

AI as a Service

The fast track to AI

Peter Elger

@pelger

www.linkedin.com/in/peterelger





Shops

Packet of bacon	2.00
Packet of sausages	3.50
1 Black pudding	1.50
Eggs	2.00
Orange Juice 1 Carton	2.45
Coffee 1 packet	4.50
Total	15.95



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DIY	
Sausages, Bacon	Purchase Animal
	Equipment
Black Pudding	Oat seeds
	Fertilizer
	Scythe
	Oatmeal grinder
Eggs	Purchase Hen
	Henhouse
	Hen feed
Orange Juice	Juicer
	Return flight to Valencia
Coffee	Coffee Grinder
	Return flight to Bogota
Total	3,566.60



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COMMODITISATION!



2005

Client

Application

Application Server

Runtime

OS

Hardware

2010

Client

Application

Application Server

Runtime

OS

Virtual Servers

2015

Client

Microservices

Runtime

Containers

Cloud Managed

Cloud Managed

2020

Client

Code (Function)

Cloud Managed

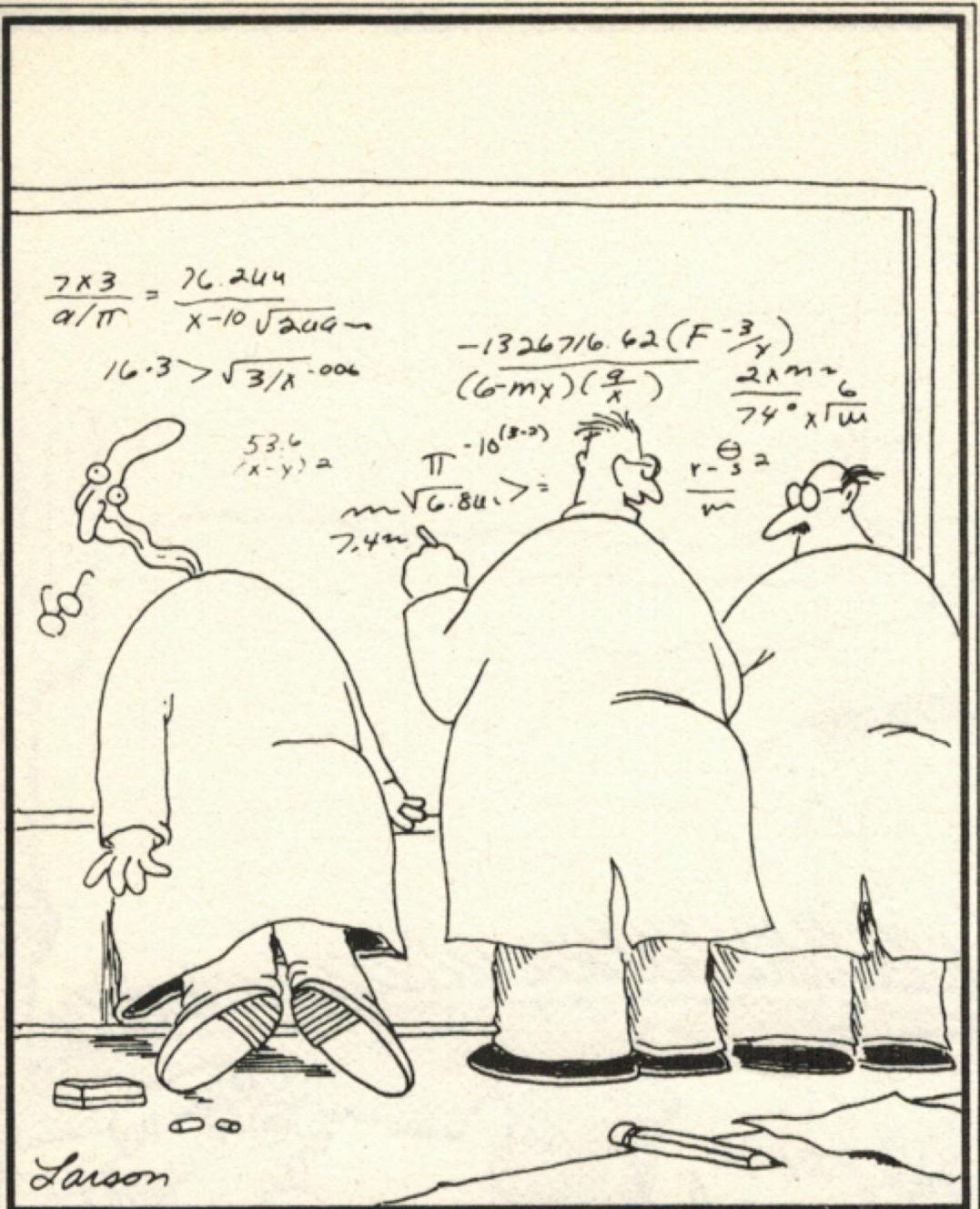
Cloud Managed

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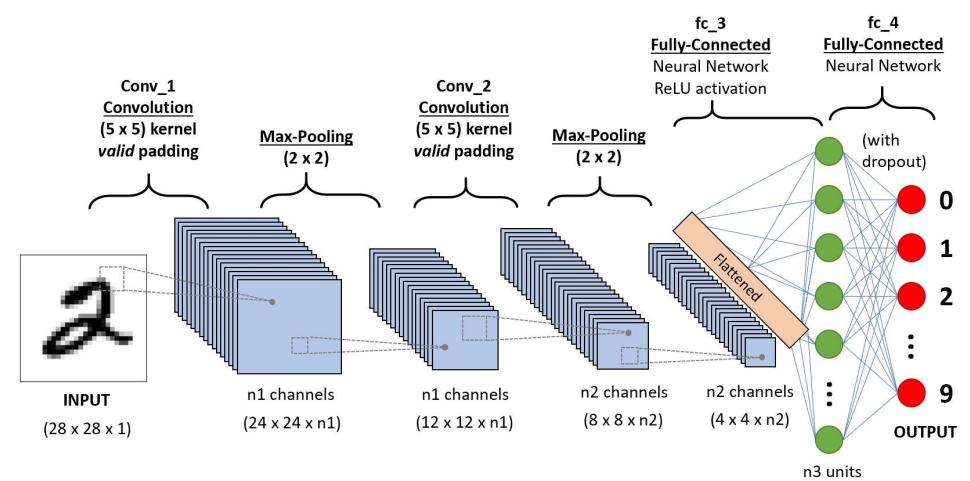
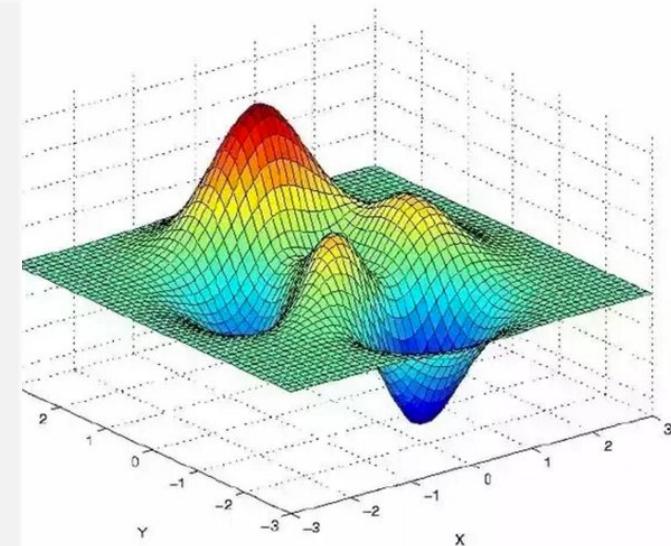
COMMODITISATION!





"Ha! Webster's blown his cerebral cortex."

Data Science Integration
 Machine Learning IoT
 Cloud Security
 Python SQL Data Science
 Hadoop Algorithms
Deep Learning
 Artificial Intelligence
 Security Big Data Neural Networks
 Statistics Blockchain Java



DIY?



AI as a Service

Peter Elger
Eoin Shanaghy



MANNING

aiiasaservicebook.com

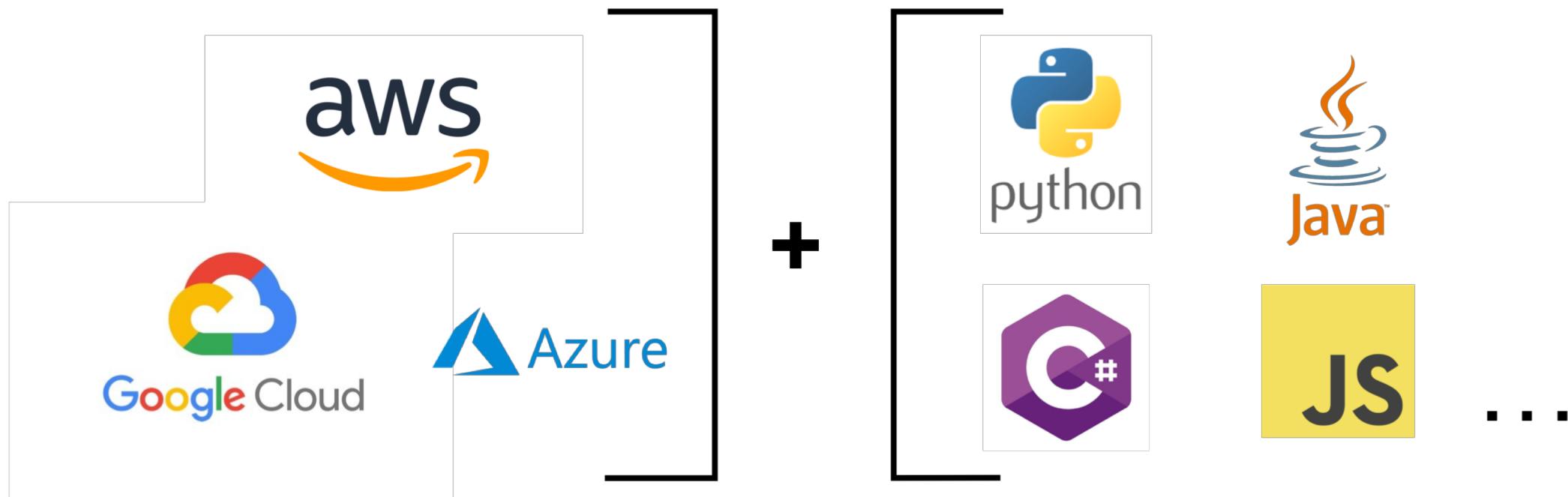
40% discount code:

ctwqcon20

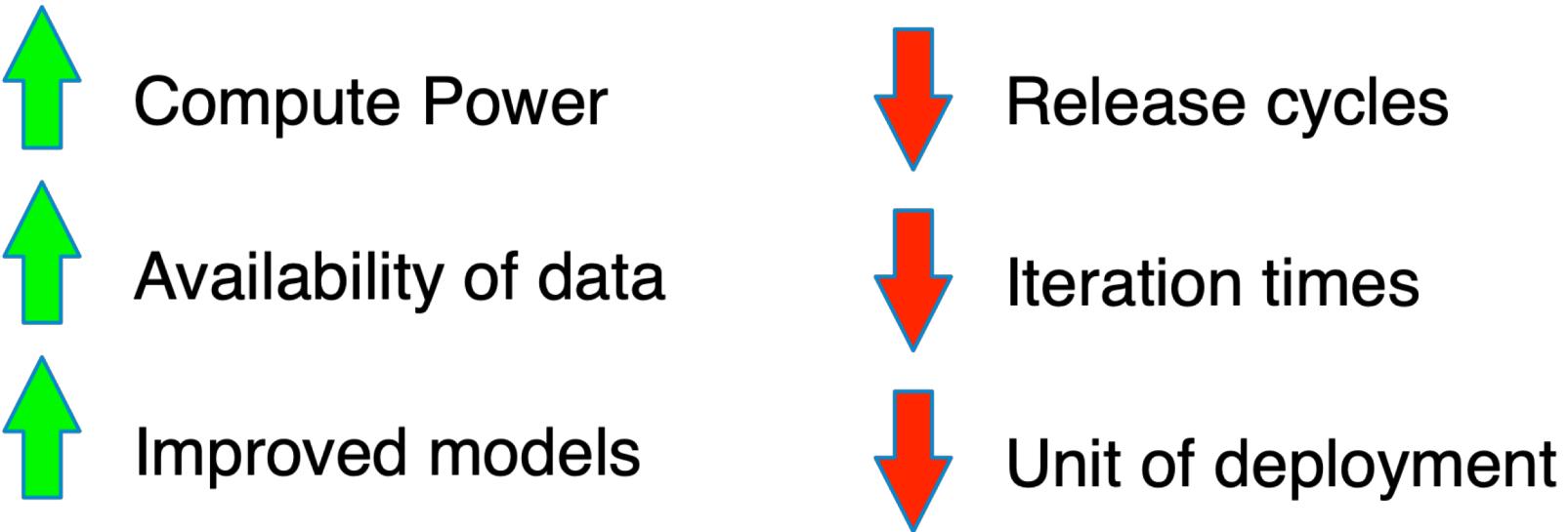
AI/ML is commoditizing



It's just code! Only an API call away...



Forces



+ Cloud Economics

AI as a service

Serverless



Consequences

- Serverless computing will increasingly become a standard approach for enterprise development. This represents a move to fully ‘utility’ computing and increasing commoditization.
- Increasing commoditization of AI/ML will result in a growth in the range and capability of off the shelf AI components.
- Increasingly enterprise systems will incorporate ‘AI’ capabilities built by adapting and combining off the shelf AI/ML services.



Cloud services as of December 2019 (+2018)

Service Type	AWS	Google	Azure
Compute	14	12 (+2)	19 (+2)
Data and Storage	20 (+7)	12	28 (+16)
Network	12 (+6)	10 (+2)	15 (+2)
Developer	12 (+3)	16 (+3)	10 (+1)
AI and Machine Learning	19 (+8)	19 (+4)	39 (+5)
Other (e.g. IoT)	98 (+42)	94 (+61)	135 (+111)
Totals	175 (+66)	163 (+74)	246 (+136)

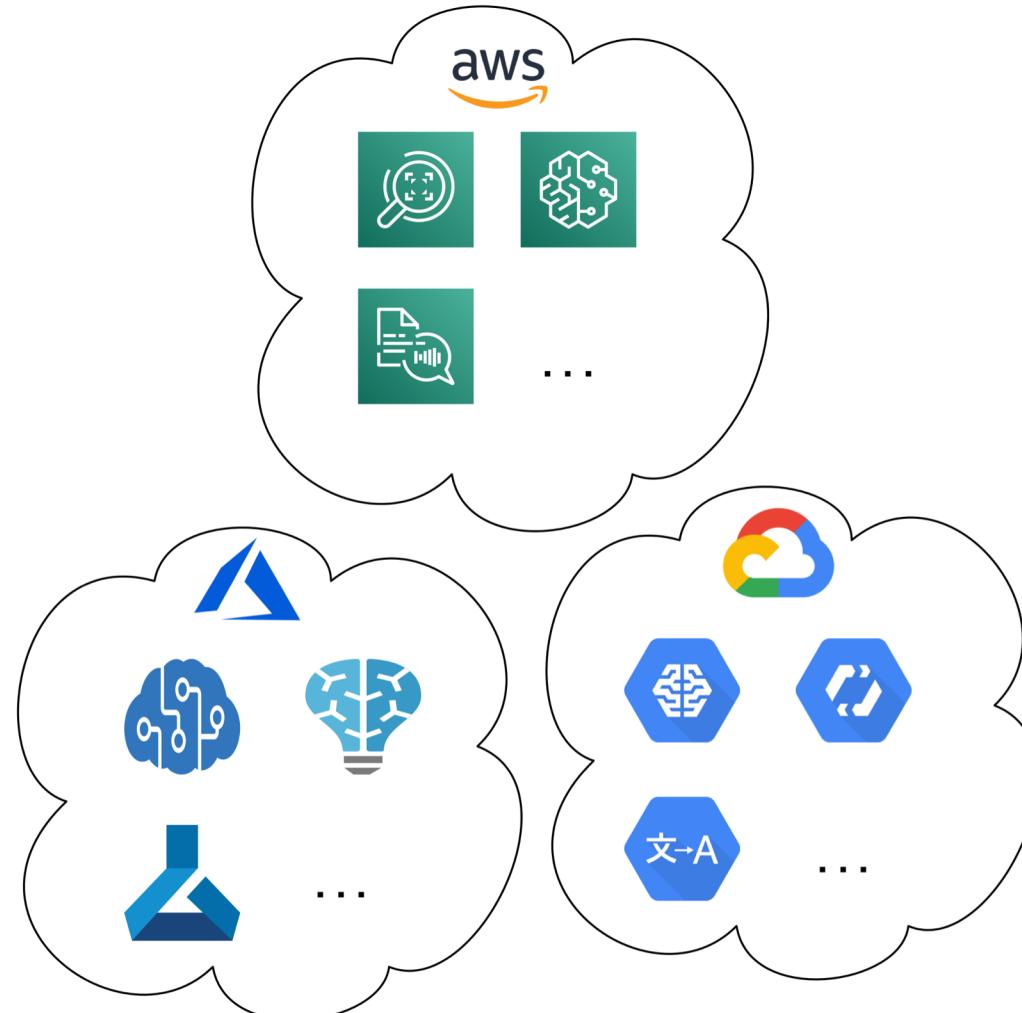


AI/ML Services

Service Type	AWS	Google	Azure
Image + Video	Rekognition	Vision, Video Intelligence	Face Detect, Video Indexer
Recommendations	Personalize	Recommendations AI	Personalizer
Voice	Lex, Polly, Transcribe	Cloud Speech to text, text to speech	speech to text, text to speech, speech translation, speaker recognition
Chatbot	Lex	Dialogflow	QnA Maker, Azure bot service
Prediction	Forecast, FraudDetector	Cloud inference API	Azure ML
Language	Comprehend, Textract, Transcribe	Cloud Natural Language, Cloud Translation	Form recognizer, translator, reader, text analytics
Training/Custom	SageMaker, Inferentia, Elastic Inference	AI Hub, Cloud AI, Auto ML	Azure ML service
Search	Kendra	Cloud search services	Cognitive search
Developer	CodeGuru, SageMaker Studio	TensorFlow, CoLab	ML Studio



When to use?



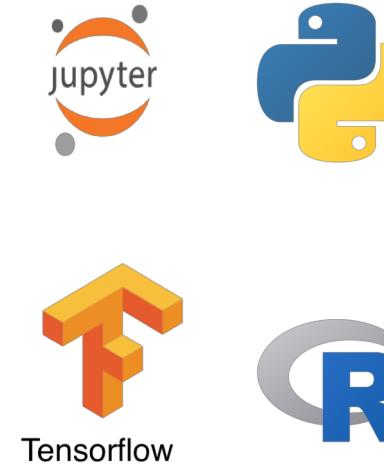
Research
Custom, problem not well understood.

<- Adapt ->

Commodity
Problem is well understood. Operationalize,
Consume/Combine



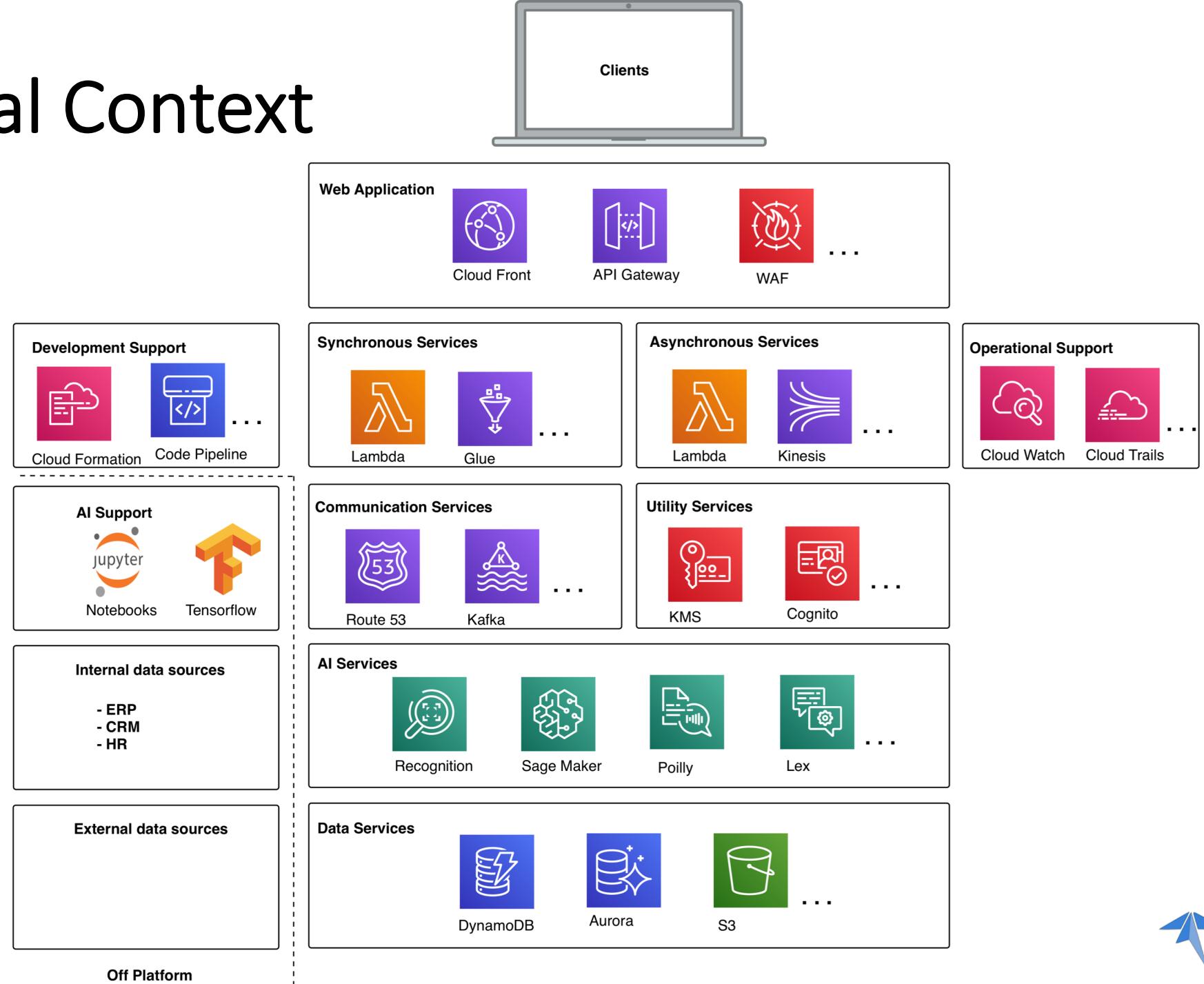
So you built a model...



- Host
- Data In, results out
- User Interface
- Scale
- Security
- Deploy updates (CI/CD)
- Monitor
- Optimize performance
- ML is a small part of delivery



Architectural Context



Cat Detector System in a day ?



~~DOG~~ LICENCE (£0·37½)
(NOT TRANSFERABLE)

Cat WJ 895224

Full Christian Names *M*

and Surname
(IN BLOCK LETTERS)

Full Postal Address

I declare that I am the owner of the dog named above and that I am entitled to keep ONE DOG in Great Britain, from the date hereof until and including the day of JAN 88 next following; the sum of ONE DOG and a HALF PENCE having been paid for this dog.

At hours 43 minutes 2 m. o'clock at the place and

on the date indicated in the issuing office stamp.

by *John Hatchett*

NOTICE.—Any permanent change of address should be notified to the appropriate District or Island Council.

Penalty for refusing to show this Licence to any duly authorised Officer, or Police Constable, or for keeping a dog above 6 months old without Licence, £10

*Insert month preceding the month of issue of the Licence.

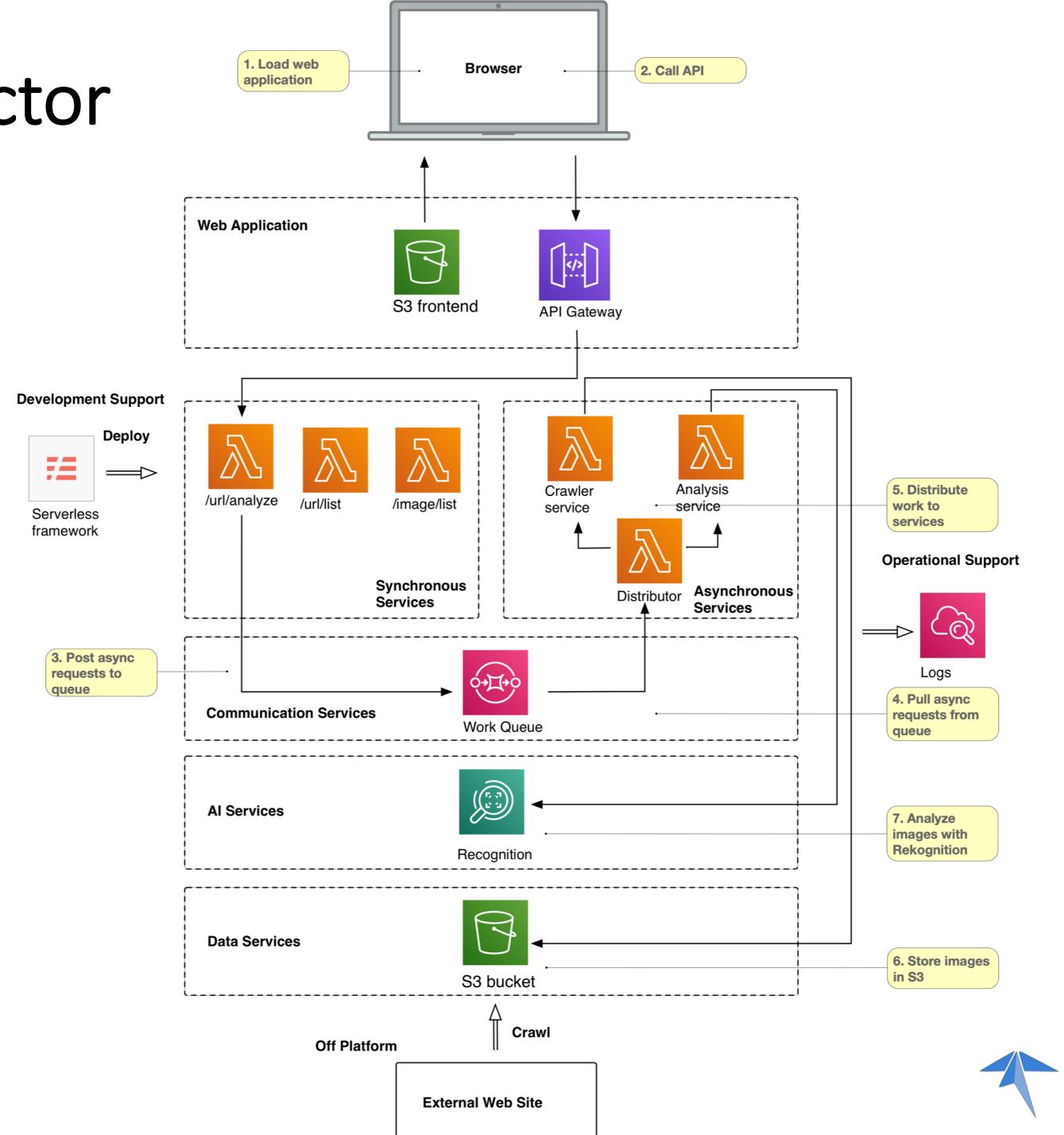
SEE NOTES OVERLEAF

ISSUING OFFICE STAMP
TOWN PERCESSIONFIELD * 88

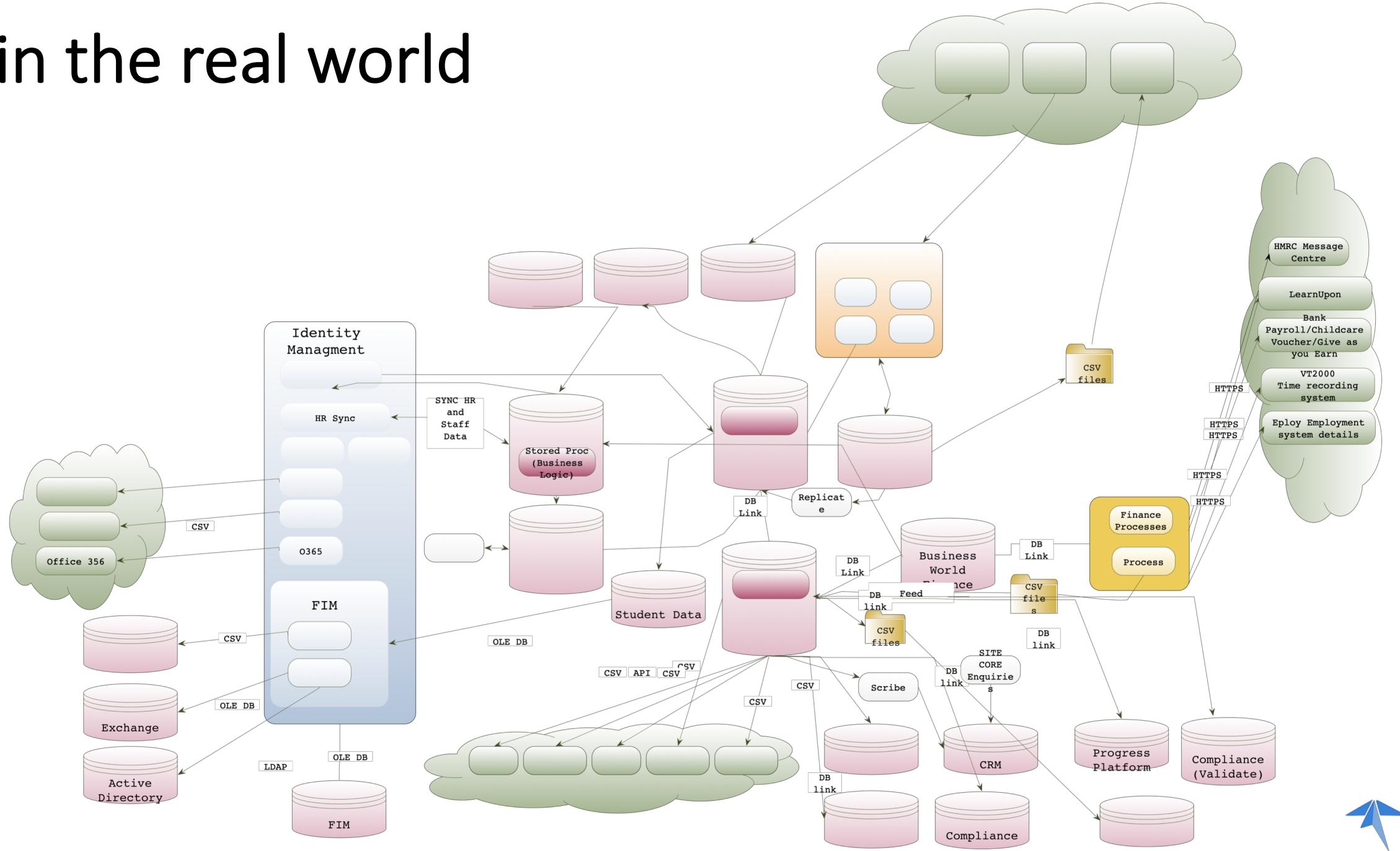
The ‘hello world’ of AI



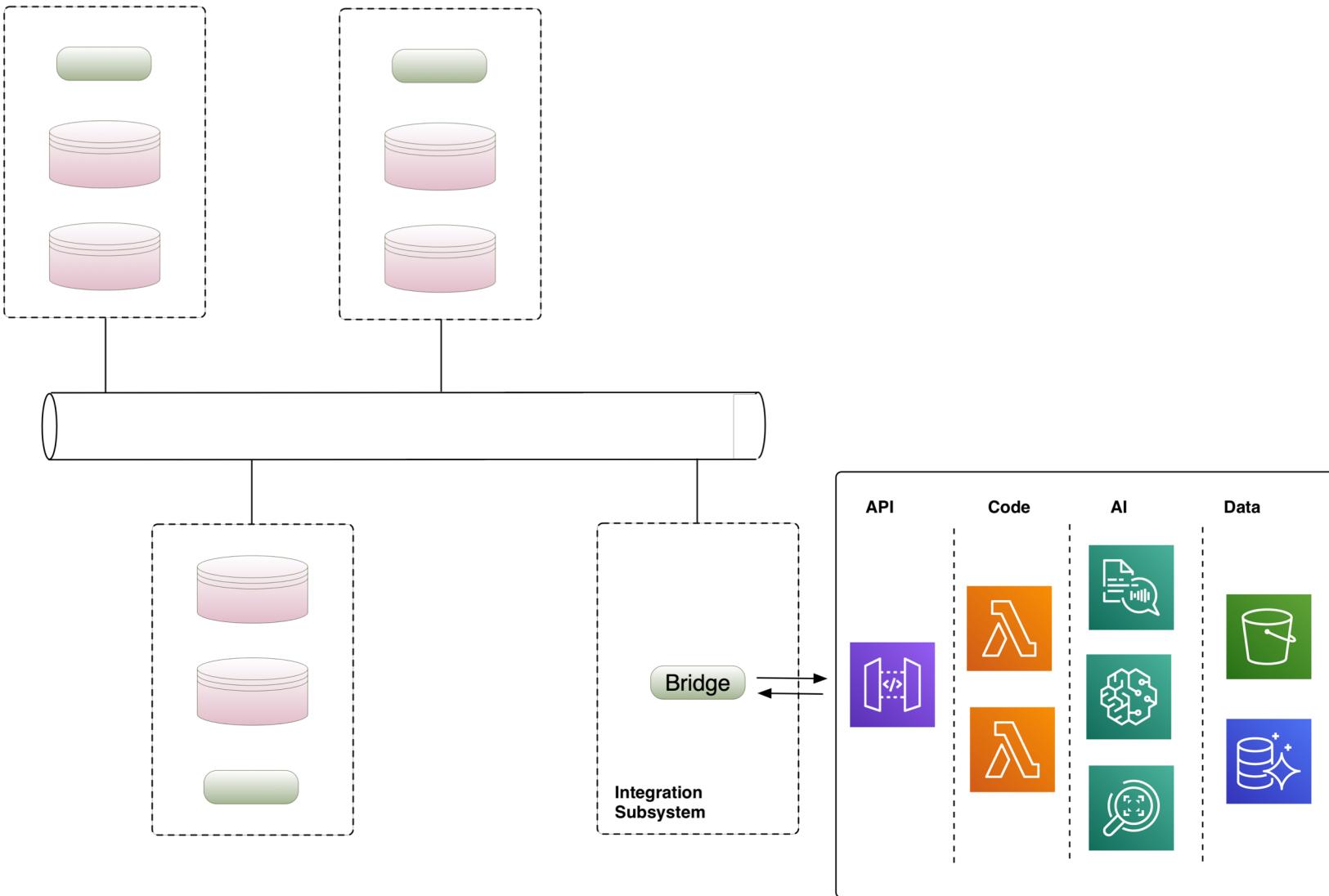
Book Example - Cat Detector



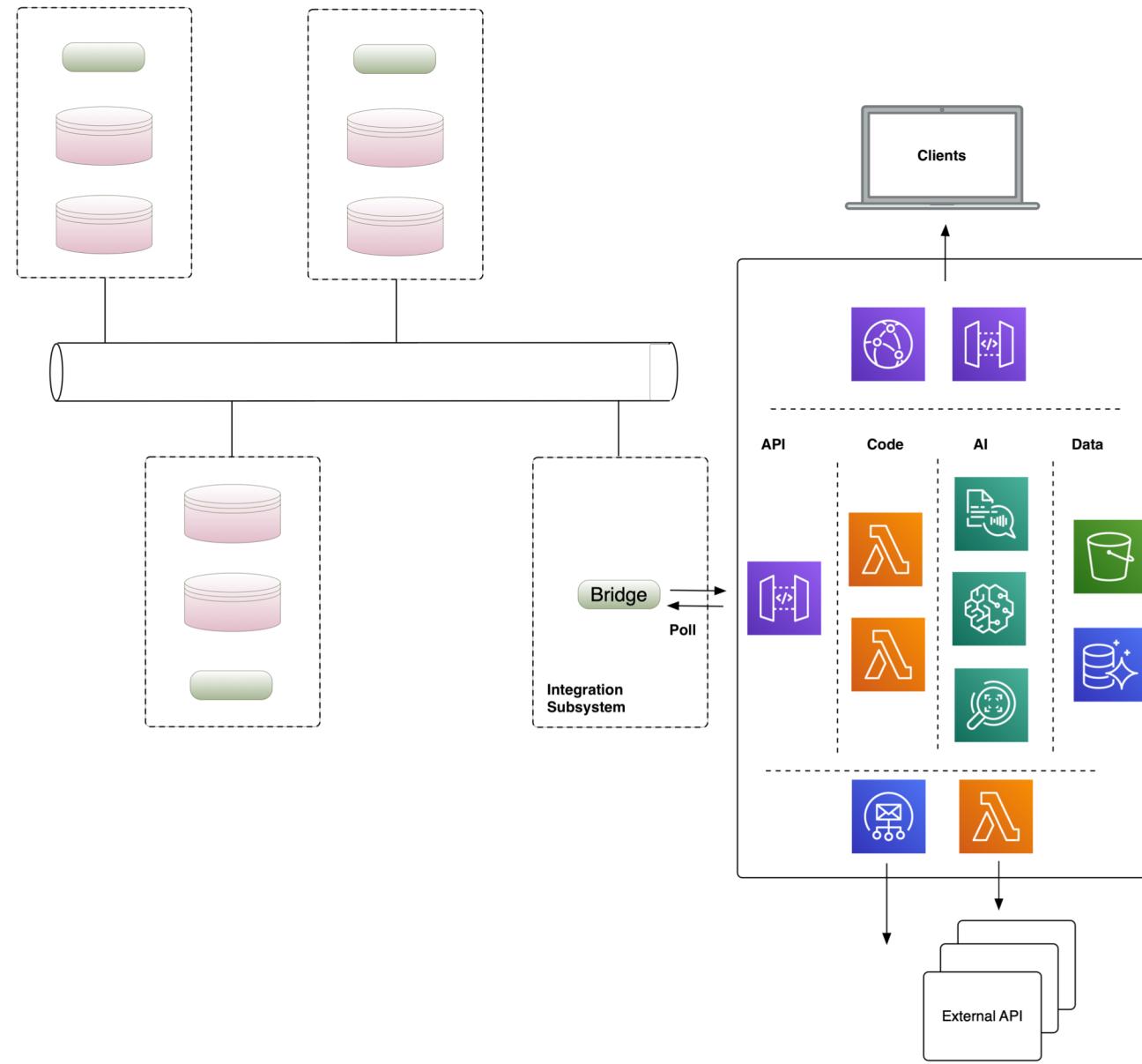
But in the real world



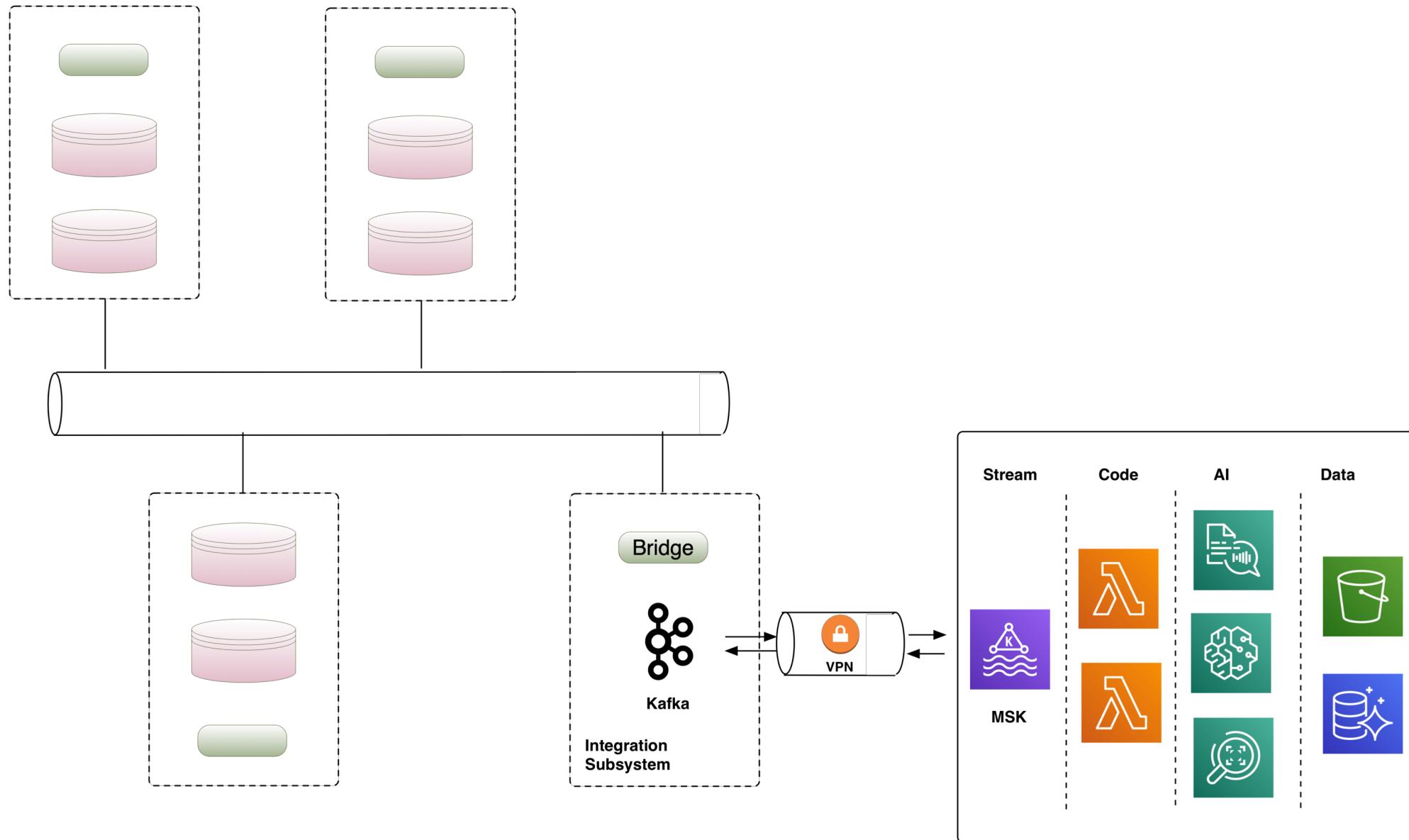
Synchronous API



Asynchronous API



Streaming



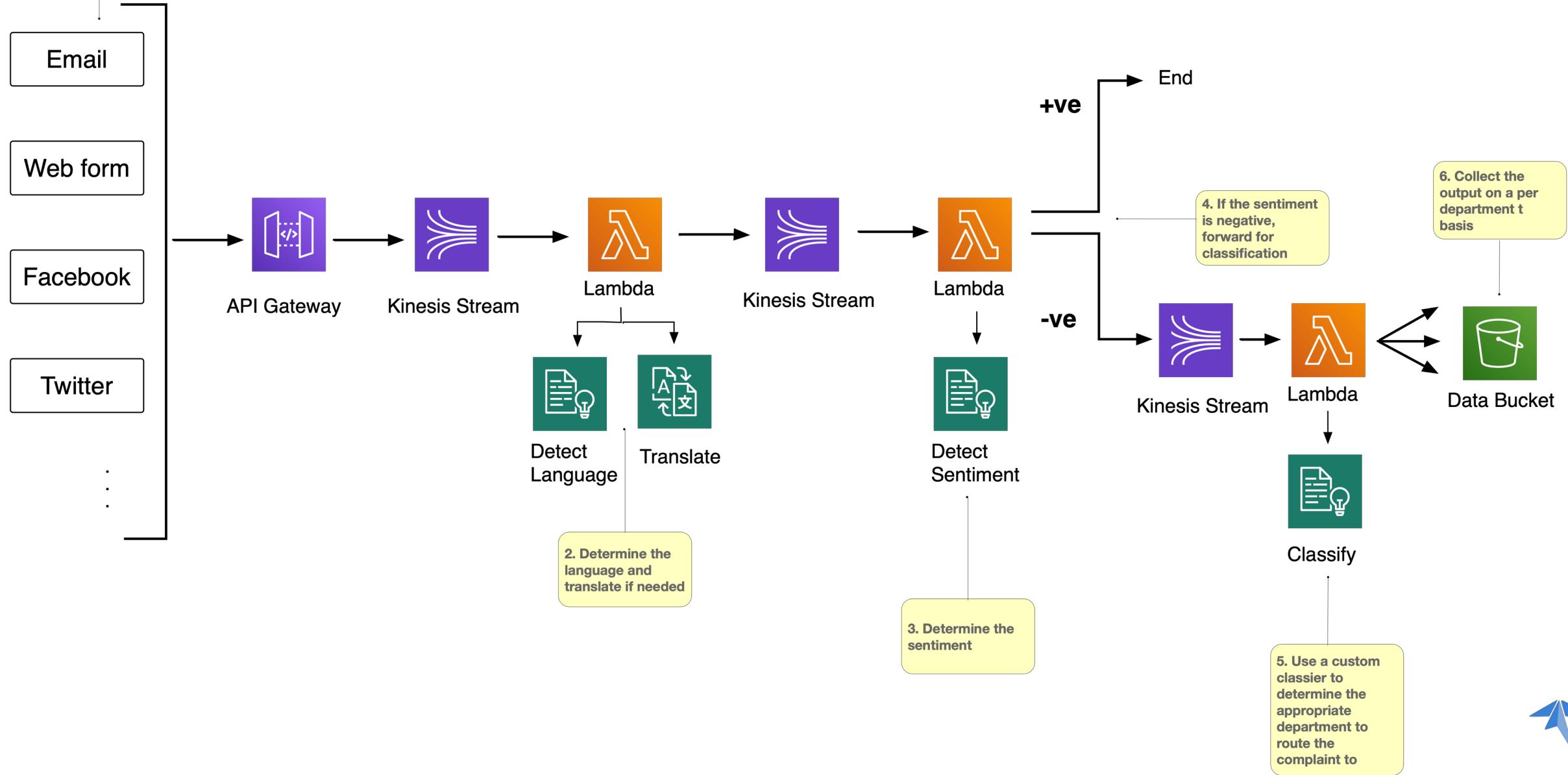
Book Example – Social CRM

- Social CRM / Product feedback
- Triage and categorize customer interactions
- Complicated, but can be constructed using commodity services
- Asynchronous integration

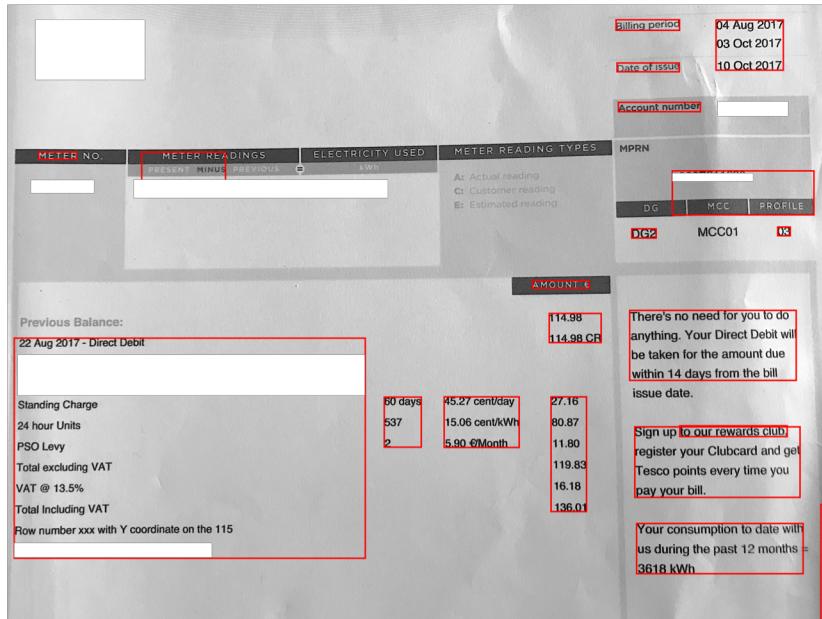


1. Customer feedback through various channels

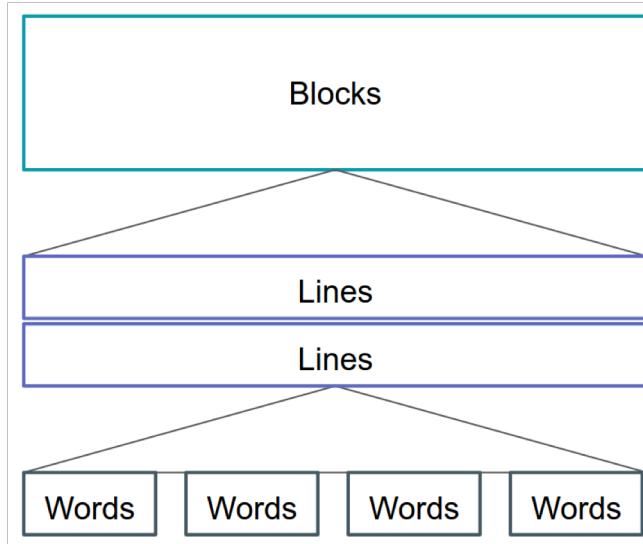
Book Example – Social CRM



Example Project – KYC



- 2017 OSS OCR library + Custom analytics
 - Name, address, MPRN...



- 2019:



AWS Textract



Azure Form Recognizer

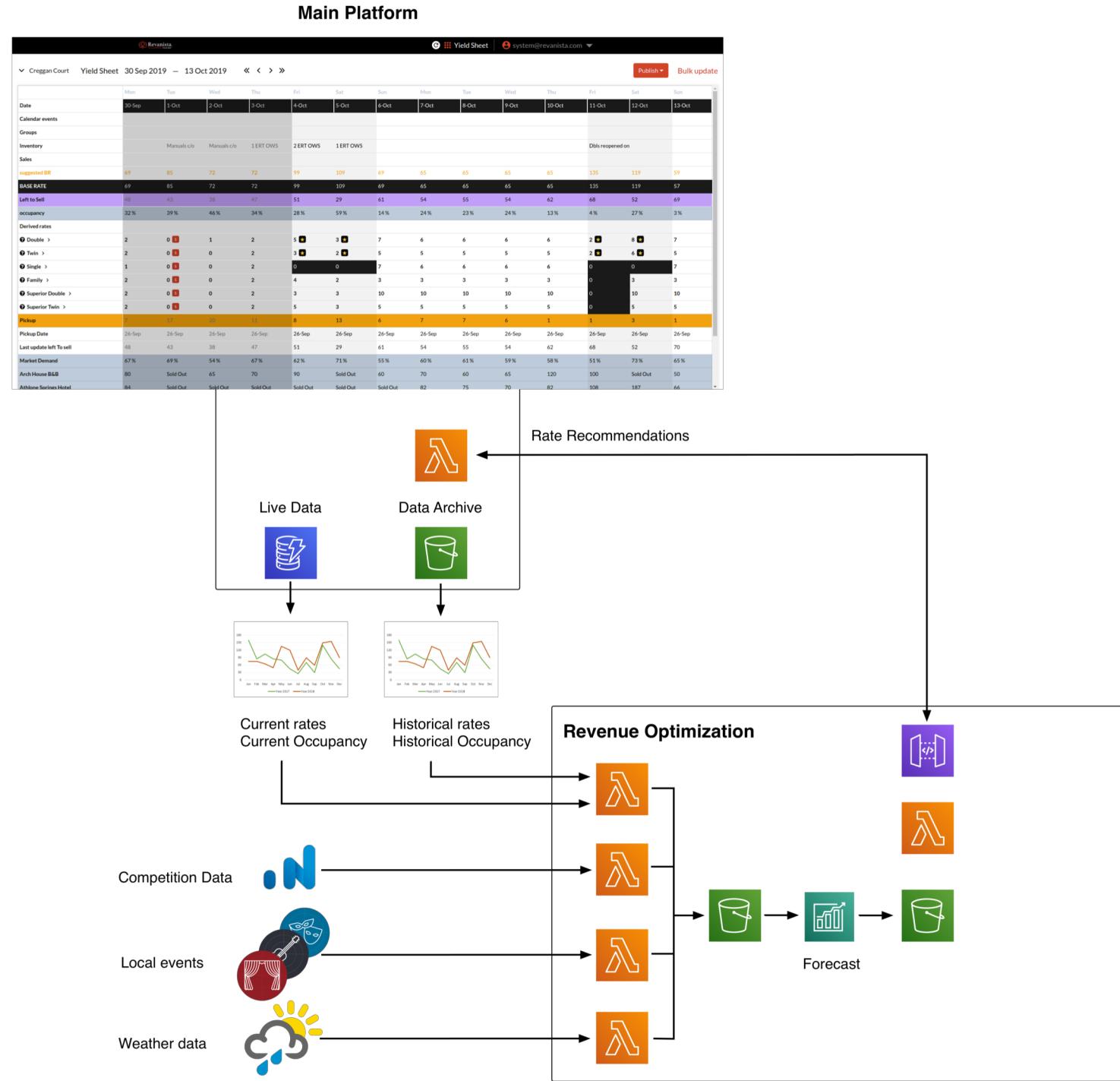


Google cloud vision OCR



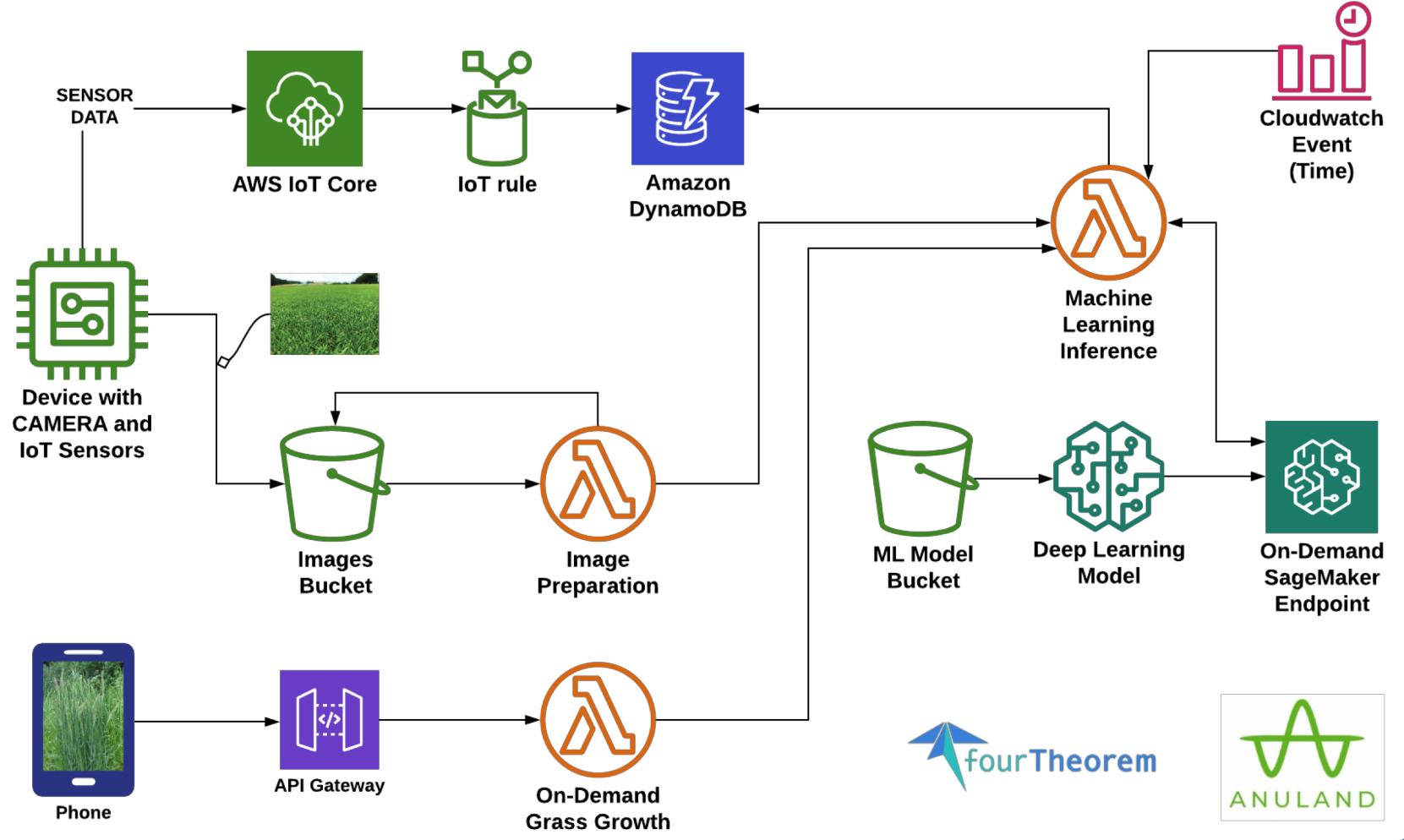
Example project – Rate Optimization

- Optimize hotel room rates
 - Historical rates
 - Historical occupancy
 - Live Rates
 - Live Occupancy
 - Competition data
 - Local Events
 - Weather data
- Forecast the optimal room rate



Example Project - Agritech

- Optimize fertilizer usage
- Sensor unit in the field (really!)
- R&D Prototype to fully operational solution
- Serverless data and ML pipeline with SageMaker
- 2 weeks to get into production from existing prototype
- Significant cost reduction
- Elastic scale



Summary

- Serverless computing increasingly become a standard enterprise development tool. Incorporating ‘AI’ components built by customizing, combining and consuming off the shelf AI/ML services.
- Developers will increasingly use these commoditized services without requiring an expert understanding of AI/ML.
- AI is not just about the model. It has to be operationalized. The fastest, most economic route is through serverless technologies
 - Accelerate development
 - Reduce time to production



AI as a Service

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Eoin Shanaghy



MANNING

aiiaservicebook.com
40% discount code:

ctwqcon20

Thanks!



Questions ?

