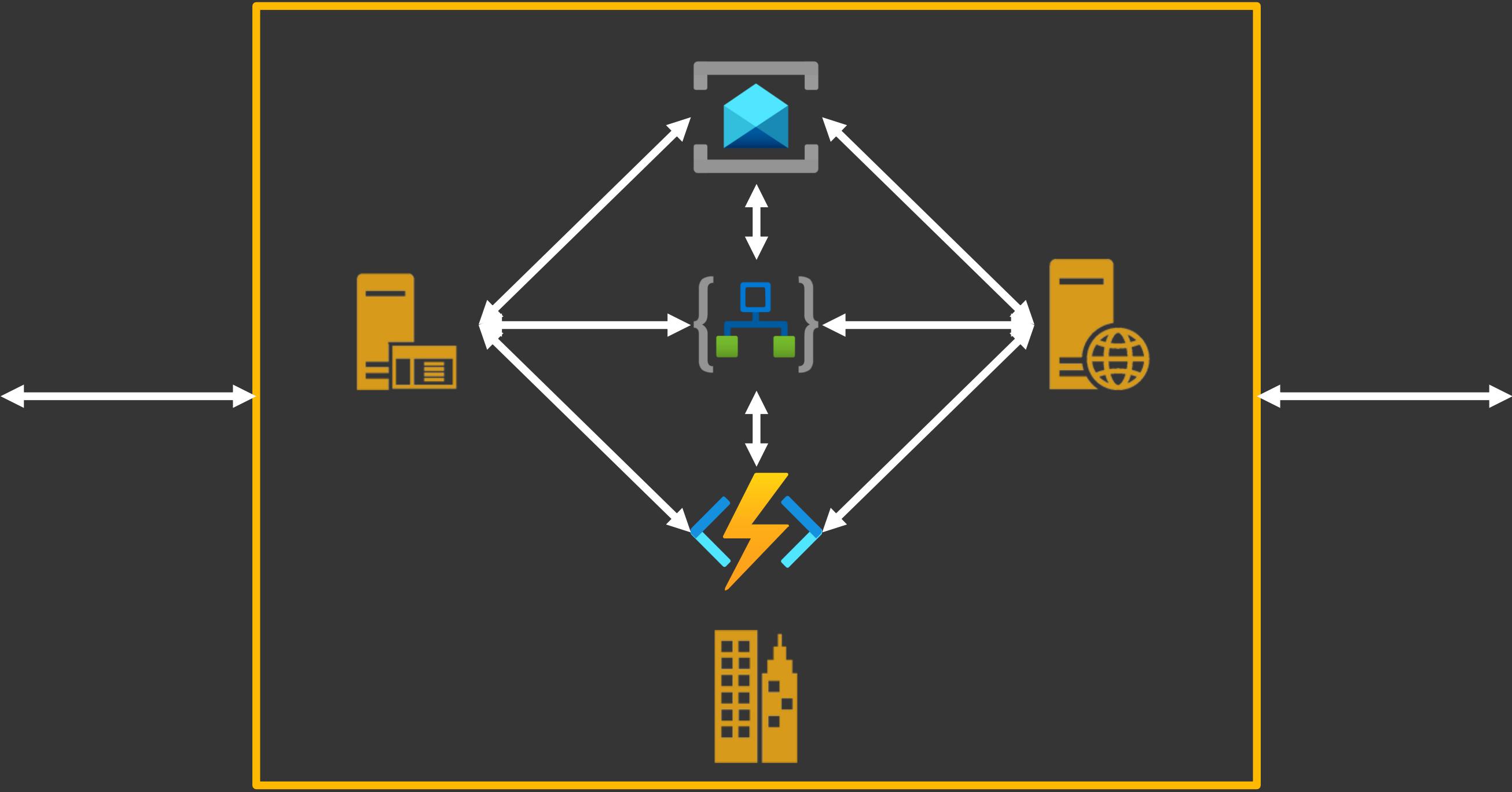


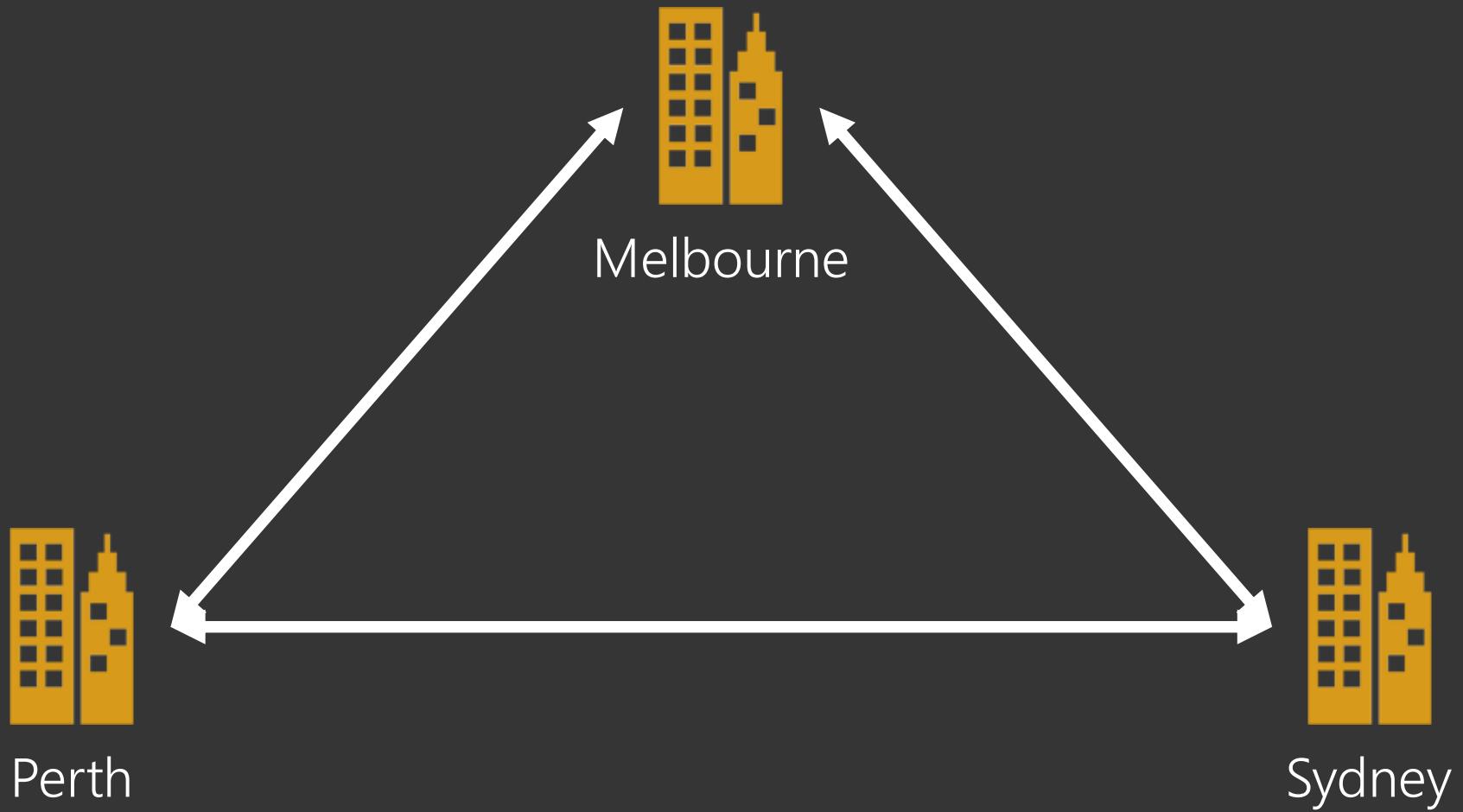
IaaS vs PaaS vs Serverless

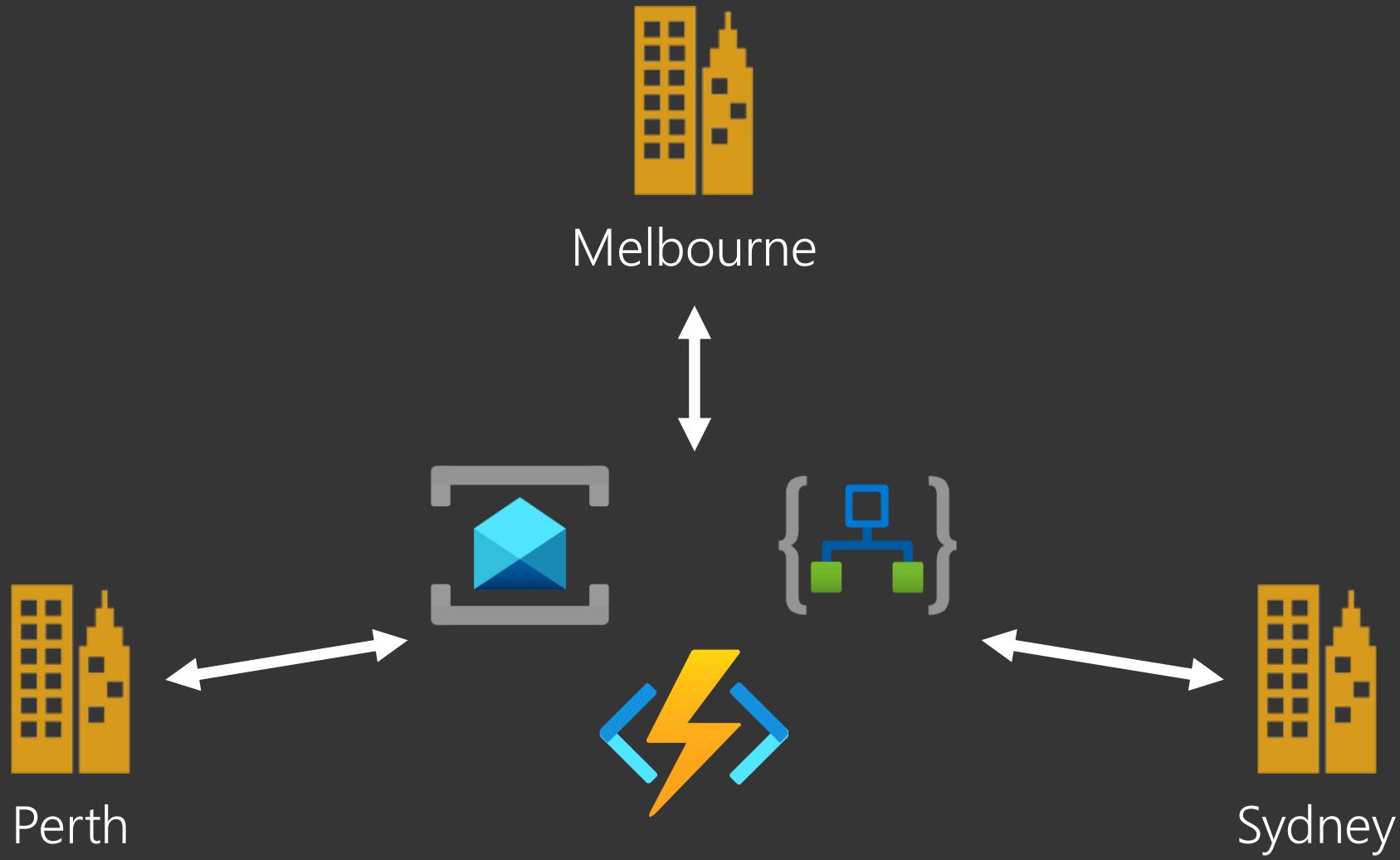
Serverless!











No more servers
No more licenses
No more maintenances

What you run is what you pay

Took a year for migration

All modularised/componentised

Only integration part done

A Winery



130 year old winery

All IT operations out-sourced

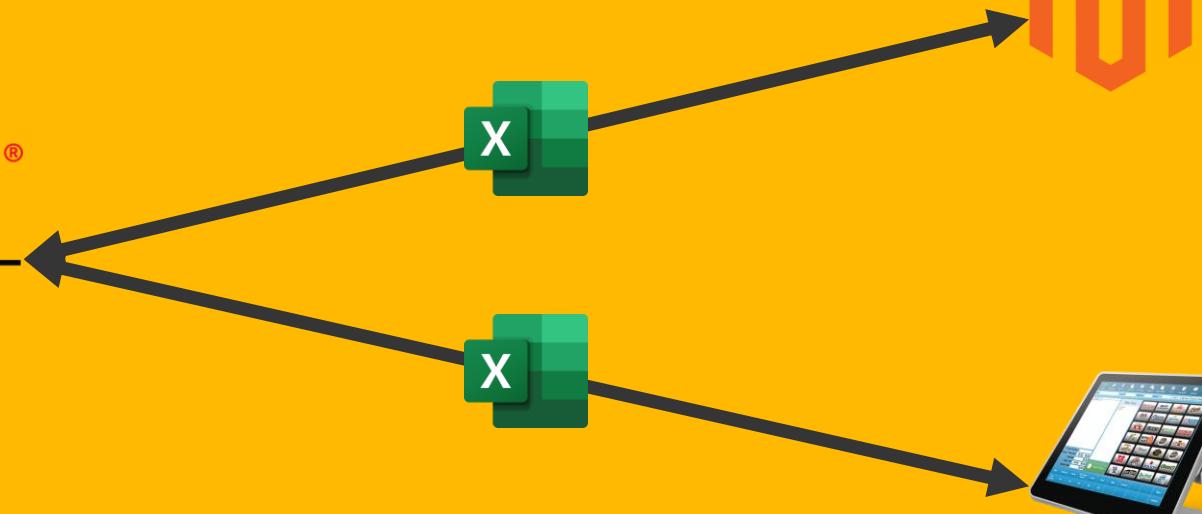
Source Solution Service

No idea how system works

Paid almost doubled for ops

Audit result – smart invest on IT

ORACLE®
JD EDWARDS



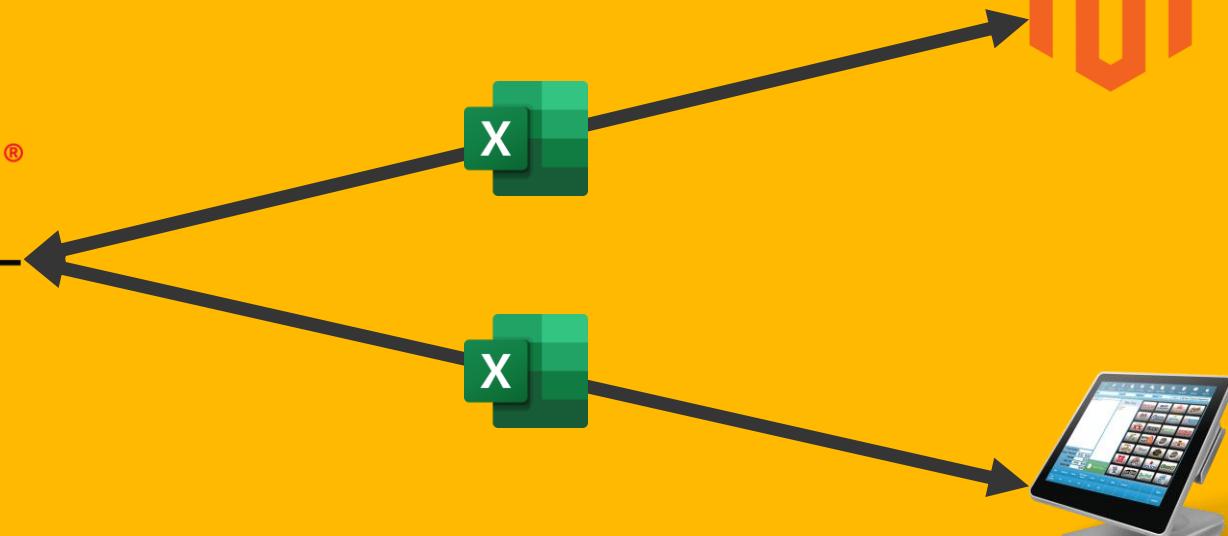
Digital transformation!

ERP integration for e-commerce

ORACLE®
JD EDWARDS



 **Magento®**
An Adobe Company



ORACLE®
JD EDWARDS



Challenges: No API on existing POS

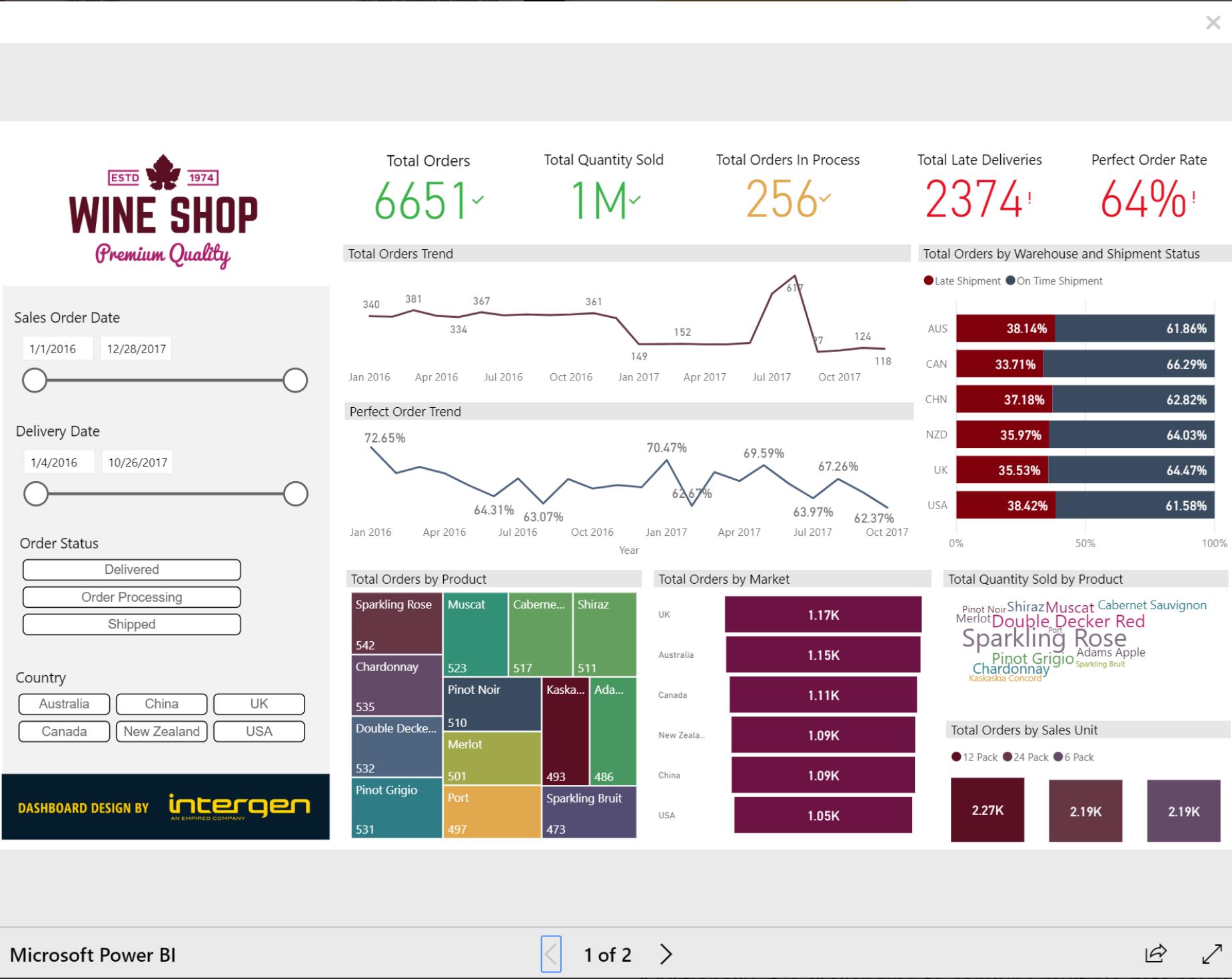
IoT Implementation for vineyard

Rainfall
Temperature
Bunch count #1 - bud burst
Bunch count #2 - Veraison

Contract hire
Machine hire
Vintage decision
Marketing strategy

Manually by viticulturists

IoT sensors deployment Bureau of Meteorology



Challenges:
Sensor coverages
Viticulturists

Artificial Intelligence



Who Am I?

Mijeong Jeon
Microsoft AI MVP

 [@ninevincent](https://www.facebook.com/ninevincent)

ninevincentg@gmail.com



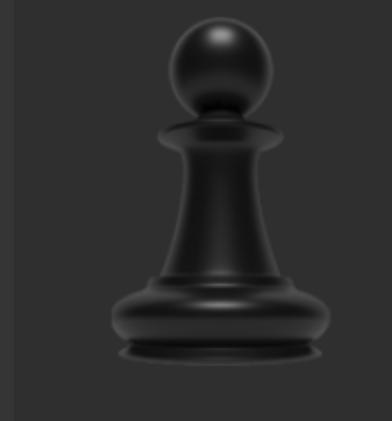
What is “AI” ?



Terminator



AlphaGo



AI Speaker



AI



기계를 인간과 비슷하게 동작하게 하는 기술



의료

마케팅

보안

금융

스포츠

환경

예술

농수산

안전

법률

모바일

쇼핑

AI can do everything



AI, Why now?



Big Data



Big Data Hardware



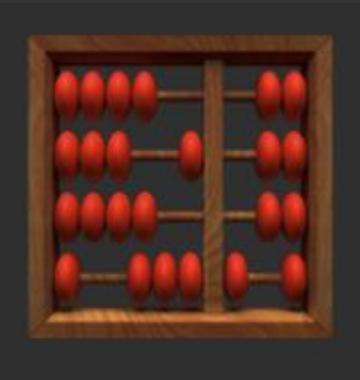
Big Data



Hardware



Algorithm



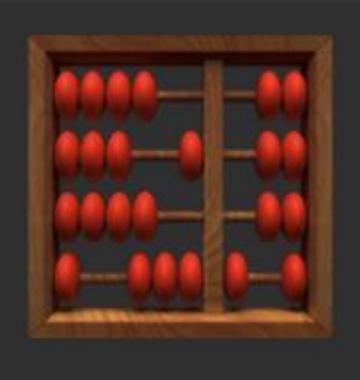
Big Data



Hardware



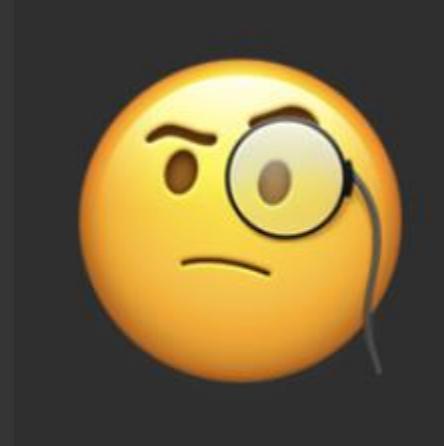
Algorithm



Cloud



How can I make AI ?



Mathematics

Algorithms

Hyper-parameter tuning

Data analysis

Jupyter notebooks

Python/R

Tensorflow

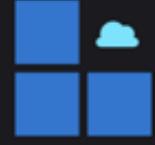
...



Azure AI can help you!



Azure AI Platform



Cognitive Service

앱에 혁신적인 환경을
구현하세요



Machine Learning

쉽고 빠르게 모델을 만들어
배포, 관리하세요

https://azure.microsoft.com/ko-kr/overview/ai-platform/?WT.mc_id=AI-MVP-5003262

Azure AI Platform



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Microsoft Data
Microsoft Model

Custom Data
Custom Model

https://azure.microsoft.com/ko-kr/overview/ai-platform/?WT.mc_id=AI-MVP-5003262



Cognitive Service

앱에 혁신적인 환경을
구현하세요

Cognitive Services

시작 > 음성 > 언어 > 웹 검색 >

Bot Service

https://docs.microsoft.com/ko-kr/azure/cognitive-services/?WT.mc_id=AI-MVP-5003262



Cognitive Service

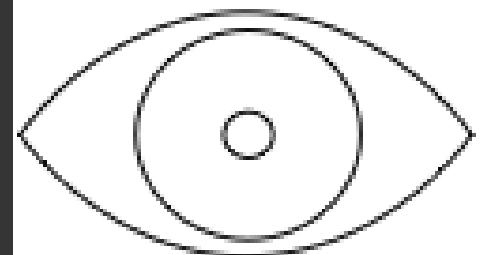
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Cognitive Services

시작 > 음성 > 언어 > 웹 검색 >

Bot Service

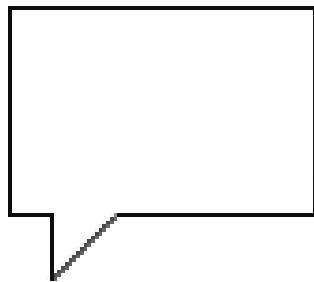
https://docs.microsoft.com/ko-kr/azure/cognitive-services/?WT.mc_id=AI-MVP-5003262



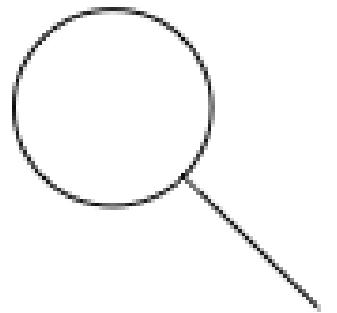
Vision



Language



Speech



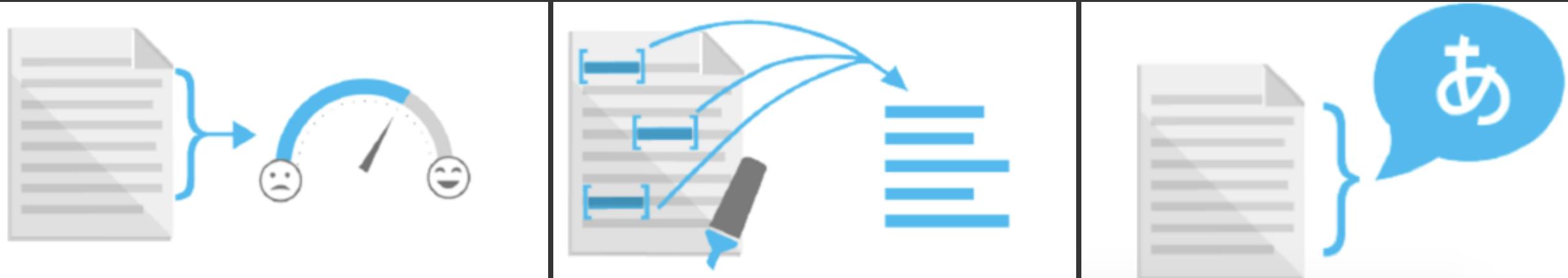
Search

https://azure.microsoft.com/ko-kr/services/cognitive-services/?WT.mc_id=AI-MVP-5003262



```
"color" {  
    "background": "White",  
    "dominantColors": "Blue"  
},  
  
"face" {  
    "age": 36,  
    "gender": "Male"  
},  
  
"tags" {  
    "name": "water",  
    "name": "swimming"  
}
```

https://azure.microsoft.com/ko-kr/services/cognitive-services/computer-vision/?WT.mc_id=AI-MVP-5003262



https://azure.microsoft.com/ko-kr/services/cognitive-services/text-analytics/?WT.mc_id=AI-MVP-5003262



▷ 등록 음성



텍스트 JSON

대통령 Barack Obama

은 선택한 오디오의 식별된 연설입니다.

https://azure.microsoft.com/ko-kr/services/cognitive-services/speaker-recognition/?WT.mc_id=AI-MVP-5003262

All

애니메이션 Gif

클립 아트

라인

사진

cute animals



예시

abstract art

cute animals

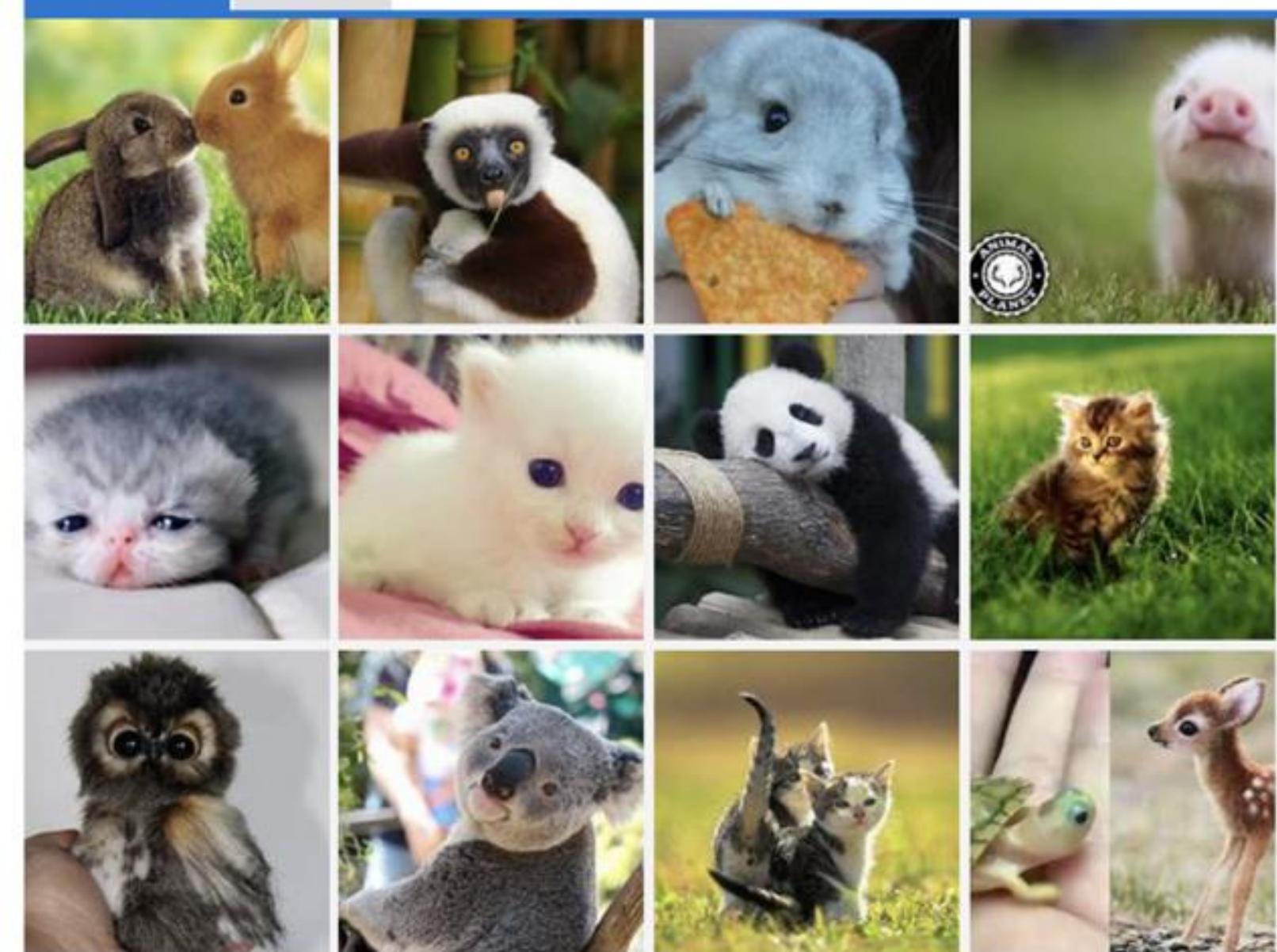
celebrations

nature wallpapers

sunsets

시장

ko-kr (한국어)



https://azure.microsoft.com/ko-kr/services/cognitive-services/bing-image-search-api/?WT.mc_id=AI-MVP-5003262

@justinchronicle

aka.ms/justinyoo

```
face_api_url = 'https://eastus.api.cognitive.microsoft.com/face/v1.0/detect'  
image_url = '/man_and_woman.jpg'  
  
headers = {'Ocp-Apim-Subscription-Key': subscription_key}  
  
params = {  
    'returnFaceAttributes': 'age,gender,emotion',  
}  
response = requests.post(face_api_url, params=params,  
                         headers=headers,  
                         json={"url": image_url})
```

https://docs.microsoft.com/ko-kr/azure/cognitive-services/face/quickstarts/python/?WT.mc_id=AI-MVP-5003262



Cognitive Service

앱에 혁신적인 환경을
구현하세요

 Cognitive Services

시작 > 음성 > 언어 > 웹 검색 >

 Bot Service

https://azure.microsoft.com/ko-kr/services/bot-service/?WT.mc_id=AI-MVP-5003262

A diagram of a smartphone screen with a red border. Inside, there's a messaging interface with a speech bubble containing a red line graph icon, and a large red letter 'S' icon below it.

- Train Status**
Live arrivals and departures
- Journey Planner**
Where you need to be and by when
- Platform allocation**
When a platform is assigned
- Daily commute preferences**
Set your home and workplace
- Proactive delay and disruption**
Message notification alerts
- Alternative routes**
While you plan your journey

https://partner.microsoft.com/ko-kr/case-studies/popcornapps/?WT.mc_id=AI-MVP-5003262

Azure AI Platform



Cognitive Service

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Machine Learning

쉽고 빠르게 모델을 만들어
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Azure Machine Learning



Azure Databricks



ONNX

https://azure.microsoft.com/ko-kr/services/machine-learning/?WT.mc_id=AI-MVP-5003262



Machine Learning

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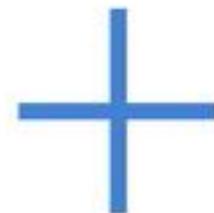
 Azure Machine Learning

 Azure Databricks

 ONNX

https://azure.microsoft.com/ko-kr/services/machine-learning/?WT.mc_id=AI-MVP-5003262

Set of Azure
Cloud Services



Python
SDK

That enables
you to:

- ✓ Prepare Data
- ✓ Build Models
- ✓ Train Models

- ✓ Manage Models
- ✓ Track Experiments
- ✓ Deploy Models



Prepare Data

Explore your data with summary statistics and transform it using intelligent transformations.



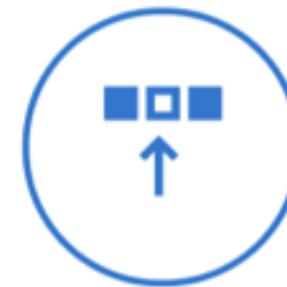
Train Models

Use machine learning algorithms with training data to create models.



Evaluate Models

Find the best model using test data.



Deploy Models

Deploy model as a web service in the Azure cloud, or to IoT Edge devices.

Azure Machine Learning



Automated machine learning

Identify suitable algorithms and hyperparameters faster.



Managed compute

Train models with ease and reduce costs by autoscaling powerful GPU clusters.



DevOps for machine learning

Increase productivity with experiment tracking, model management and monitoring, integrated CI/CD, and machine learning pipelines.



Simple deployment

Deploy models on-premises, to the cloud, and at the edge with a few lines of code.



Tool-agnostic Python SDK

Azure Machine Learning service integrates with any Python environment, including Visual Studio Code, Jupyter notebooks, and PyCharm.



Support for open-source frameworks

Use your favorite machine learning frameworks and tools, such as PyTorch, TensorFlow, and scikit-learn.

https://docs.microsoft.com/ko-kr/azure/machine-learning/service/overview-what-is-azure-ml/?WT.mc_id=AI-MVP-5003262



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Machine Learning

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배포, 관리하세요

Azure Machine Learning

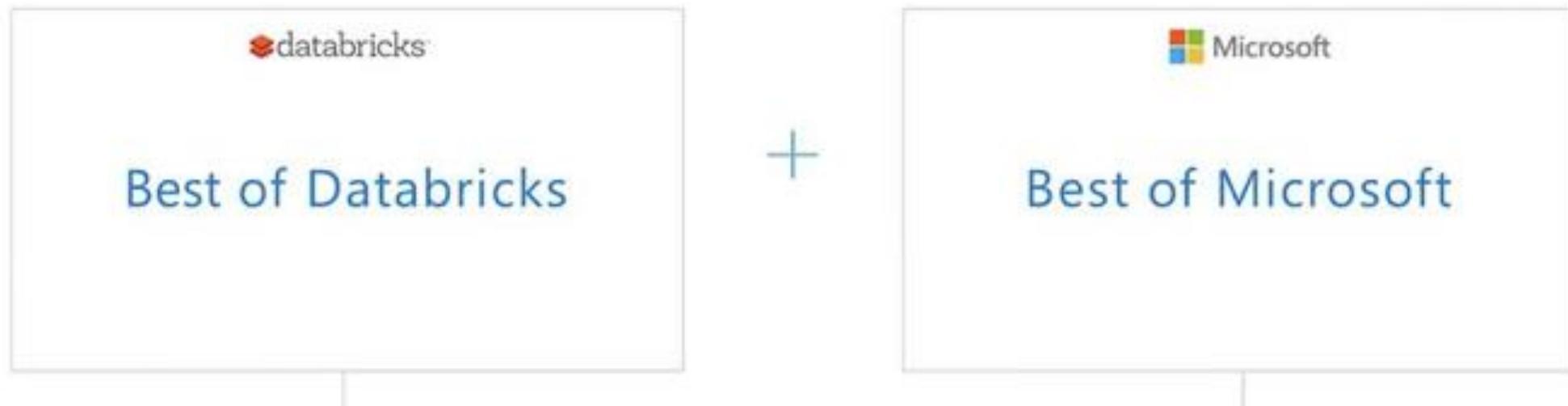
Azure Databricks

ONNX

https://docs.microsoft.com/ko-kr/azure/azure-databricks/what-is-azure-databricks/?WT.mc_id=AI-MVP-5003262

What is Azure Databricks?

A fast, easy and collaborative Apache® Spark™ based analytics platform optimized for Azure



- Designed in collaboration with the founders of Apache Spark
- One-click set up; streamlined workflows

https://docs.microsoft.com/ko-kr/azure/azure-databricks/what-is-azure-databricks/?WT.mc_id=AI-MVP-5003262



Home

Workspace

Recents

Data

Clusters

Jobs

Search



Azure Databricks



Explore the Quickstart Tutorial

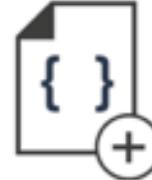
Spin up a cluster, run queries on preloaded data, and display results in 5 minutes.

Drop files or click to browse



Import & Explore Data

Quickly import data, preview its schema, create a table, and query it in a notebook.



Create a Blank Notebook

Create a notebook to start querying, visualizing, and modeling your data.

Common Tasks

- New Notebook
- Upload Data
- Create Table
- New Cluster
- New Job
- New MLflow Experiment New
- Import Library

Recents

Recent files appear here as you work.

Documentation

- Databricks Guide
- Python, R, Scala, SQL
- Importing Data

Demo Notebook (Python)

o ? &

Attached: azuredatabricksdemo

File

View: Code

Permissions

Run All

Clear



Schedule

Comments

Revision history

Max range : 5

o ?

Command took 2.30 seconds --- by saurinsh@microsoft.com at 10/19/2017, 6:23:51 AM on saurintest2

Cmd 9

Sales Overall Graph

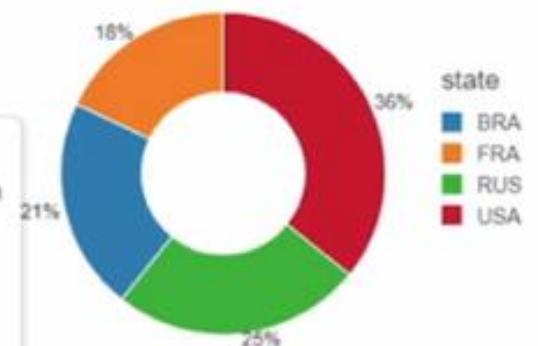
Cmd 10

1 %sql select * from sales

▶ ▾ ↻ ↺ ↻

» (2) Spark Jobs

- Bar
- Scatter
- Map
- Line
- Area
- Pie
- Quantile
- Histogram
- Box plot
- Q-Q plot
- Pivot



state

BRA

FRA

RUS

USA

Command took 0.61 seconds --- by saurinsh@microsoft.com at 10/19/2017, 11:27:37 AM on azuredatabricksdemo

Cmd 11



Machine Learning

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Azure Machine Learning

Azure Databricks

ONNX

https://docs.microsoft.com/ko-kr/azure/machine-learning/service/concept-onnx/?WT.mc_id=AI-MVP-5003262

Open Neural Network Exchange

PyTorch

Chainer

Caffe²

Cognitive Toolkit

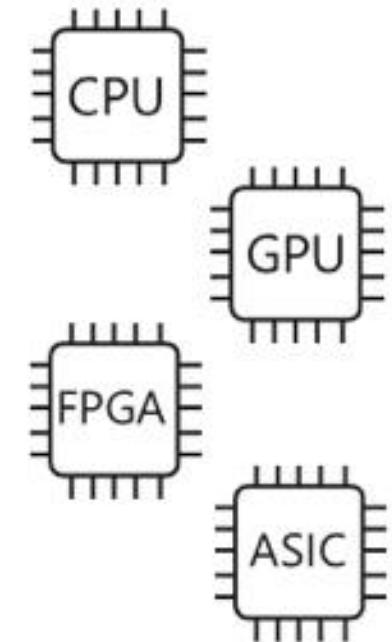
XGBoost



mxnet



PaddlePaddle



<https://onnx.ai>

Create

Frameworks

Caffe2 Chainer Cognitive Toolkit

mxnet PyTorch PaddlePaddle

ML.NET MathWorks XGBoost

TensorFlow Keras

Services

Azure Custom Vision Service

Native support

Native support

Converters

Native support

Converters

ONNX Model



Deploy

Azure

Azure Machine Learning services

Ubuntu VM

Windows Server 2019 VM

Windows Devices

Other Devices (iOS, etc)



Machine Learning

쉽고 빠르게 모델을 만들어
배포, 관리하세요



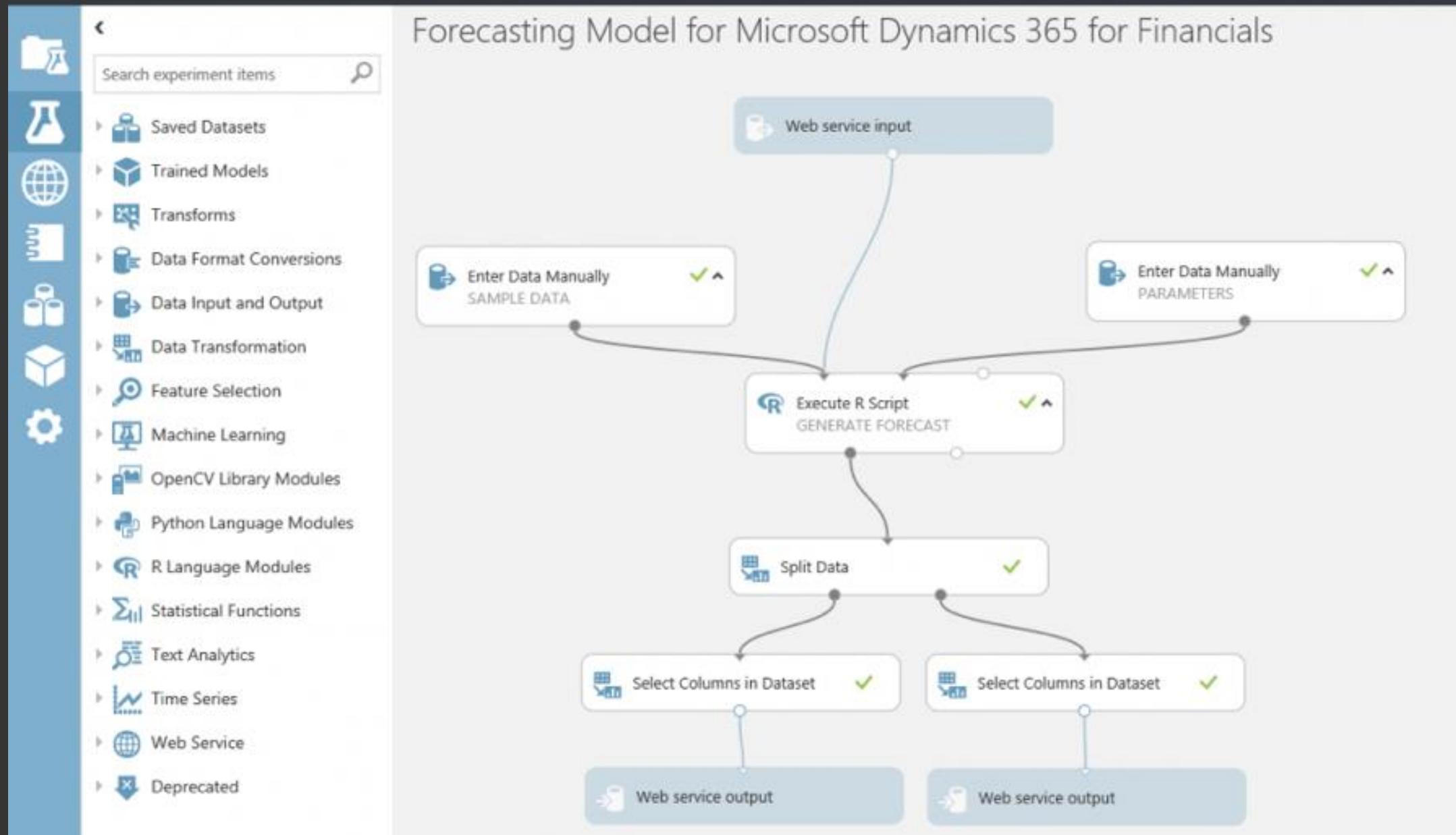
Azure Machine Learning



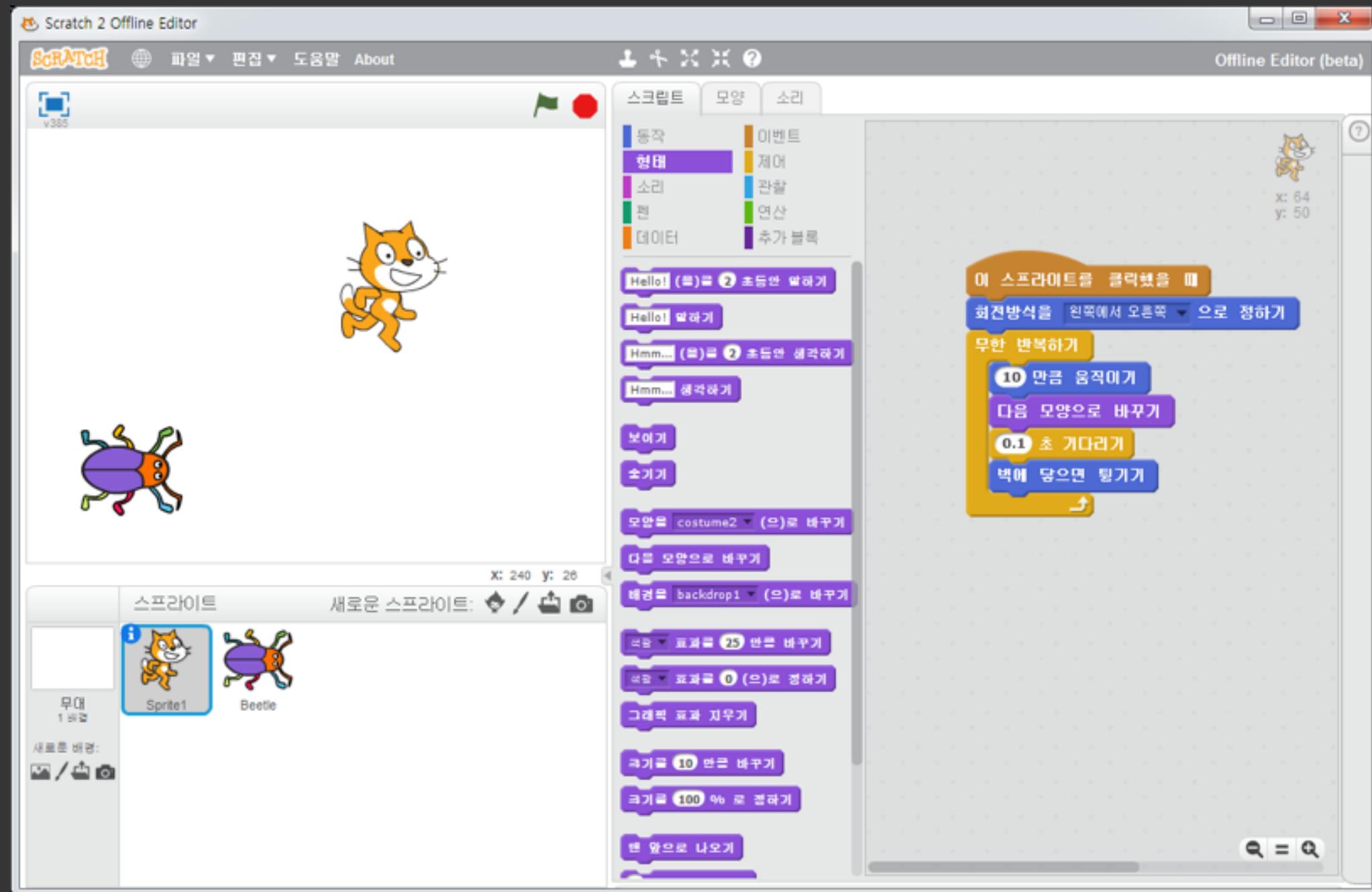
Azure Databricks



ONNX



<https://studio.azureml.net>



Visual Interface

Drag & Drop

No Terminal

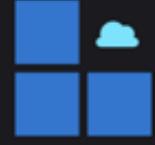
No Code

R, Python, SQL

Tensorflow

https://docs.microsoft.com/ko-kr/azure/machine-learning/studio/what-is-ml-studio/?WT.mc_id=AI-MVP-5003262

Azure AI Platform



Cognitive Service

앱에 혁신적인 환경을
구현하세요



Machine Learning

쉽고 빠르게 모델을 만들어
배포, 관리하세요

Microsoft Data
Microsoft Model

Custom Data
Custom Model

Cognitive
Service

Azure ML
Studio

Azure ML
service



Learning



Where to start?



Start small, fail fast





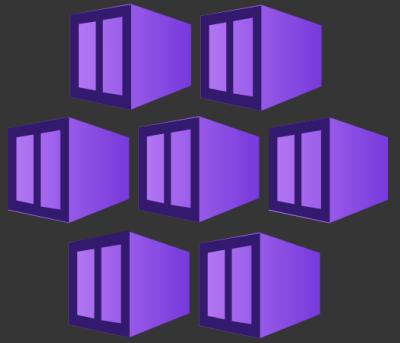
FaaS



PaaS



FaaS



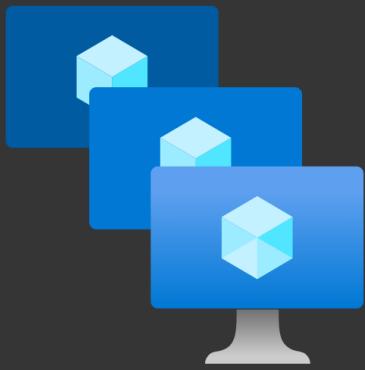
CaaS



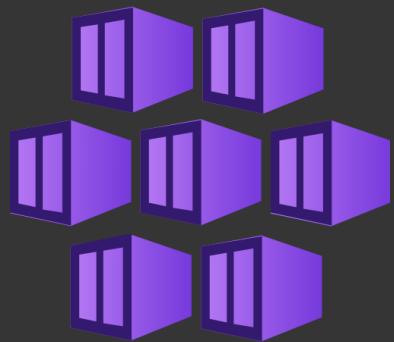
PaaS



FaaS



IaaS



CaaS



PaaS



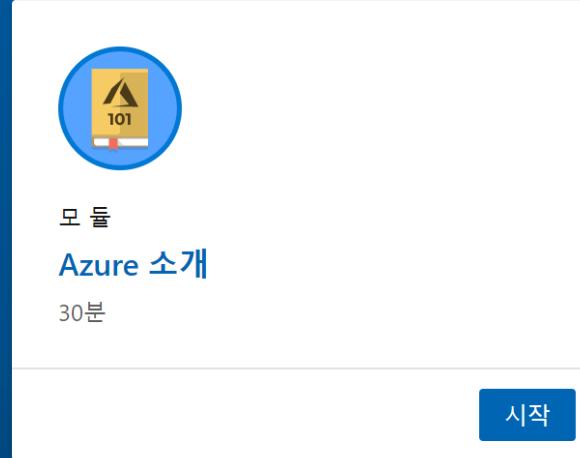
FaaS

시작 -

Microsoft Learn

학습에 대한 새로운 접근 방식 소개

경력을 발전시키고 최고의 위치에서 입지를 다지는 데 필요한 기술은 쉽게 얻을 수 있는 것이 아닙니다. 여기 빠른 목표 달성을 도움이 되는 실습 교육에 대한 성과 보답형 방식이 있습니다. 포인트를 쌓고 레벨을 높이고 더 많은 것을 이루세요!



학습 경로

실습 교육

무료 학습

지금 바로 학습하기

현재의 개발자 및 기술자에게 맞춤화되고 업계가 인정한 Microsoft 인증을 준비할 수 있도록 설계된 모듈 또는 학습 경로로 실력을 향상하세요.

역할 선택 ▾



<https://aka.ms/SNU/microsoft-learn>

AI School

Whether you're completely new to AI or a seasoned professional looking to stay on top of your game, AI School is quite simply the best place to find the information, learning materials and resources you need to start building intelligence into your solutions.

[AI Business School](#)[Conversational AI](#)[AI Services](#)[Machine Learning](#)[Autonomous Systems](#)[Responsible AI](#)

<https://aka.ms/SNU/ai-school>

Growth



Collaborative learning =
Collaborative growth



Microsoft 학생 파트너 되기

Microsoft는 차이를 만들고 활기찬 커뮤니티를 구축하고 최신 기술을 동료들과 공유할 열정적인 캠퍼스 내 리더를 찾고 있습니다.

지금 신청 >

지역과 세계에 긍정적인 영향을 주세요.

학생 파트너는 동료 학생들을 도와주고, 로컬 기술 커뮤니티를 이끌고, 미래를 위해 기술력과 경력을 개발하고자 하는 캠퍼스 내 친선대사입니다. 세계 최고의 난제를 해결하는 해커톤을 구성하거나, 동료 학생들을 멘

<https://aka.ms/SNU/msp>

꿈꾸고, 만들어내고, 실현하세요.

2020 Imagine Cup을 통해 기술 아이디어를 실현하고 독창성, 협업 및 경쟁을 통해 차별화하세요.

[2020 Imagine Cup에 등록하기 >](#)



<https://aka.ms/SNU/imagine-cup>

Bookmarks!

Microsoft Learn

<https://aka.ms/SNU/microsoft-learn>

AI School

<https://aka.ms/SNU/ai-school>

MSP Program

<https://aka.ms/SNU/msp>

Imagine Cup

<https://aka.ms/SNU/imagine-cup>



Questions?





Thank You!



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 [@alienetcube.community](https://facebook.com/alienetcube)

 alienetcube.org



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