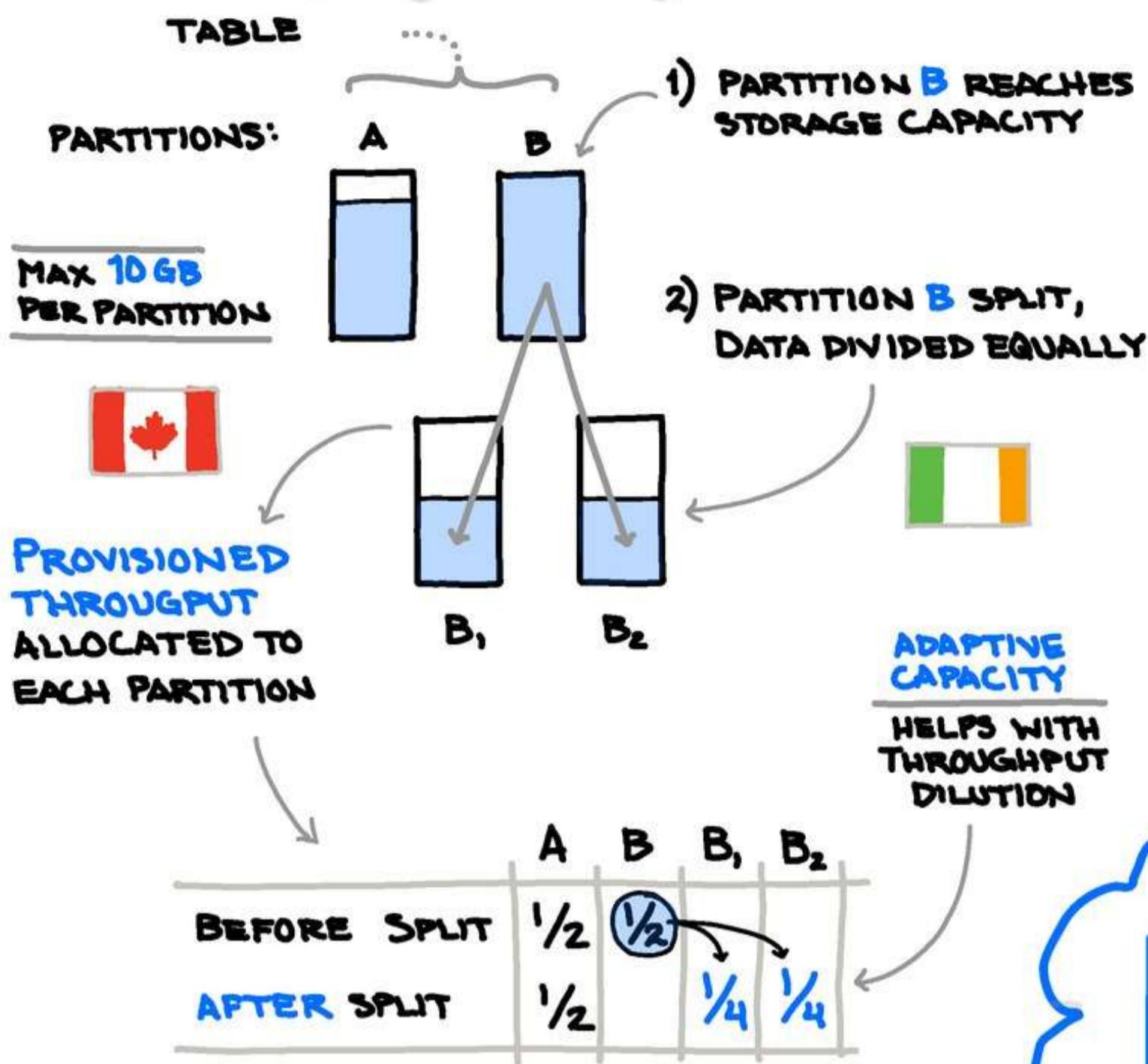
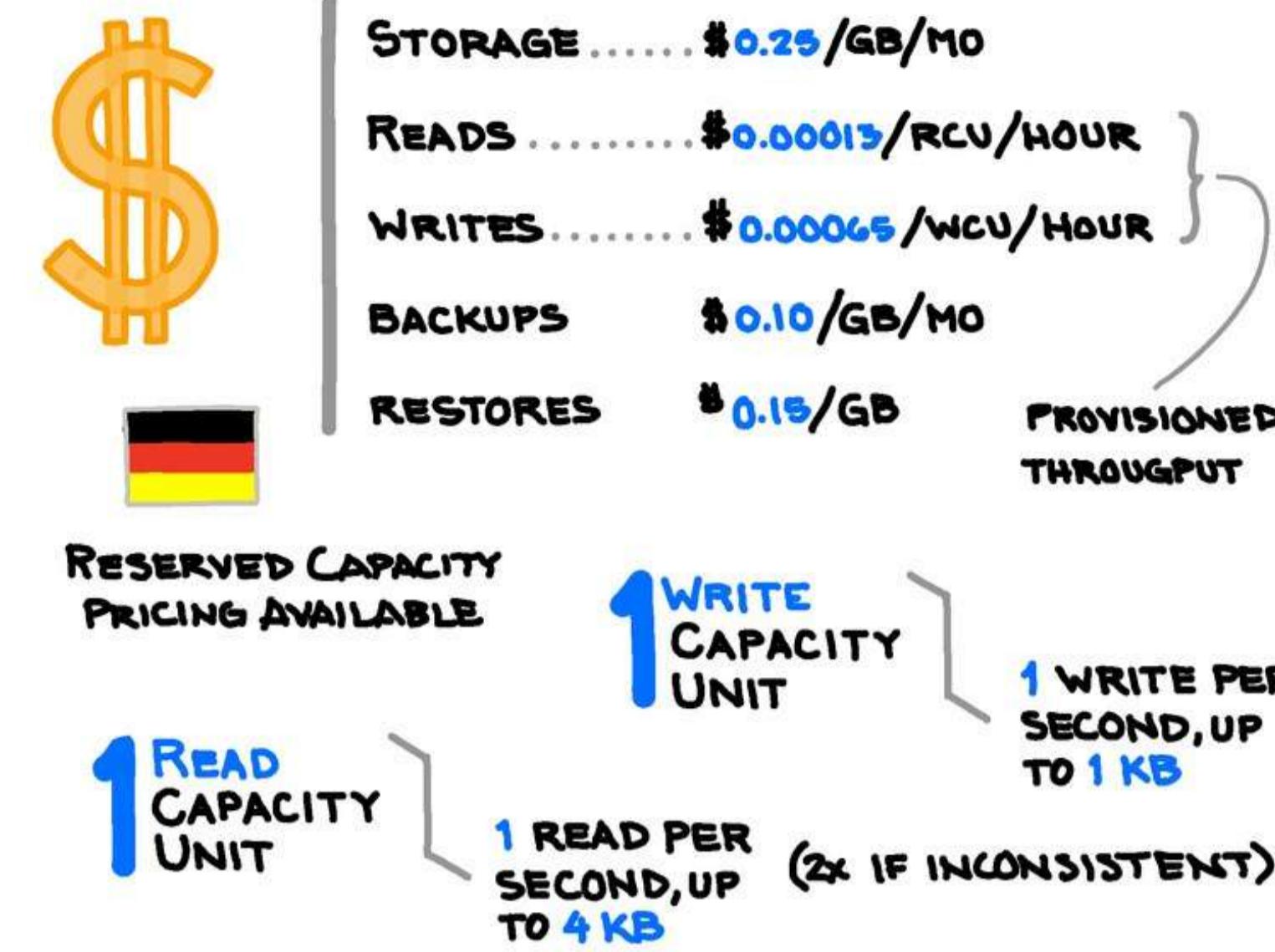


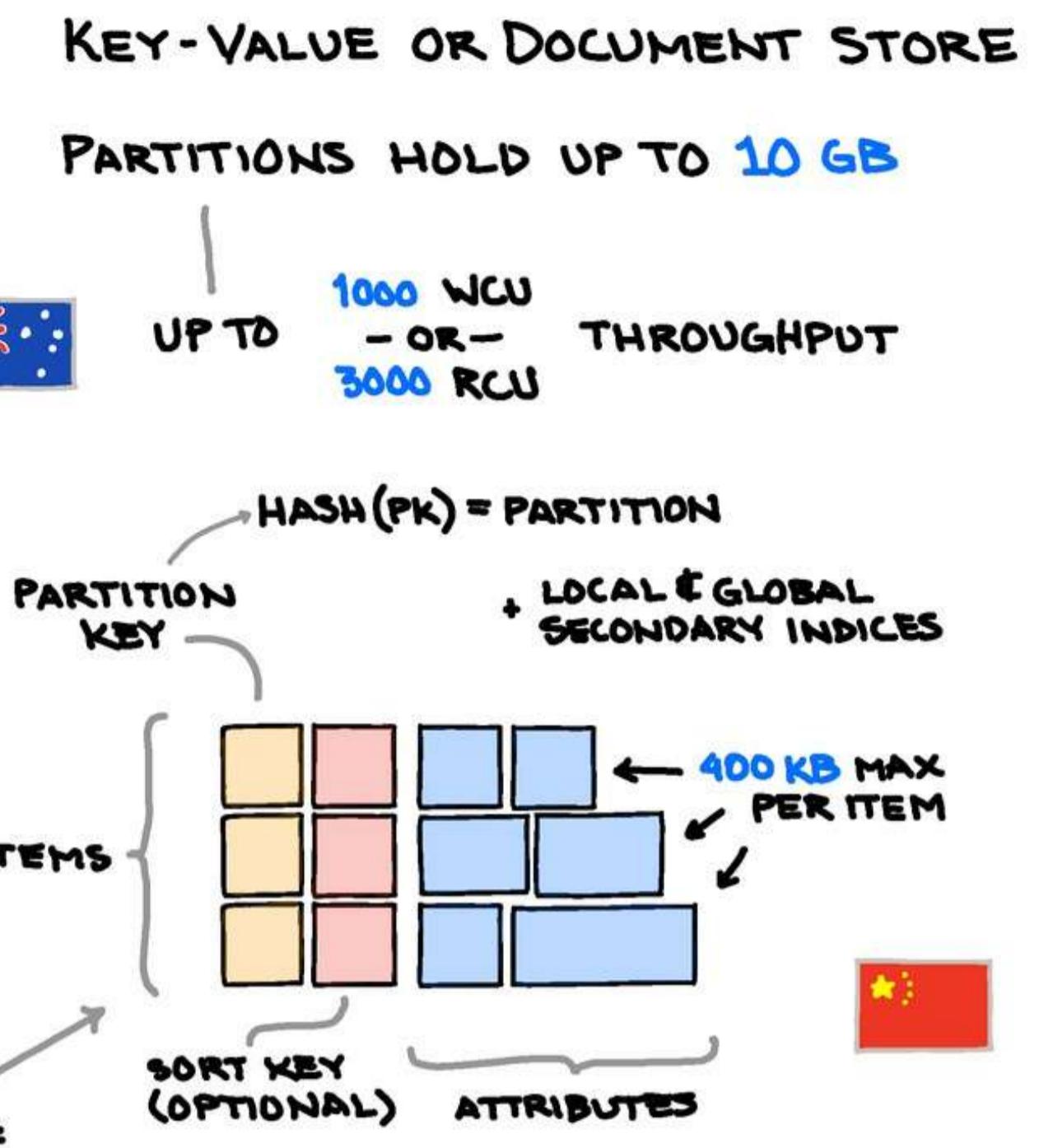
# SCALABILITY



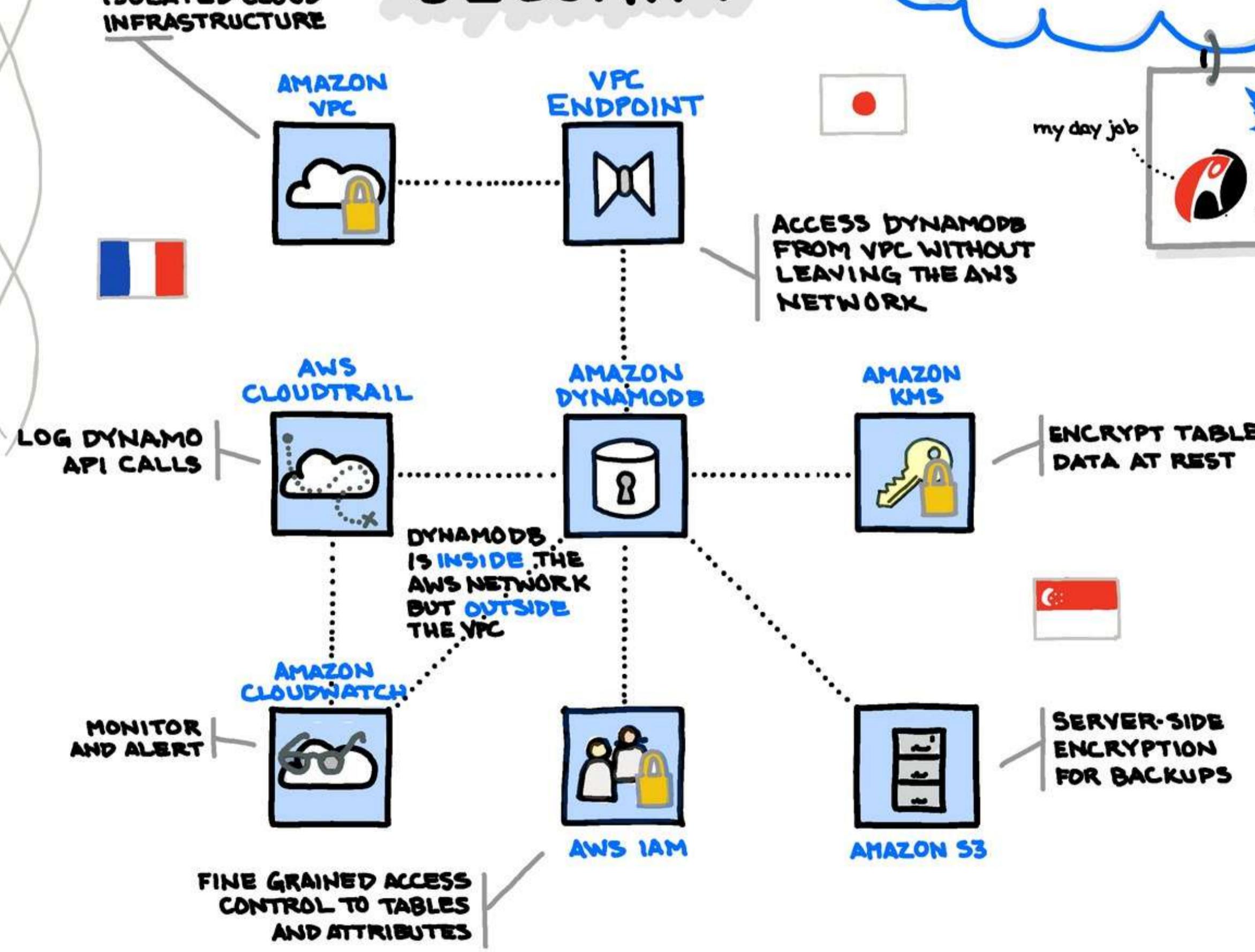
# PRICING



# ESSENTIALS



# SECURITY

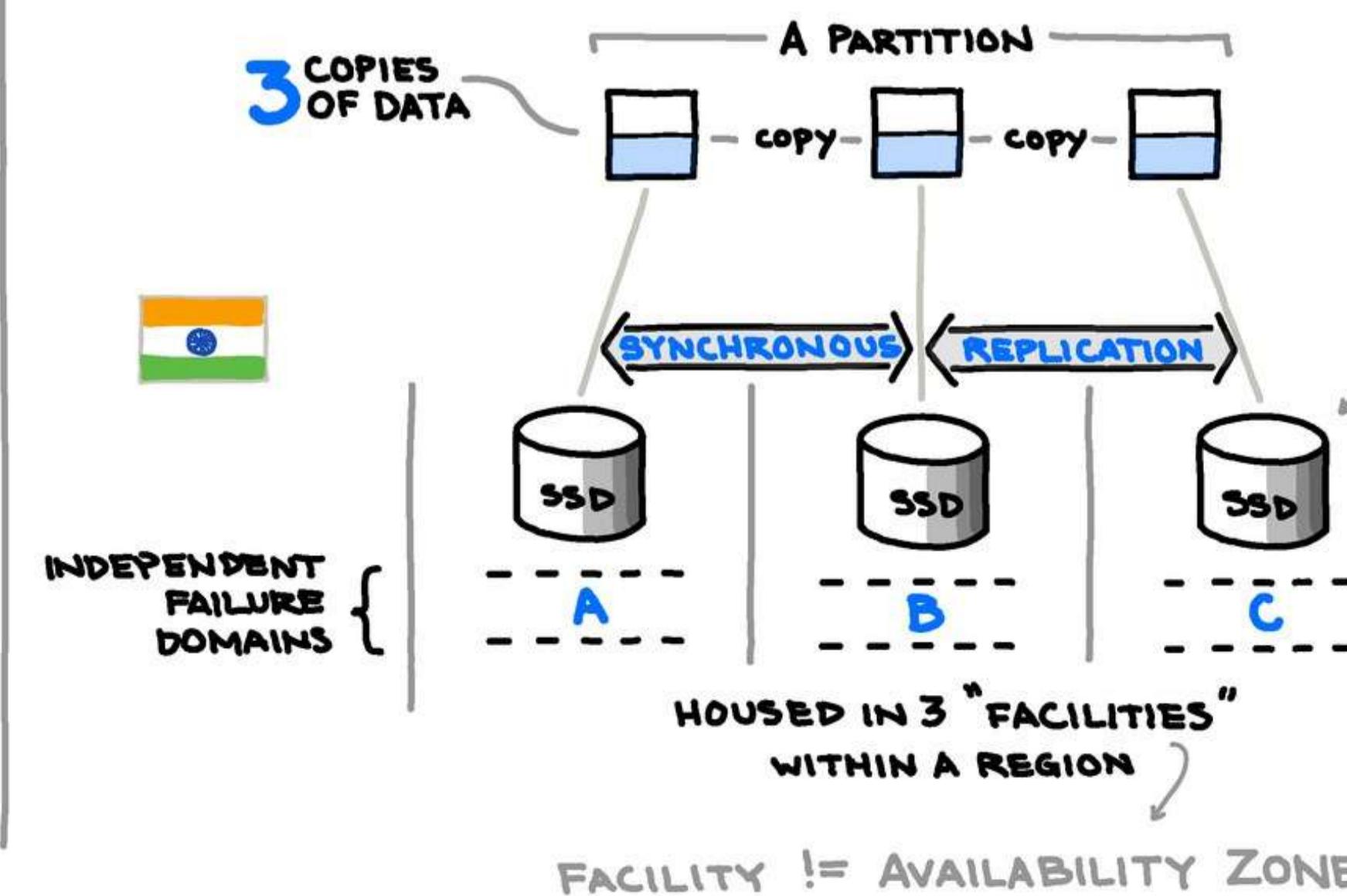


# amazon DYNAMO DB

a fast, flexible no-sql database

2/10/18

# AVAILABILITY



## STORAGE CLASSES

**STANDARD**  
— and —  
**INFREQUENT ACCESS**

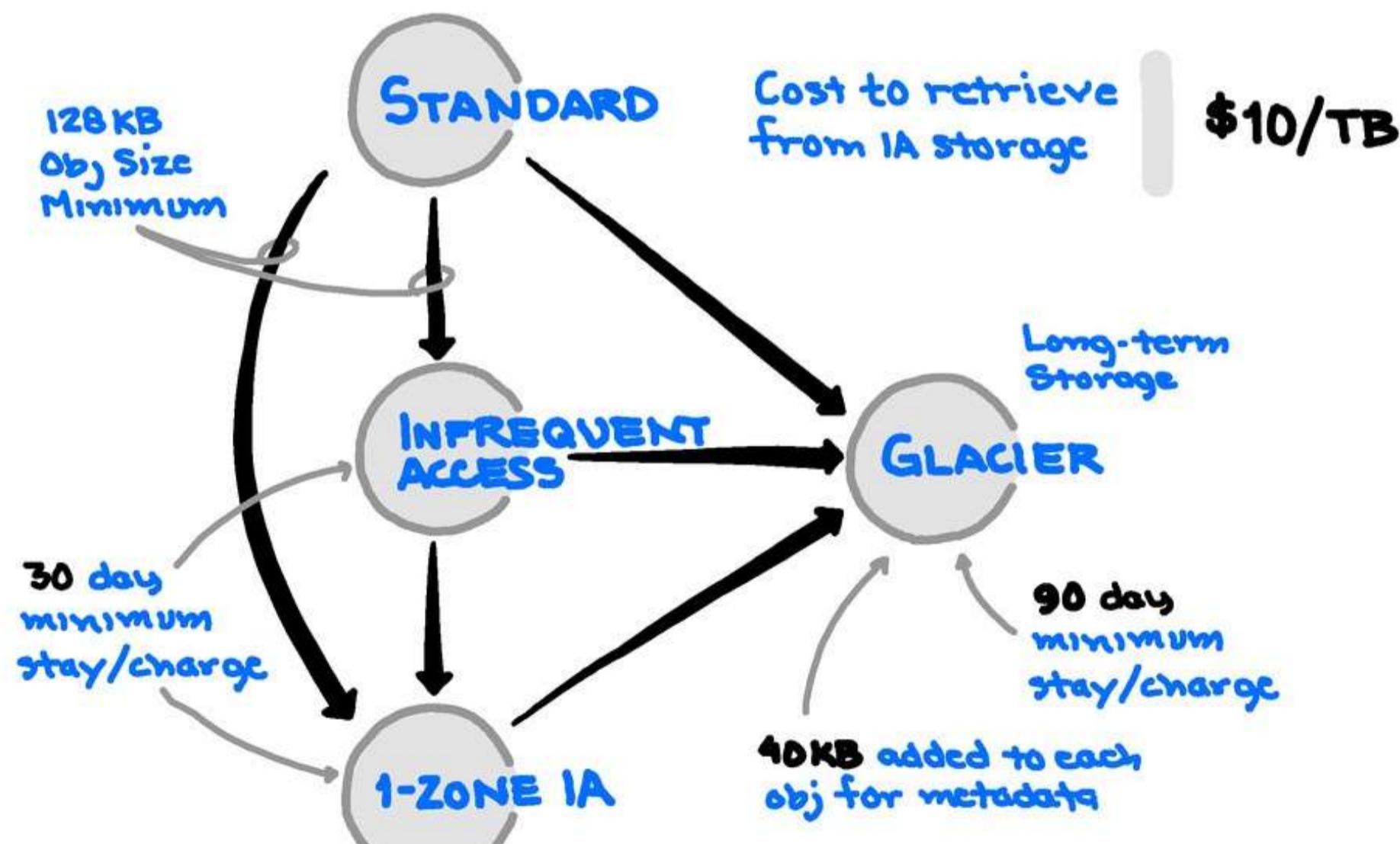
**11 NINES DURABILITY**

**1-ZONE INFREQUENT ACCESS**

**11 NINES DURABILITY**

**99.5% / YR AVAILABILITY**

## STORAGE CLASS TRANSITIONS



## SERVER SIDE ENCRYPTION

AES - 256  
master key rotation  
AWS managed KEYS

audit trail  
KMS managed KEYS  
more security controls

SELF managed KEYS  
you own it!



[all pricing from US West (Oregon)]

REQUESTS (\$USD per 1,000,000 requests)



	GET	POST	PUT	DELETE	SELECT	Other
Standard	0.4	5.0	5.0	5.0	5.0	0.4
Infrequent Access	1.0	10.0	10.0	10.0	1.0	1.0
1-Zone IA	1.0	10.0	10.0	10.0	1.0	1.0

Storage class transitions : 1¢ per 1,000 objects  
Transition to Glacier : 5¢ per 1,000 objects

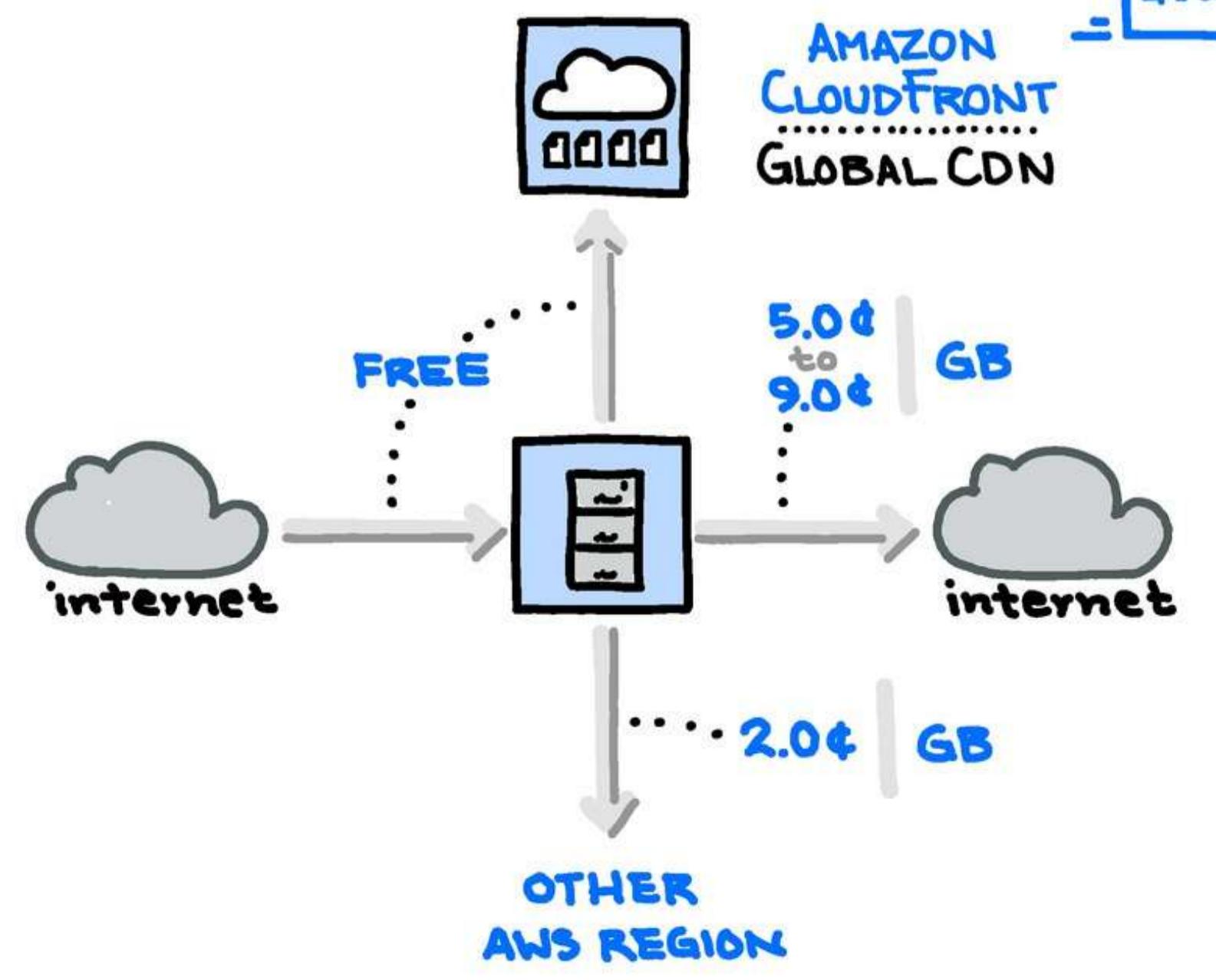
## STORAGE

	TB	\$
[0, 50]	2.3¢	
[51, 500]	2.2¢	
[501, ∞)	2.1¢	

per GB/Mo

INFREQUENT ACCESS  
STD 1-ZONE  
GLACIER

## DATA TRANSFER



## OBJECT LOCKING NEW

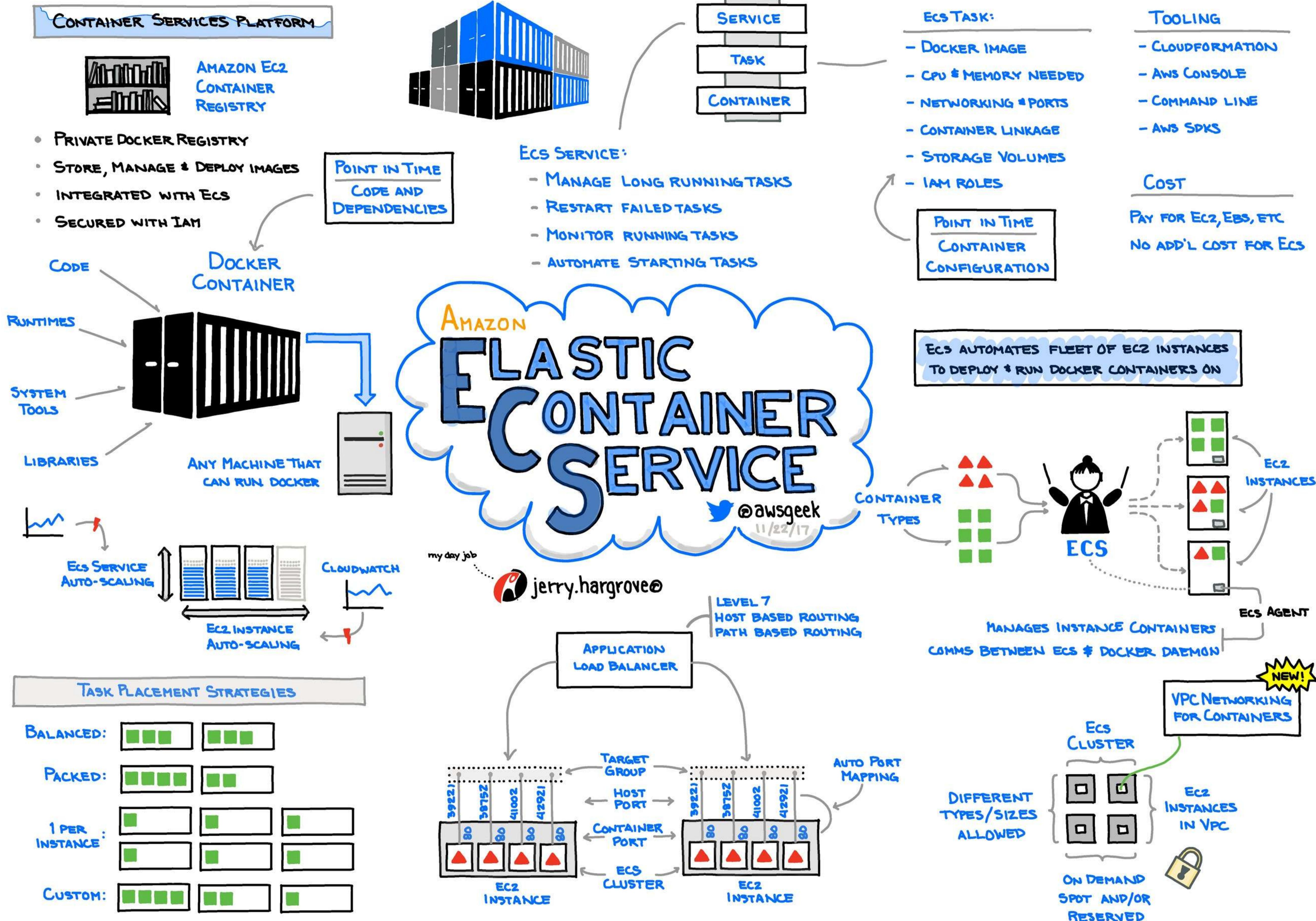
### PREVENT OBJECT DELETION

CAN'T DELETE TIL DATE

NEVER DELETE (EVER)

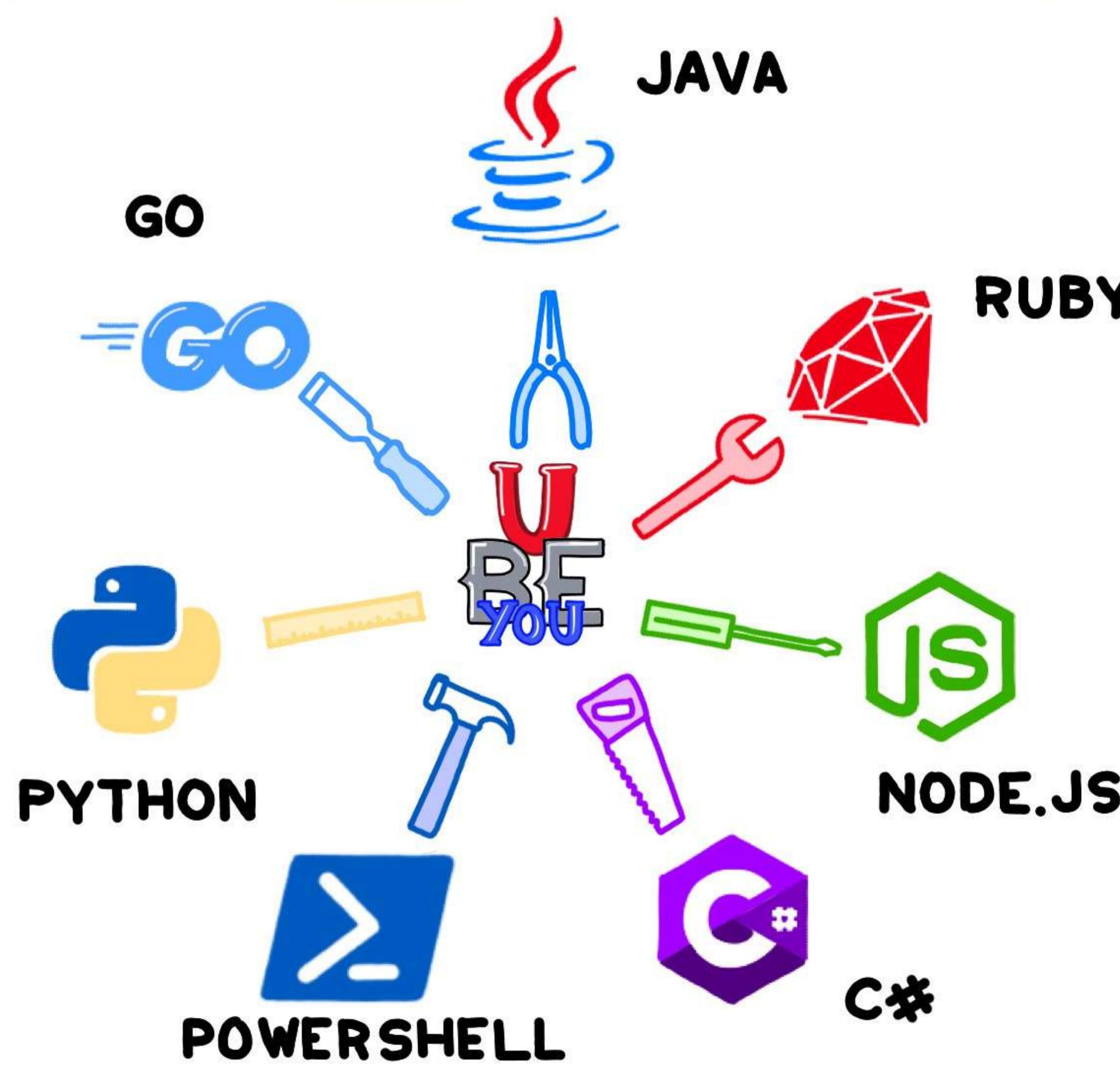
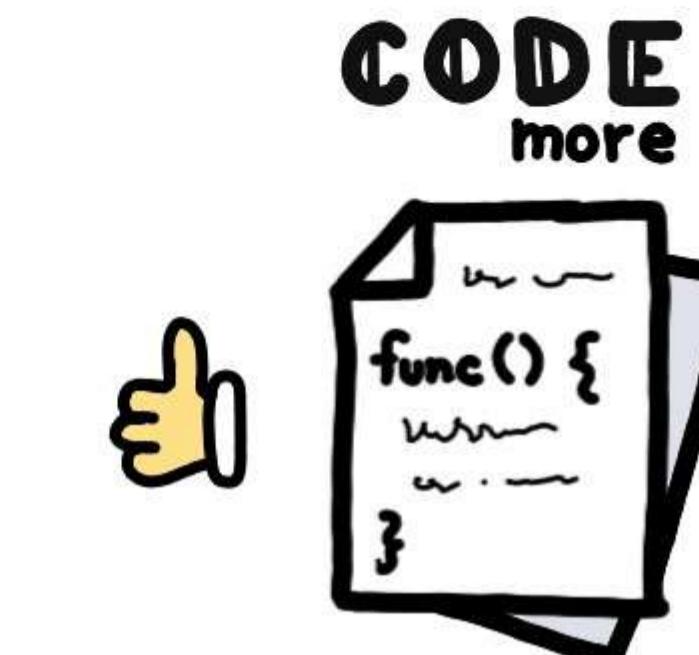
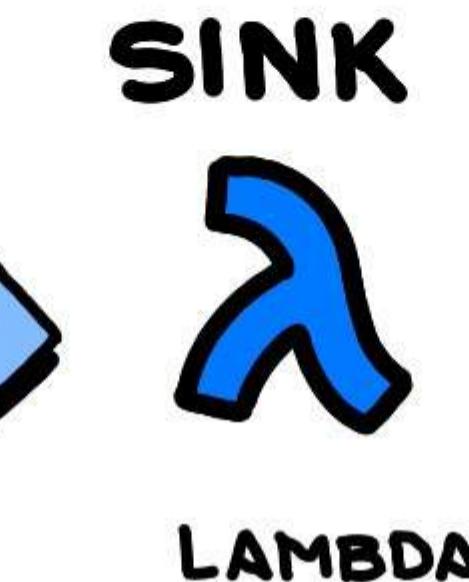
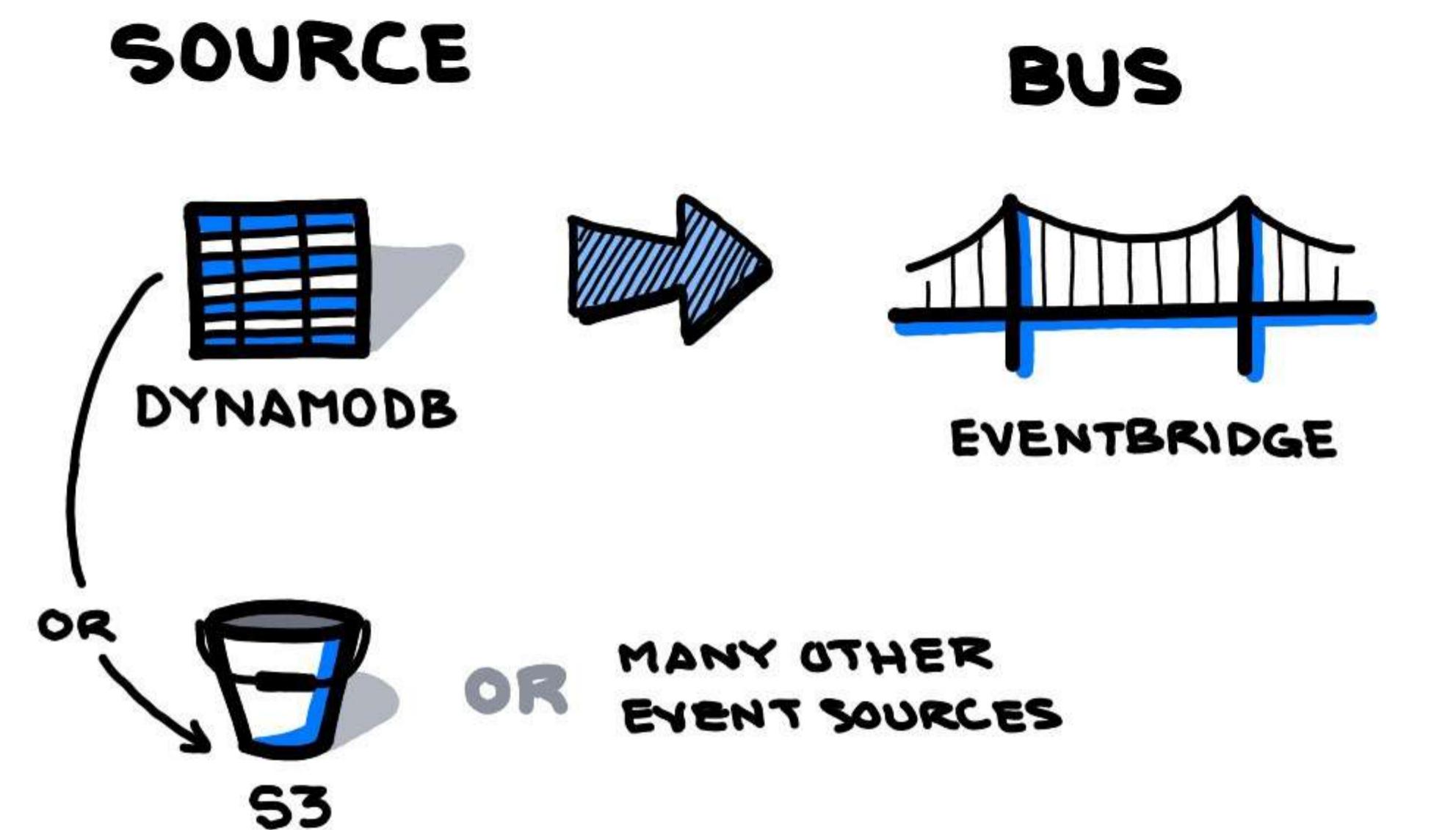
## GOVERNANCE

## COMPLIANCE



# Event Driven Apps

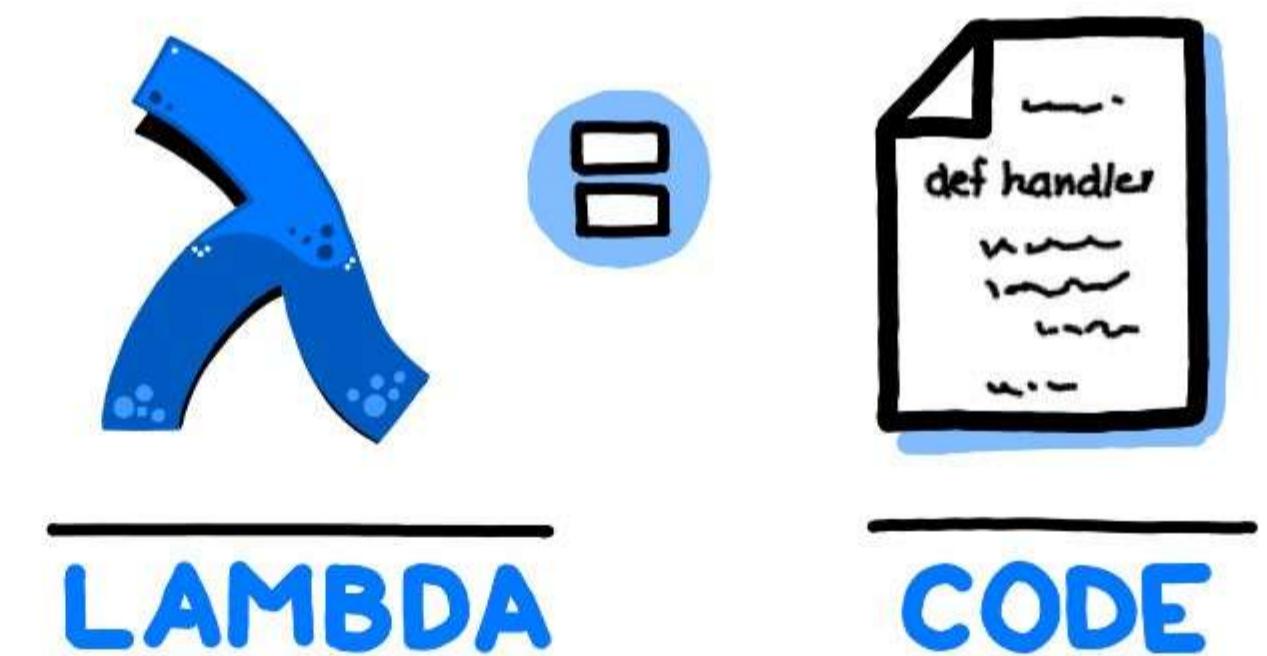
#serverlessforeveryone



## AWS LAMBDA

4/6/2020

@awsgeek



- MEMORY
  - TIMEOUT
  - IAM ROLE
- CONFIG

bring your  
BYOC  
own code



LAMBDA FUNCTIONS

LAMBDA LAYERS

## ENGINES

- ▶ ORACLE
  - ▶ SQL SERVER
  - ▶ MYSQL
  - ▶ MARIADB
  - ▶ POSTGRESQL
  - ▶ AURORA
    - MySQL
    - PostgreSQL
- commercial
- open source
- cloud native by Amazon

## PRICING

COSTS: (Oregon)

DB INSTANCE HOURS per engine/instance type  
billed hourly, round up

GP2 ... 11.5¢/GB/Mo

IOP ... 12.5¢/GB/Mo + 10¢/IOP/Mo

Mag ... 10¢/GB/Mo + 10¢/MM Requests

STORAGE

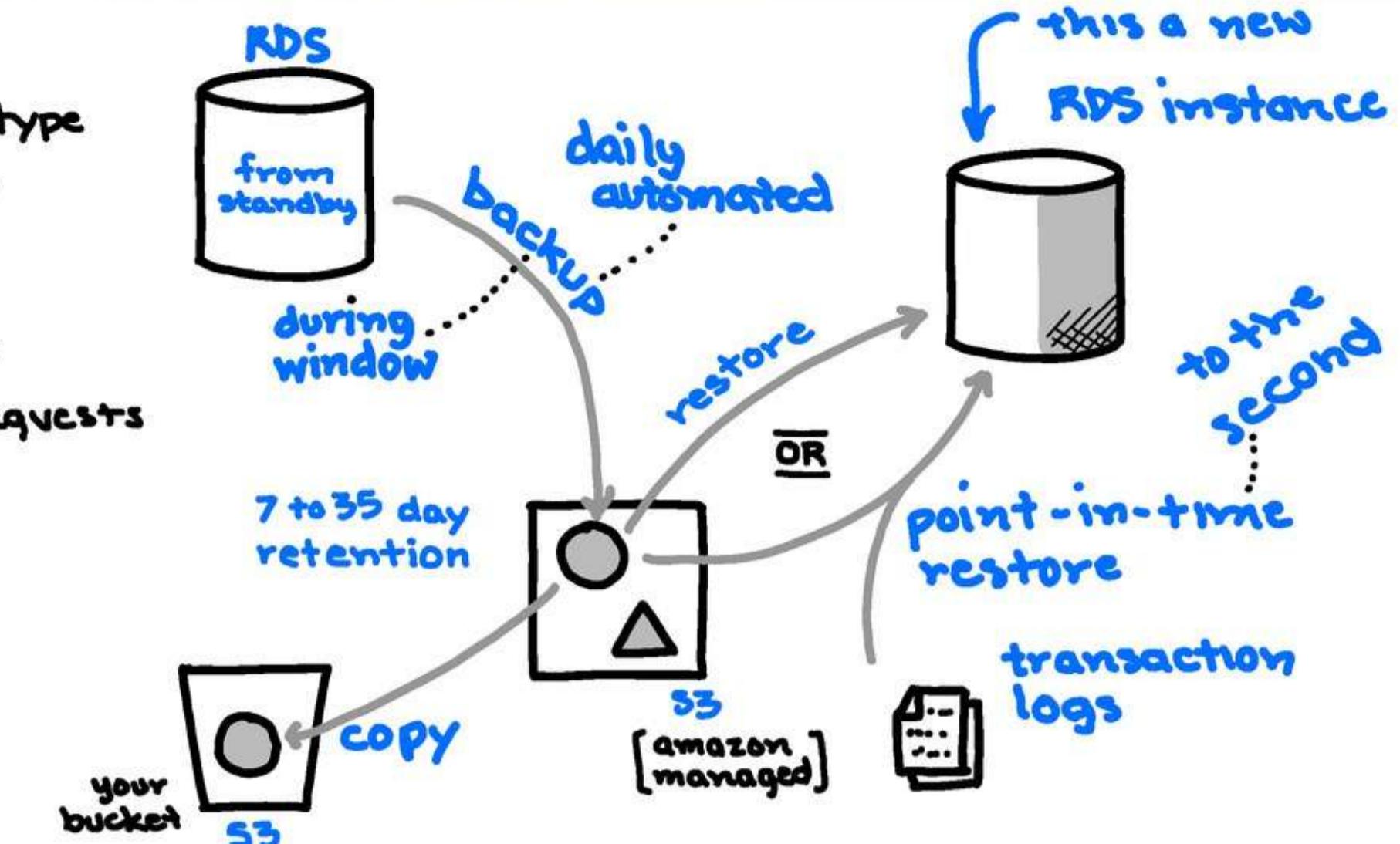
BACKUP STORAGE

DATA TRANSFER

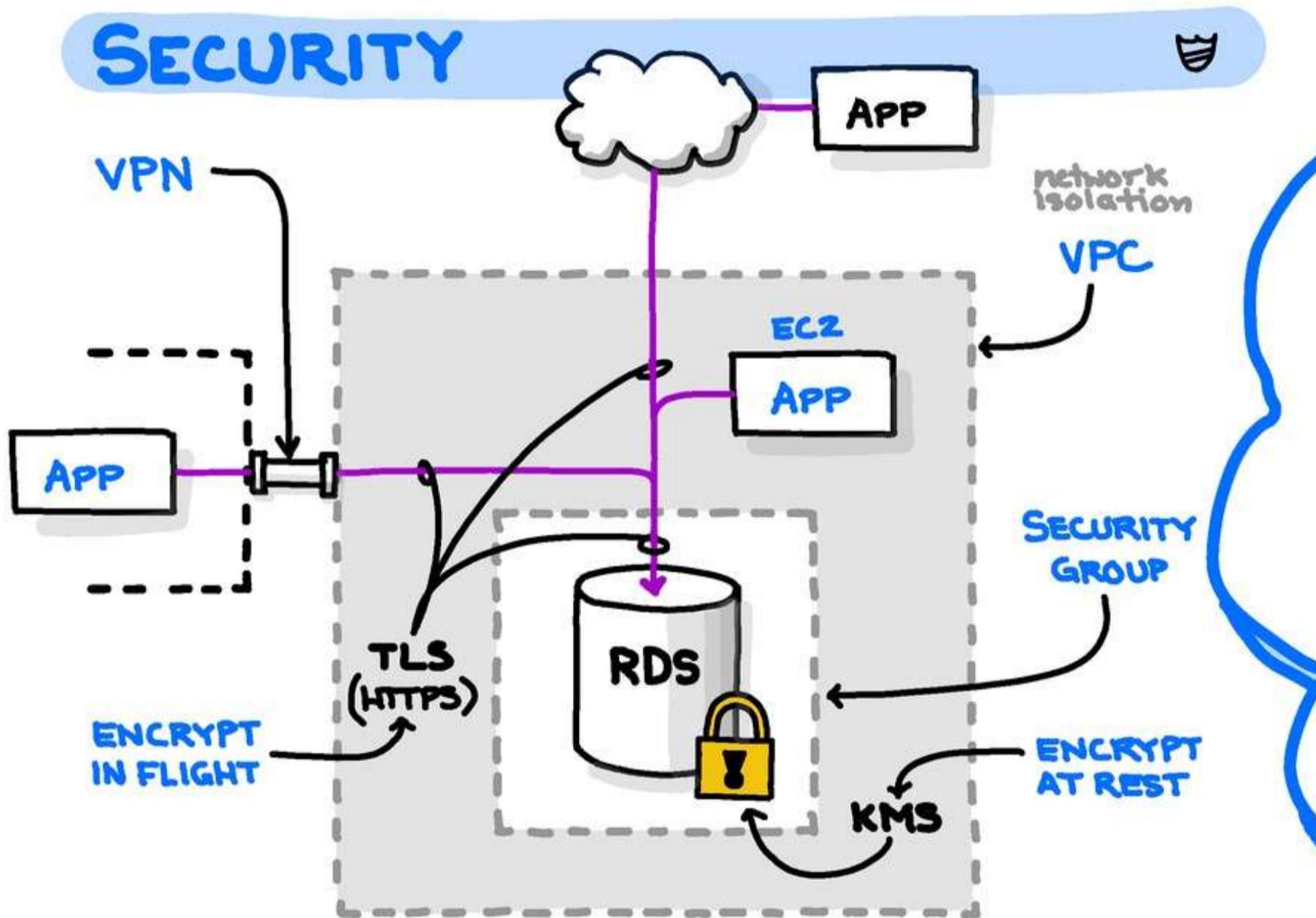
100% of DB size free  
9.5¢/GB/Mo after

varies by destination

## BACKUPS

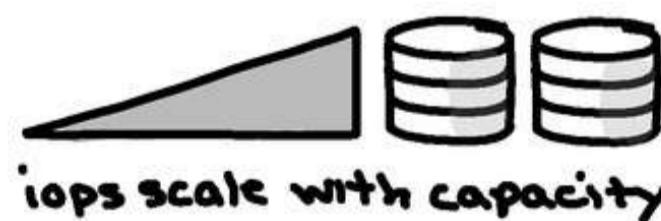


## SECURITY

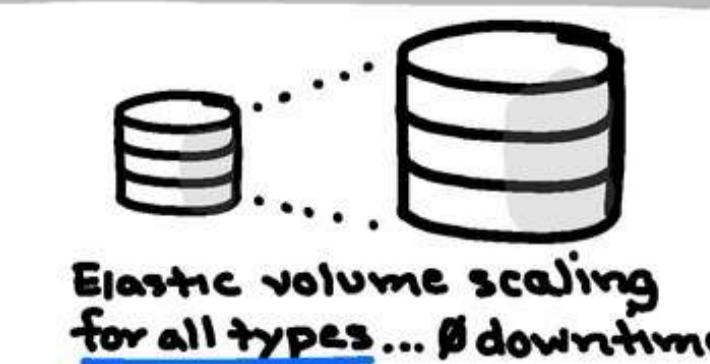


## STORAGE

**GP2** General Purpose  
SSD 16TB Max

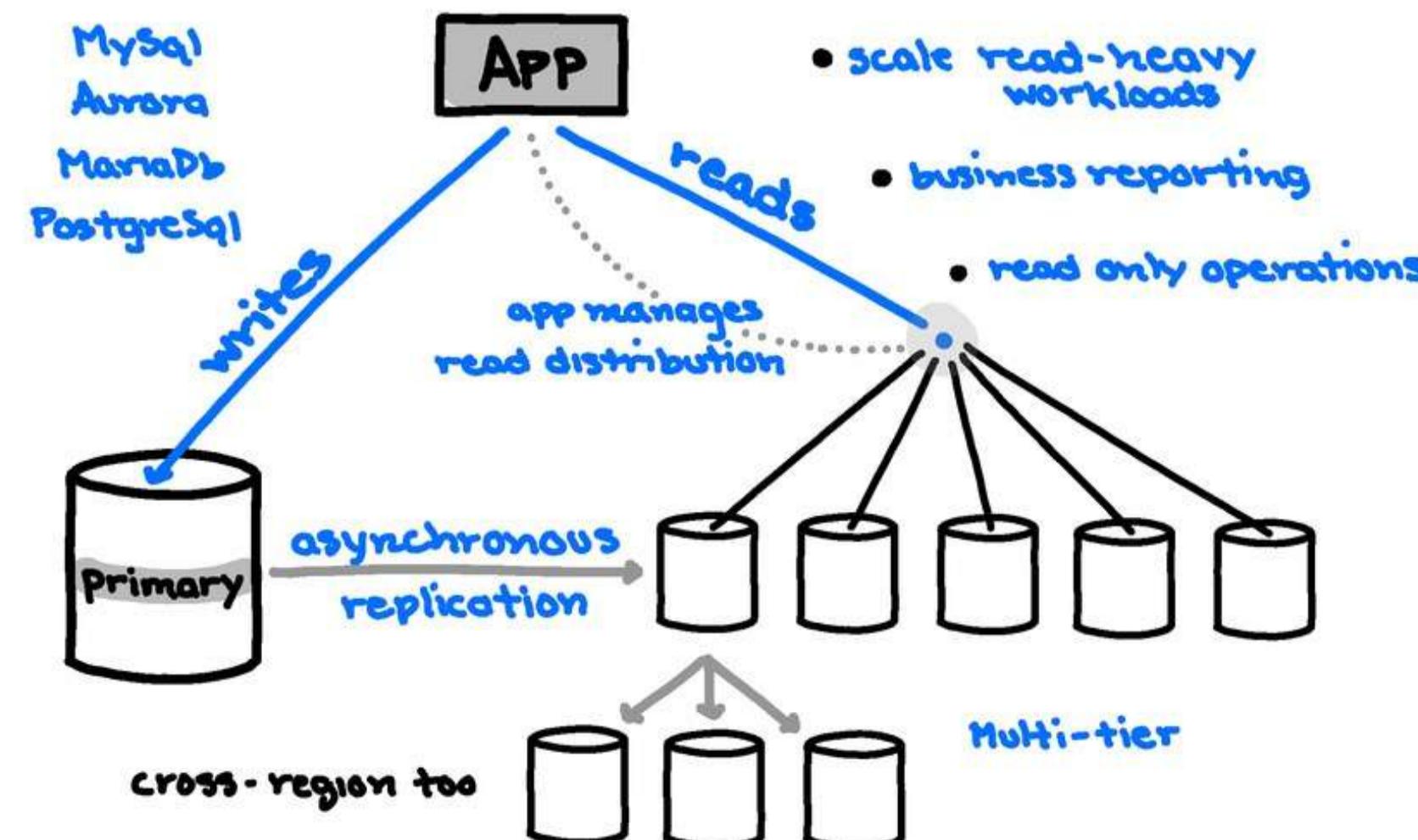


**IOP** Provisioned IOPS  
SSD 16TB Max  
30K IOPS



**Magnetic** Legacy 1TB Max

## READ REPLICAS



## INSTANCES

### SMALL WORKLOADS

**T2**  
burst

1 vCPU  
1 GB RAM  
8 vCPU  
32 GB RAM

### CPU INTENSIVE WORKLOADS

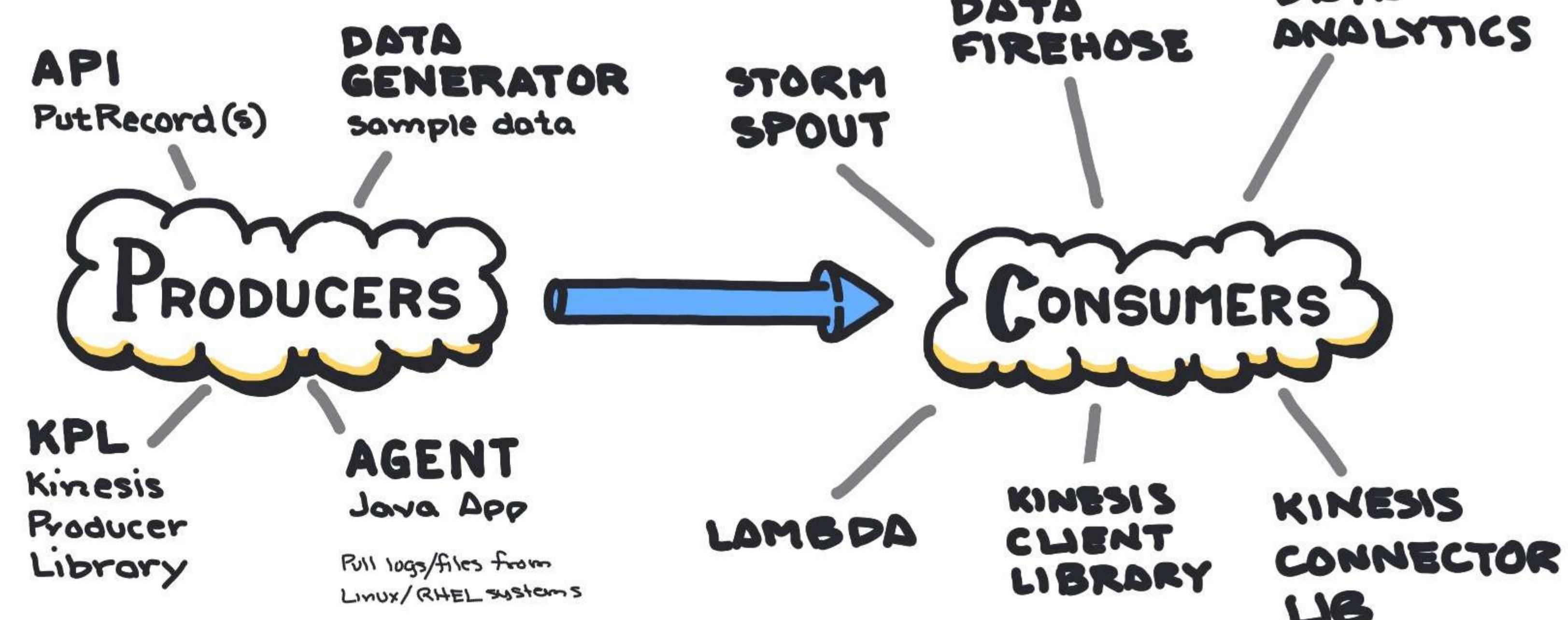
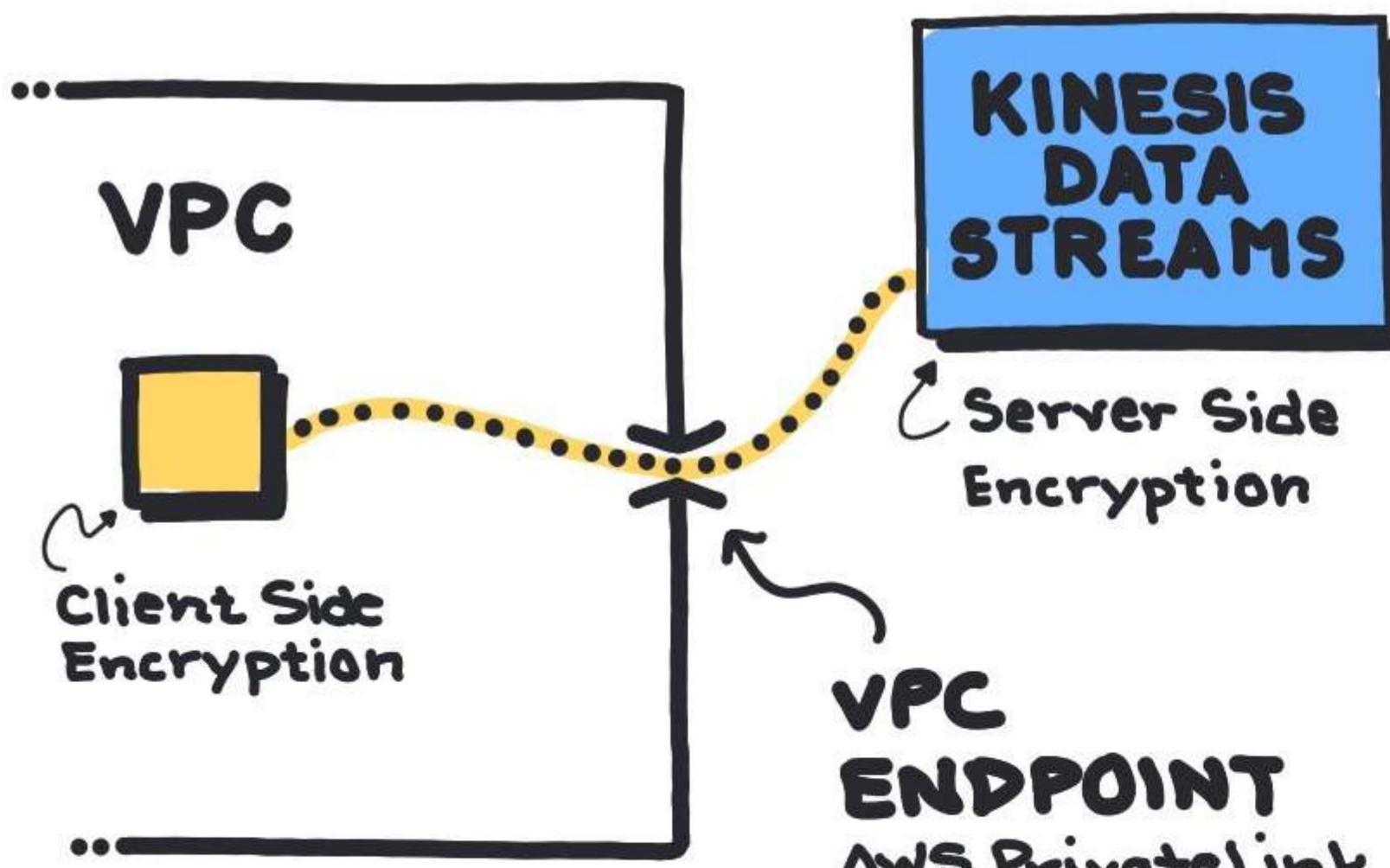
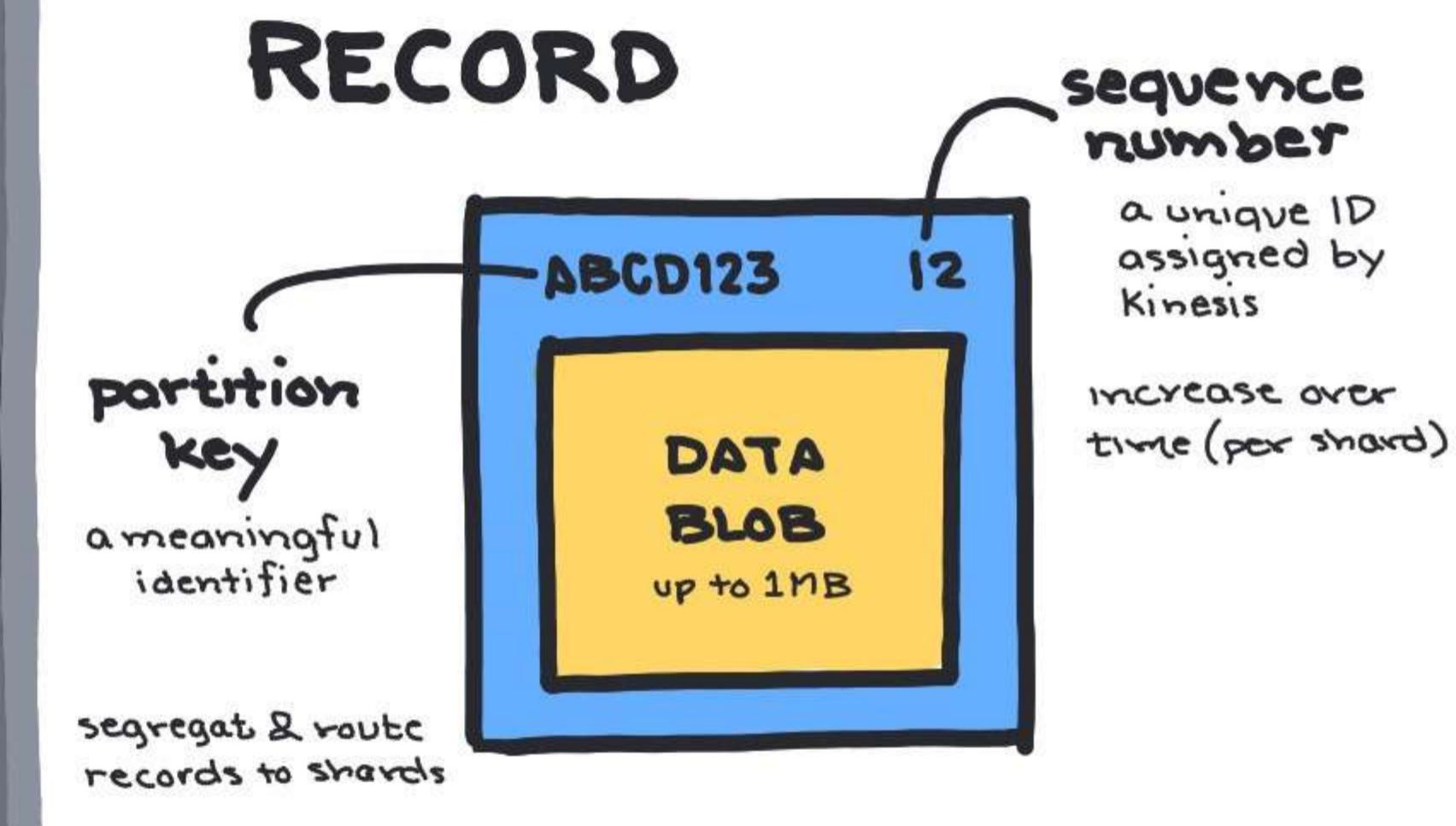
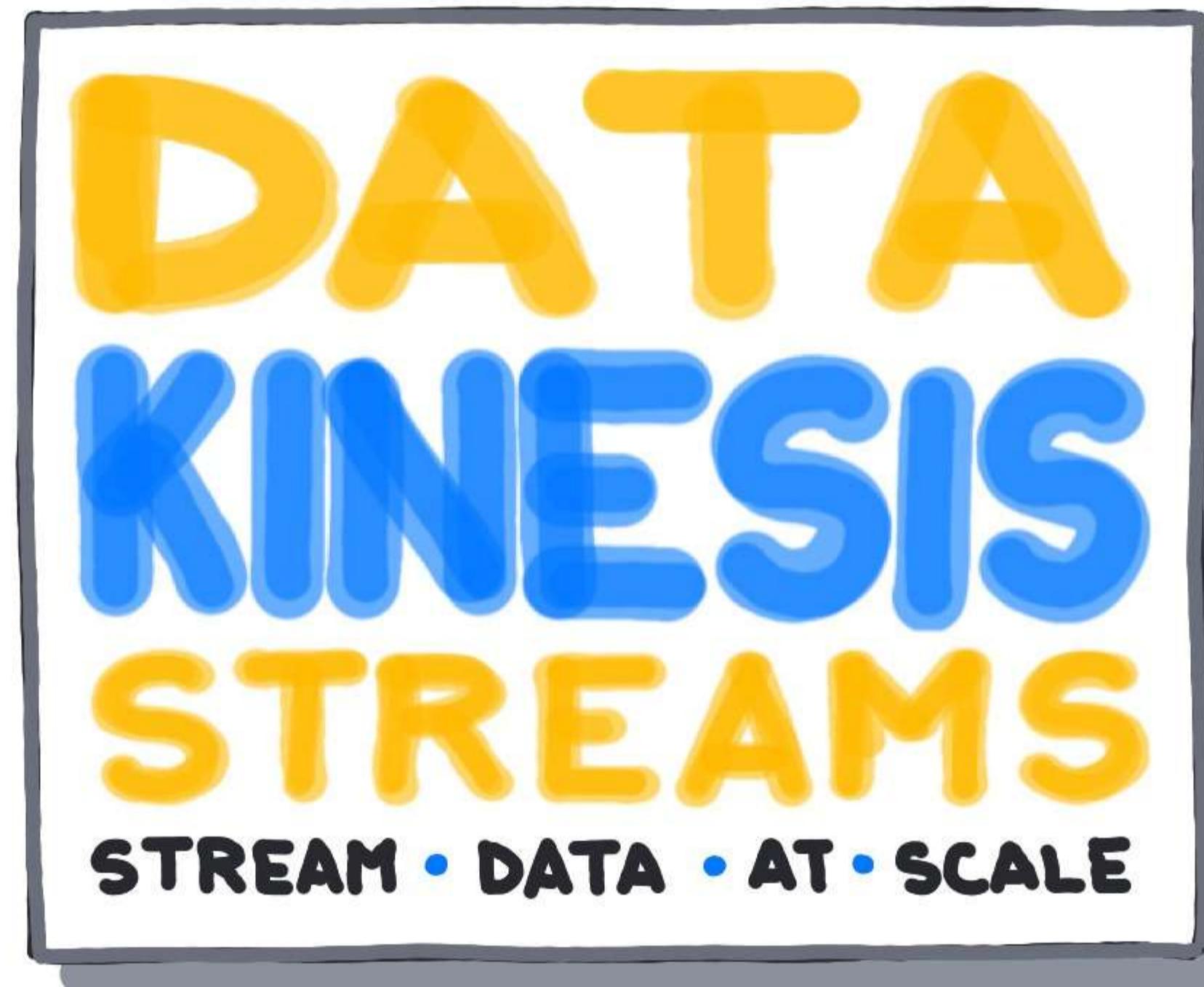
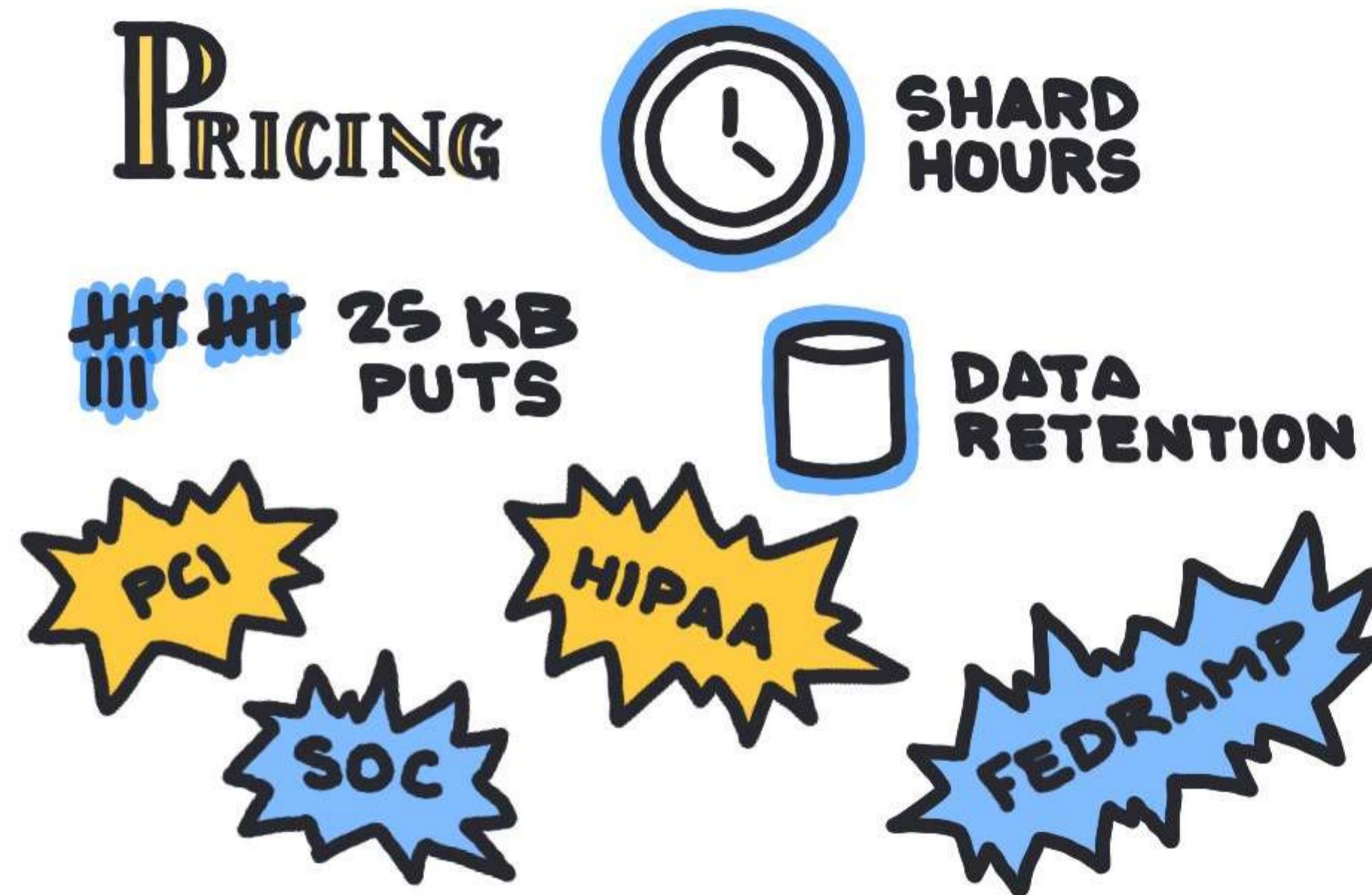
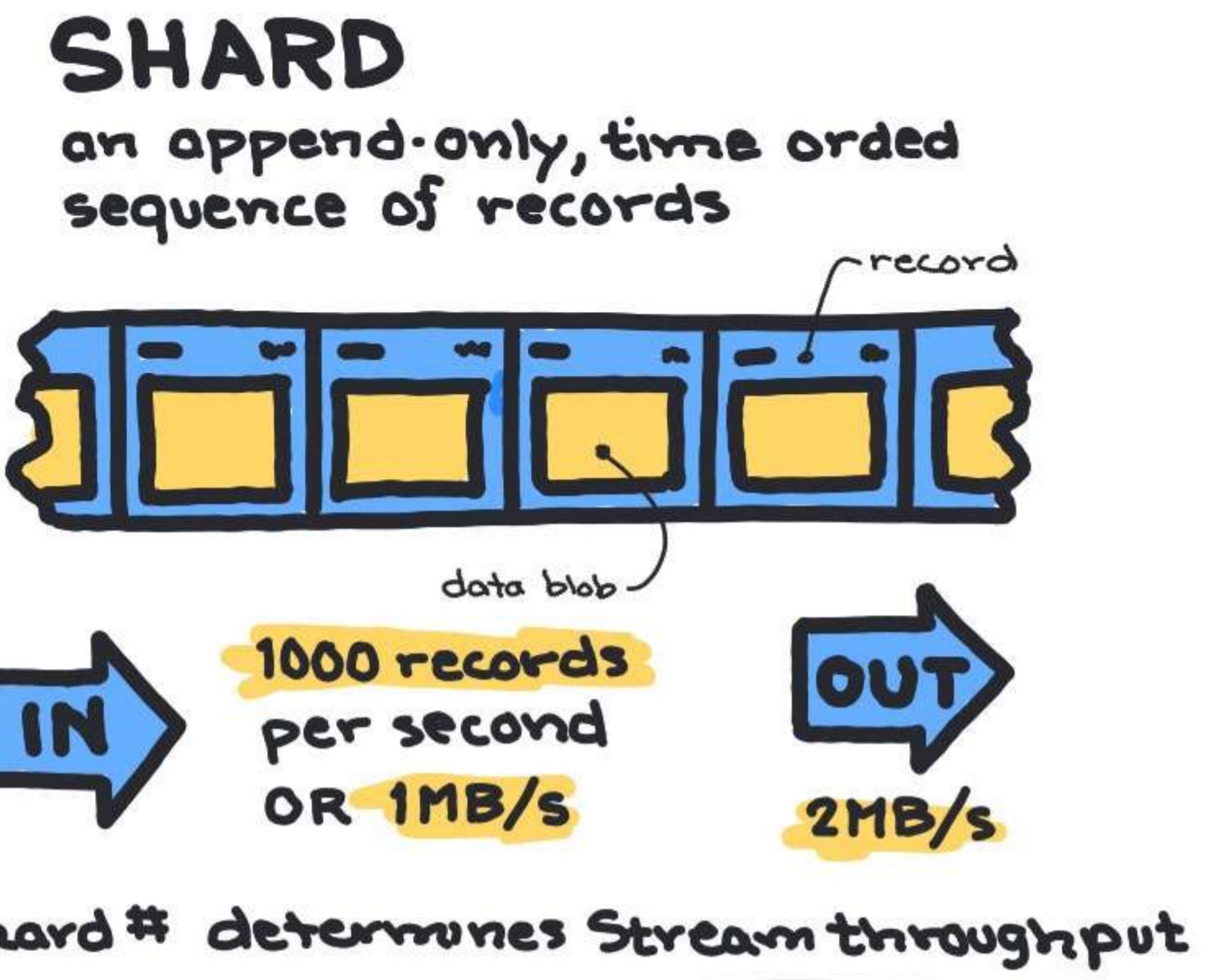
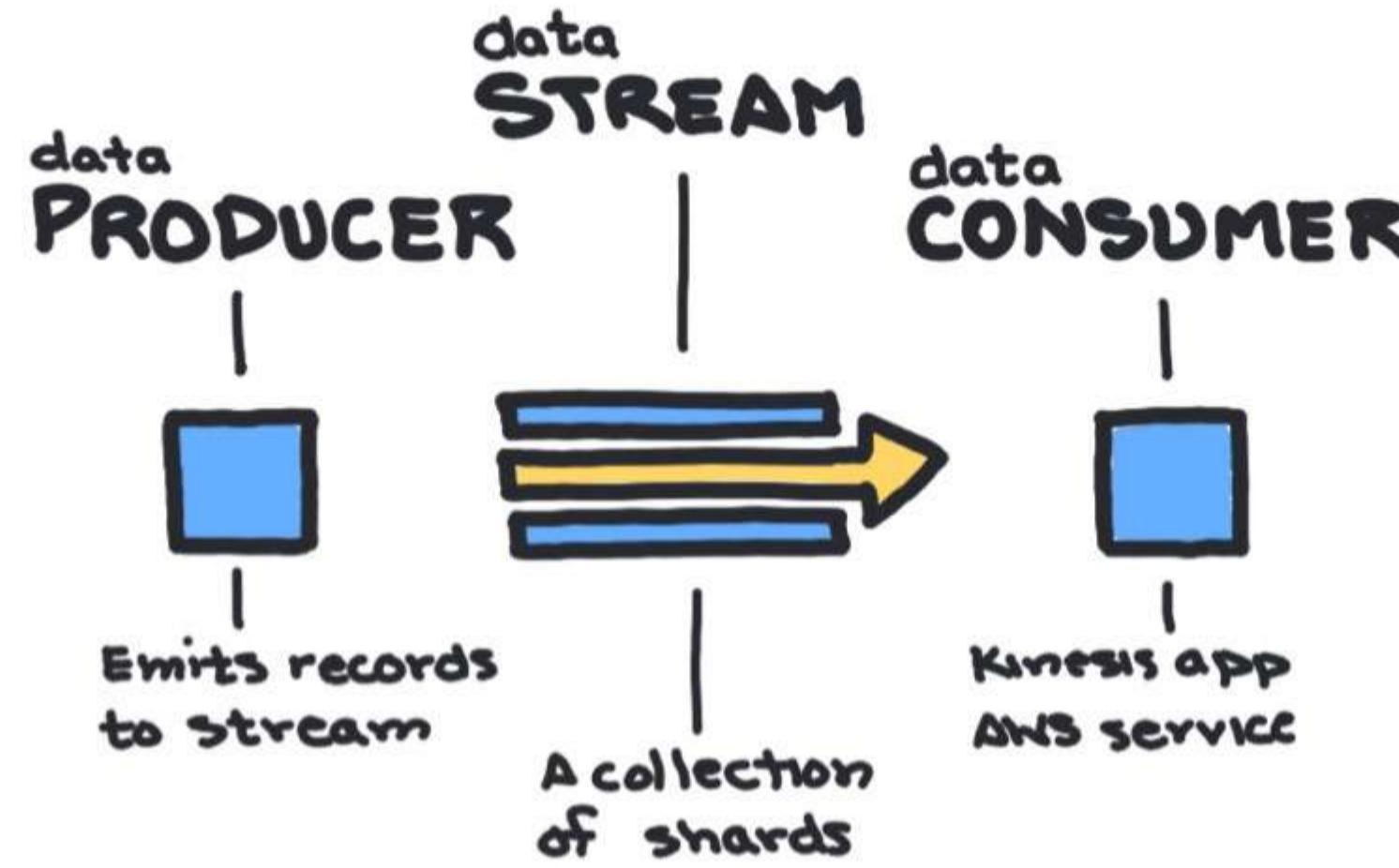
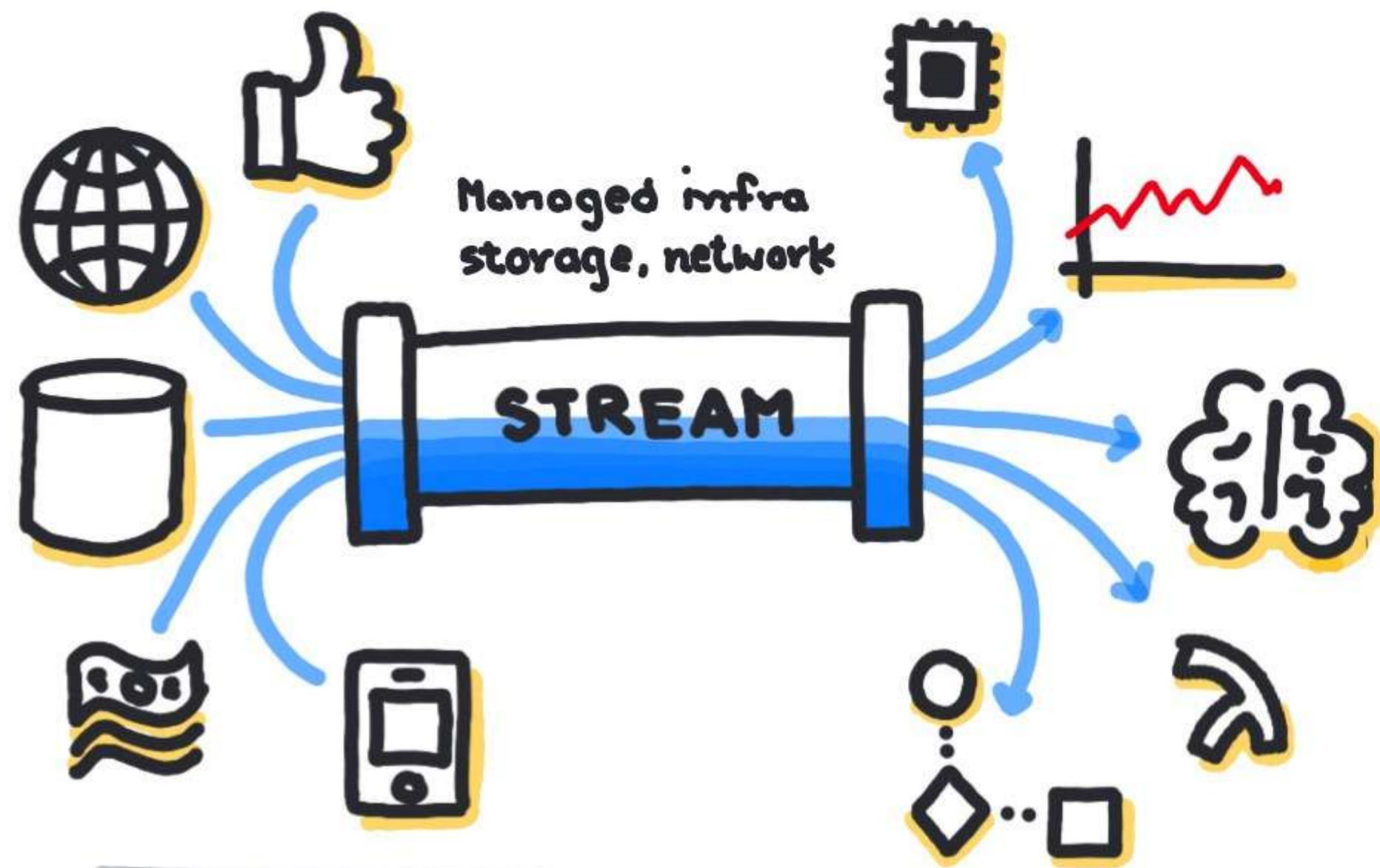
**M3/M4**  
general purpose

2 vCPU  
8 GB RAM  
64 vCPU  
256 GB RAM

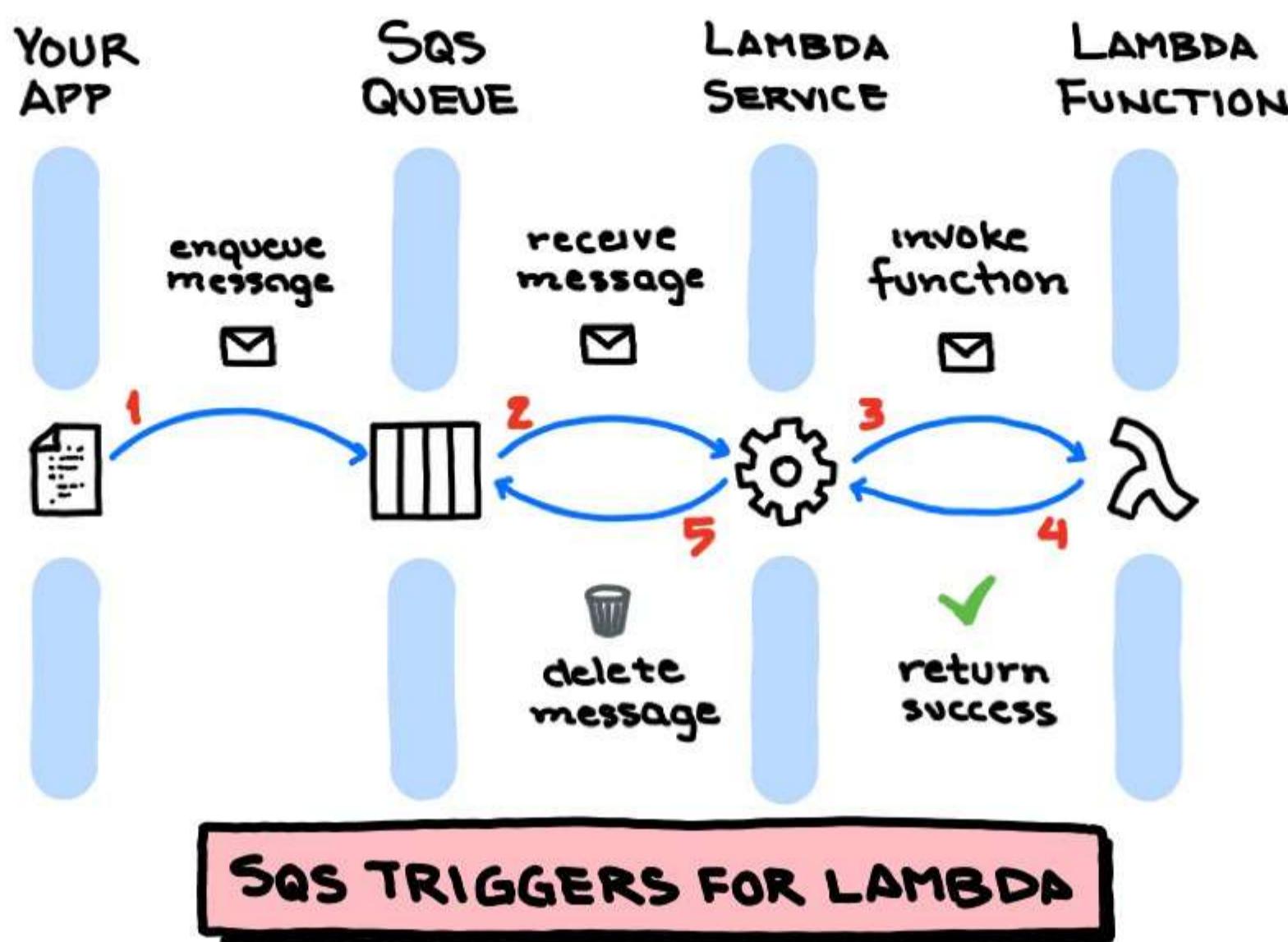
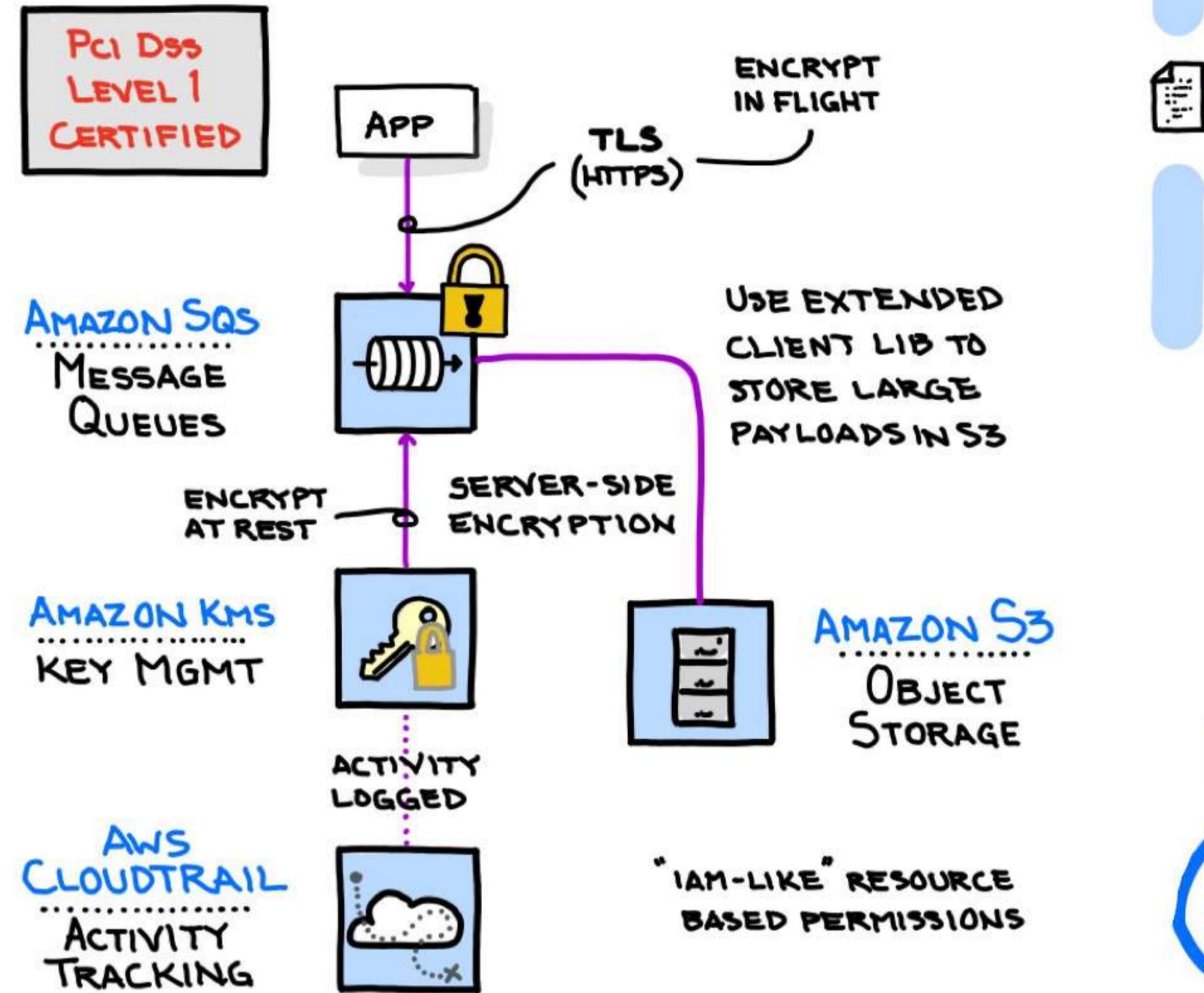
### QUERY INTENSIVE WORKLOADS

**R3/R4/X1(e)**  
mem optimized

2 vCPU  
16 GB RAM  
128 vCPU  
3904 GB RAM



# Security



# Pricing

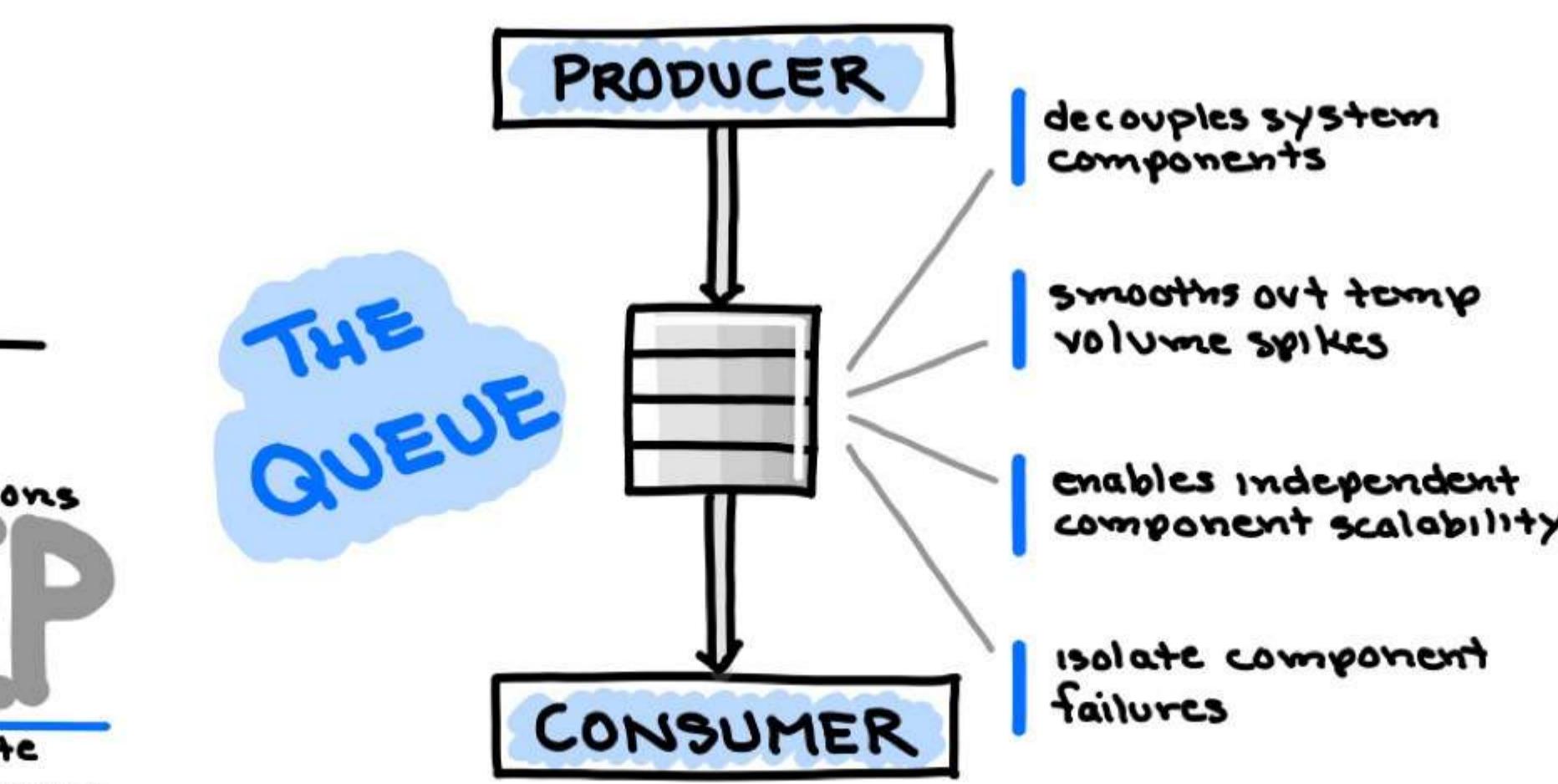
each 64K chunk of payload counts as 1 request

Standard ..... 40¢ per MM requests

FIFO ..... 50¢ additional costs for S3 & KMS

Send, receive, delete, visibility APIs at FIFO rates, others at standard rate

data transfer starts at 90¢/GB



# Limits

MESSAGE RETENTION PERIOD

MIN: 1 MIN MAX: 14 DAYS

MAXIMUM MESSAGE SIZE

MIN: 1 KB MAX: 256 KB

MAXIMUM INFLIGHT MESSAGES

STD: 120K FIFO: 20K





# EVENTBRIDGE

SERVERLESS EVENT BUS

EVENT

## S·O·R·C·E·S

SaaS Partners



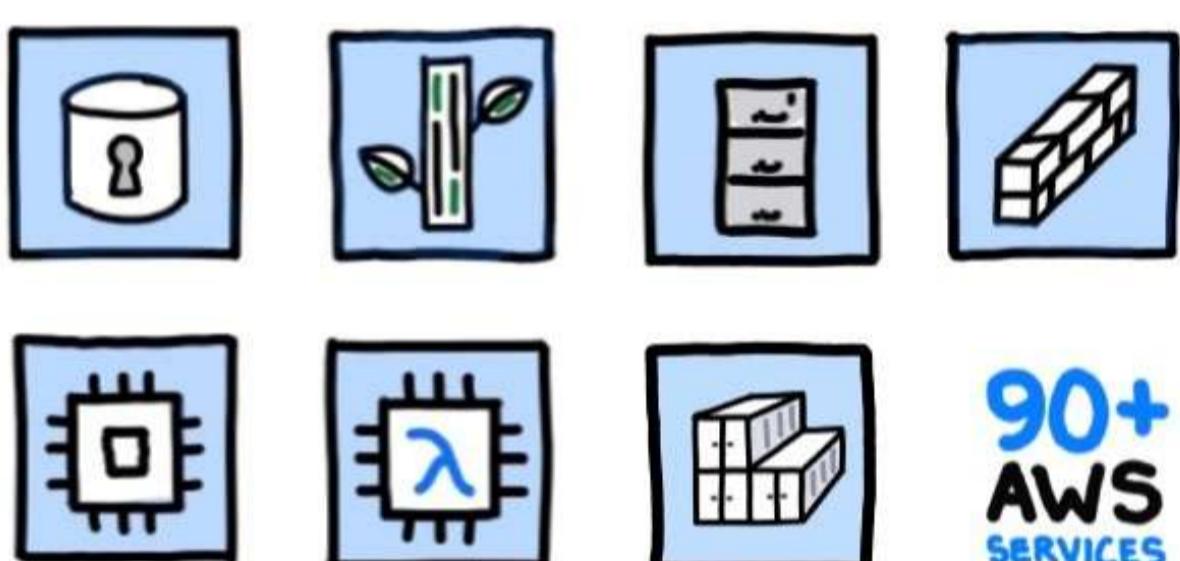
...and more

Your Apps



...yes, more

AWS Services



many more

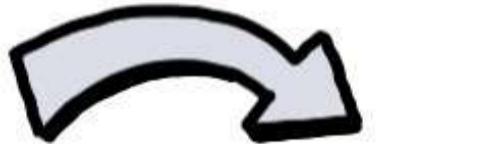
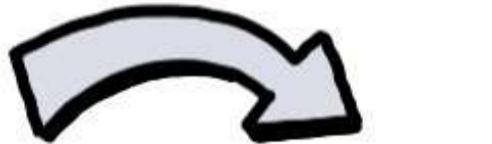
90+ AWS SERVICES

## C·O·S·T

CUSTOM &  
SaaS EVENTS

\$1 Million  
Published

AWS EVENTS  
free



EVENT

## B·U·S·E·S

SaaS  
EVENTS



PARTNER

multiple

YOUR APP  
EVENTS



CUSTOM

single

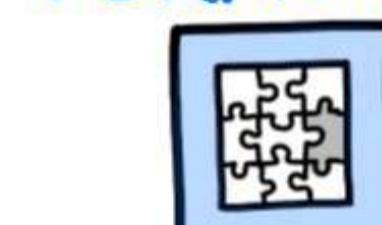
AWS  
SERVICE  
EVENTS



DEFAULT

CLOUD  
FORMATION

DEPLOY



CONFIG



MONITOR



EVENT



AUDIT

CLOUDTRAIL



SECURE

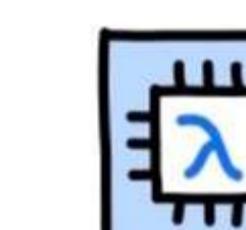


IAM

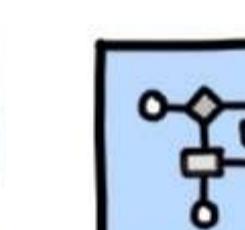


EVENT

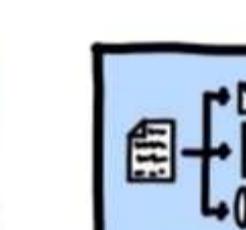
## T·A·R·G·E·T·S



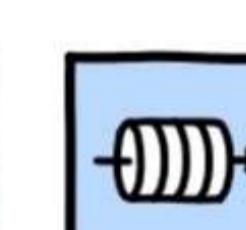
LAMBDA



STEP  
FUNCTIONS



SNS

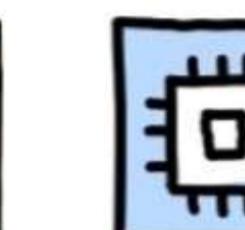


SQS

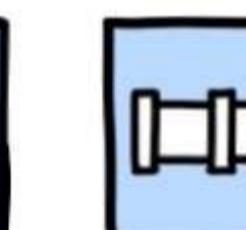
& MORE



KINESIS



EC2



CODE  
PIPELINE



CODE  
BUILD

DEFAULT

EVENT BUS

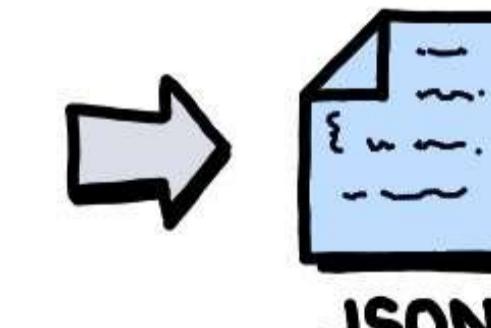
different account

OVER 15  
TARGETS

E·V·E·N·T

DETAILS

SOURCE  
TIME  
ACCOUNT  
DETAIL  
...



HIPAA  
Eligible

COMPLIANT

- GDPR
- DOD
- SOC
- FedRamp
- ISO

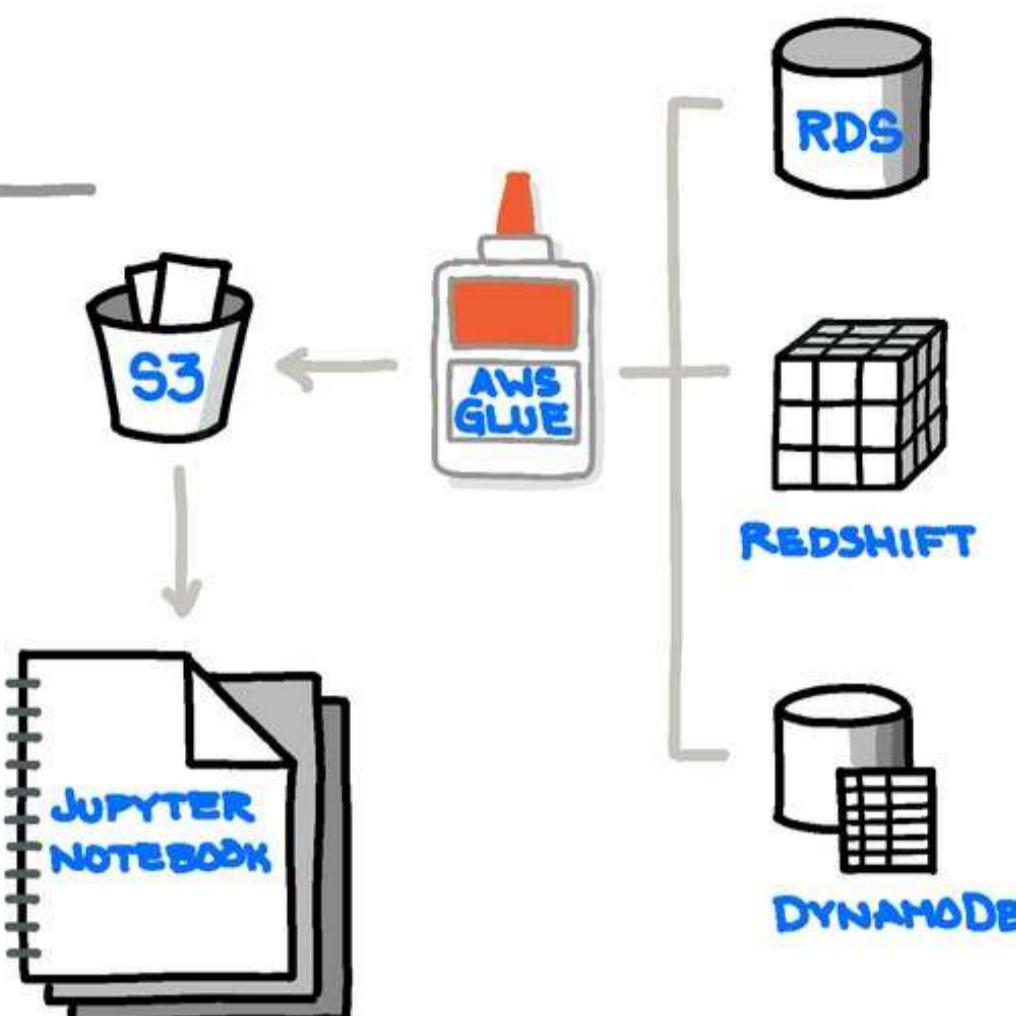
## BUILD

### COMMON TEMPLATES

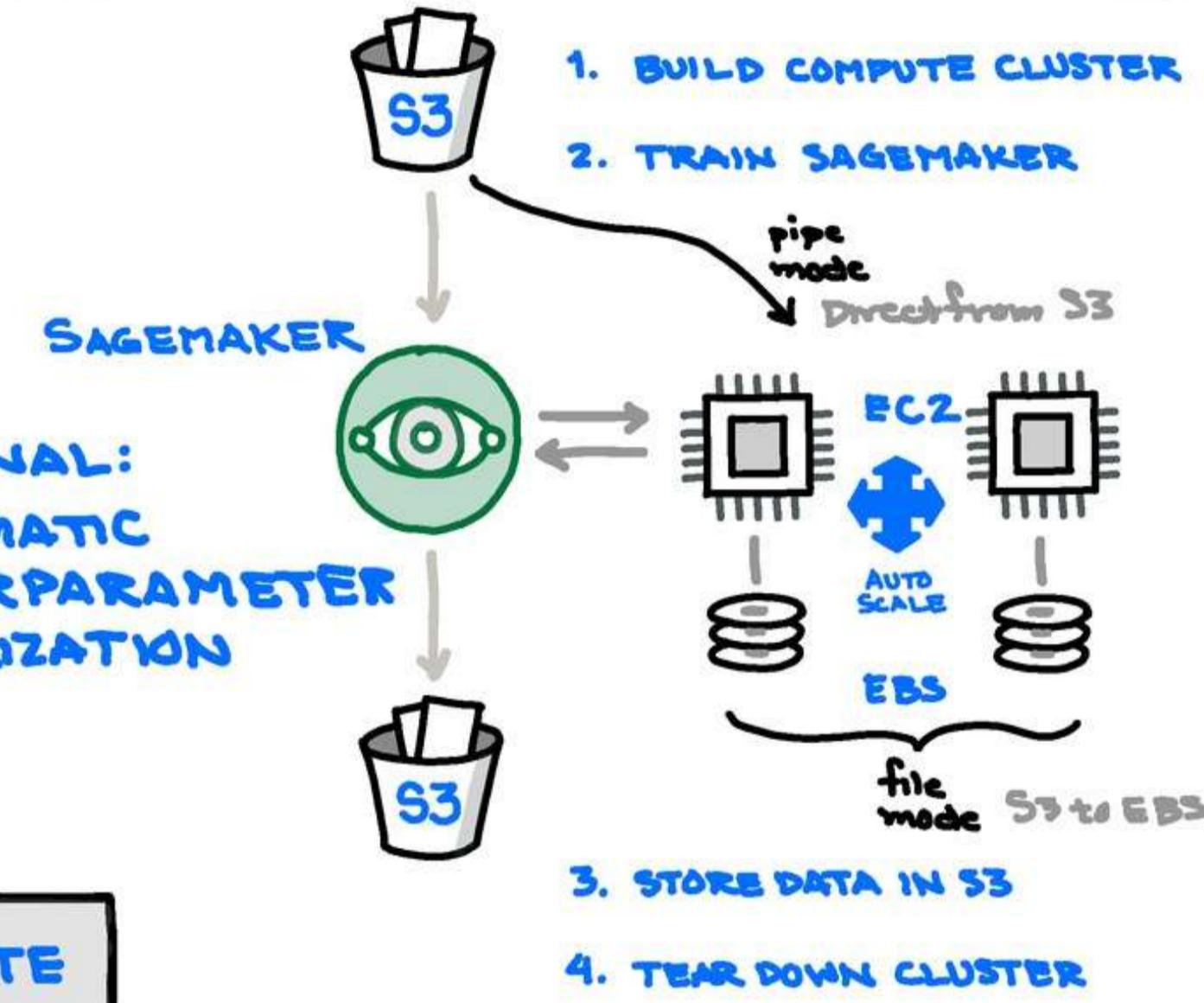
- TIME SERIES FORECAST
- DIRECT MARKETING TARGETS
- PREDICT CUSTOMER CHURN

### ADV. TEMPLATES

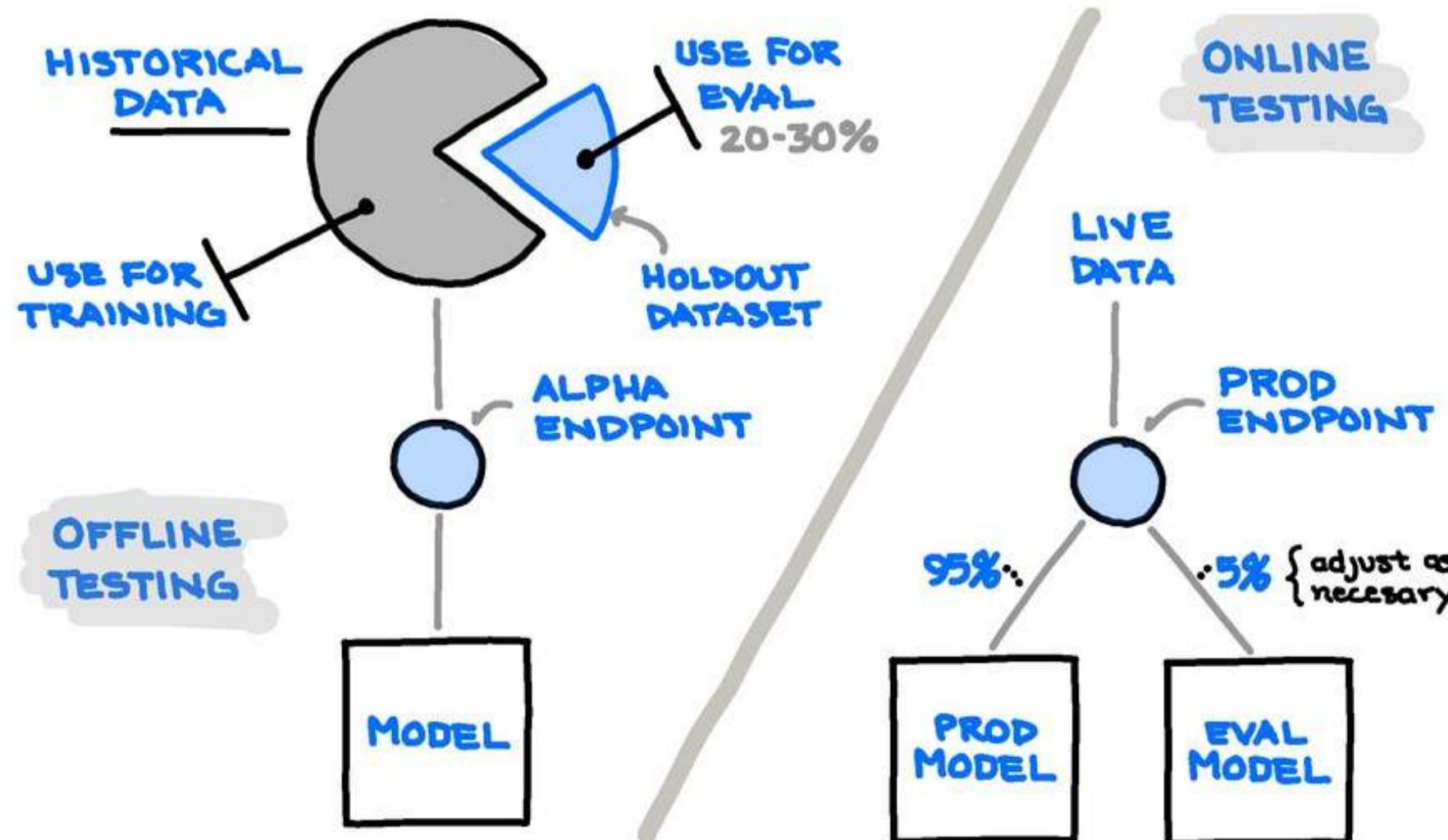
- BYO TENSORFLOW & MXNET CONTAINERS
- BYO SCIKIT OR R.ALGO



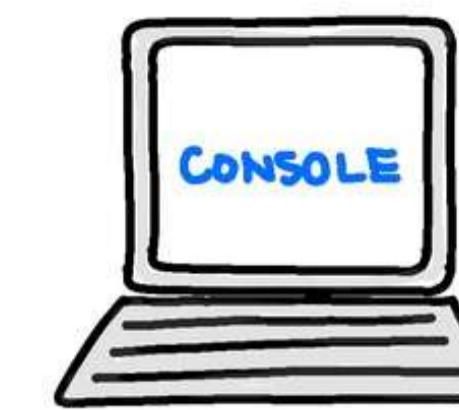
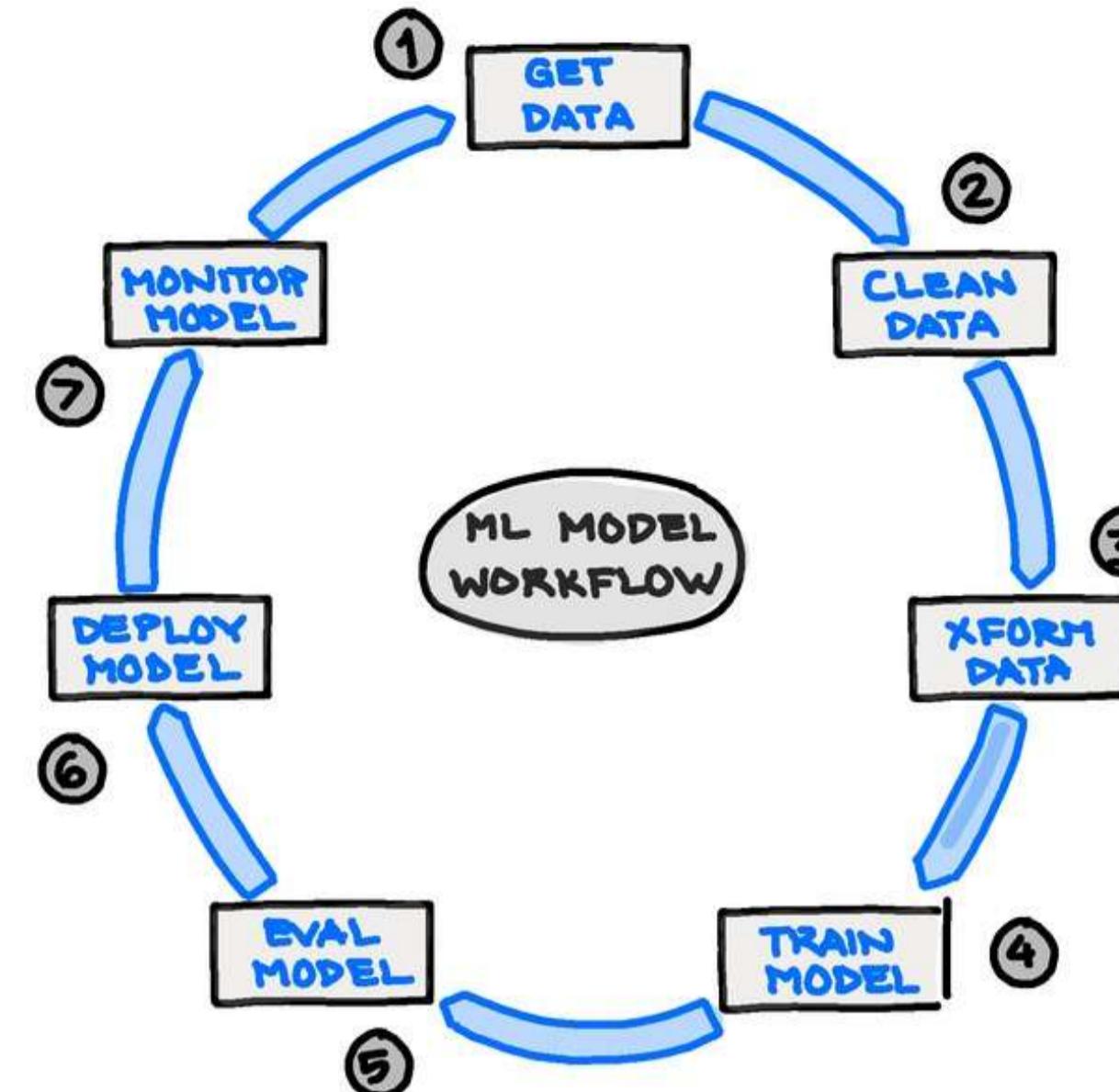
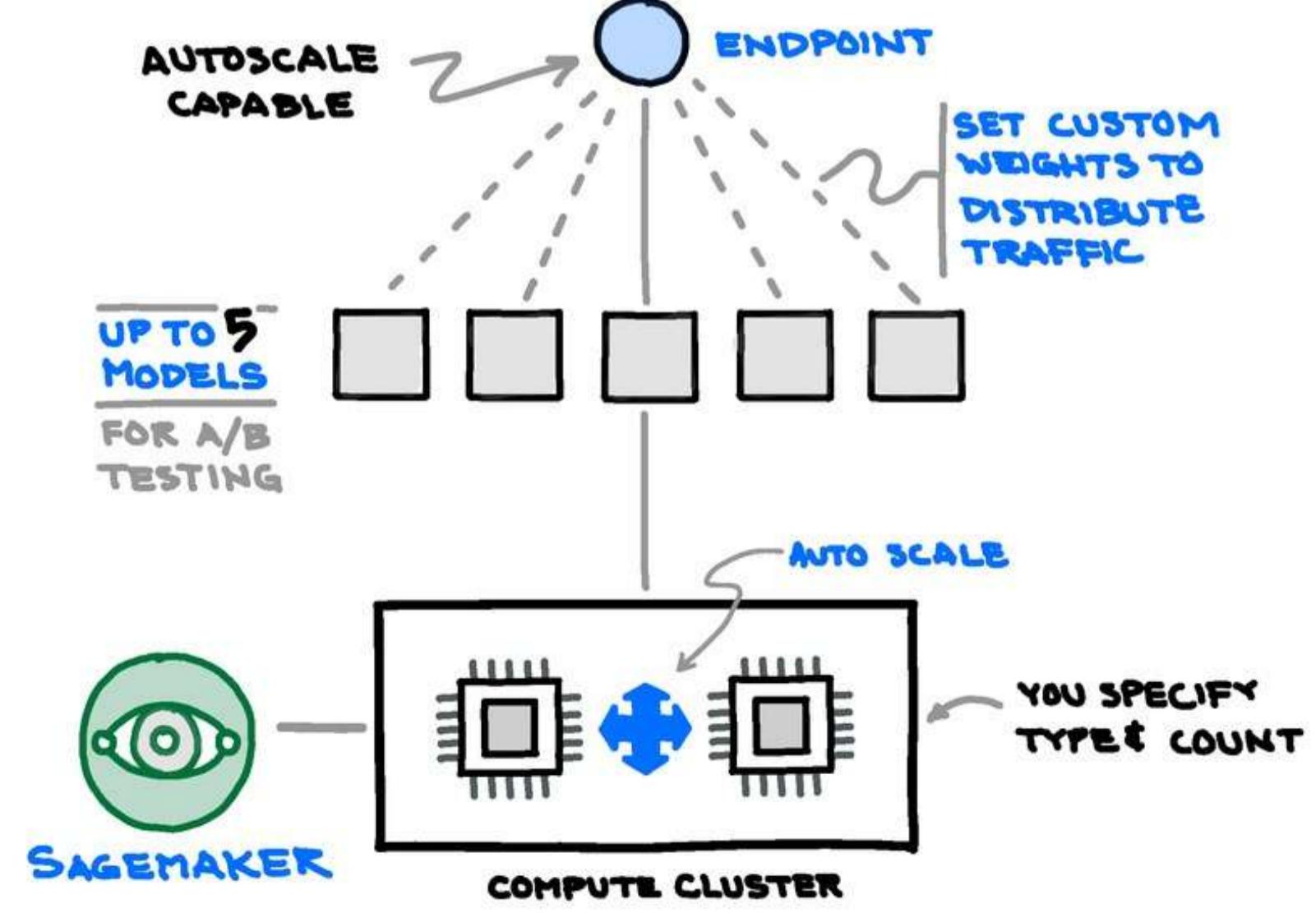
## TRAIN



## EVALUATE



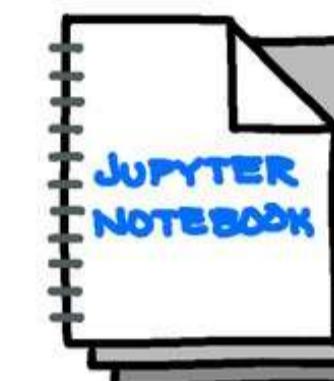
## DEPLOY



CONSOLE

PROGRAMMING MODEL

INTEGRATE v2.1.1 & v2.2.0



JUPYTER NOTEBOOK

UPDATE EXISTING NOTEBOOKS

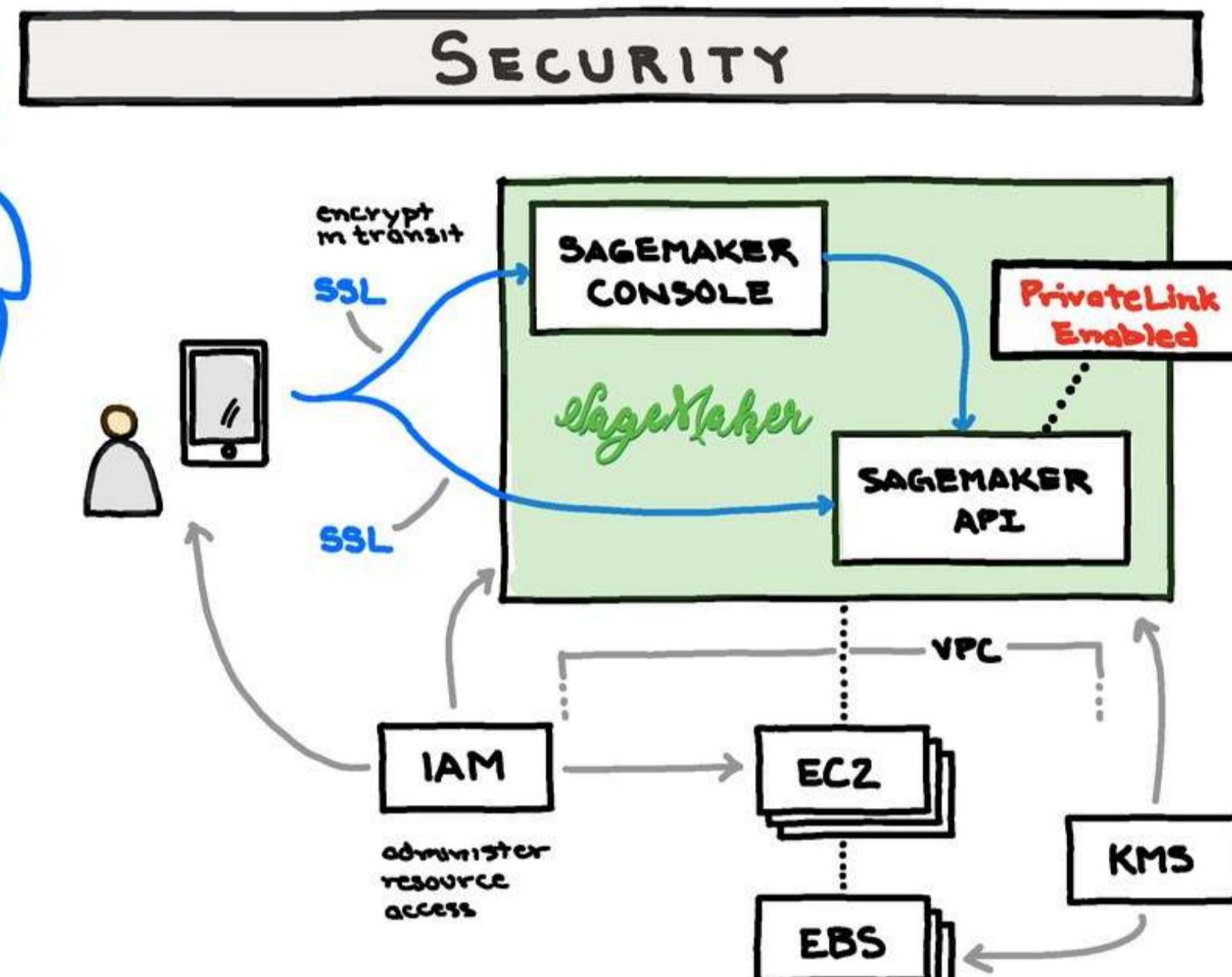
PYTHON LIBRARY

AWS SDKS



SAGEMAKER

WRITE YOUR OWN MODEL CODE

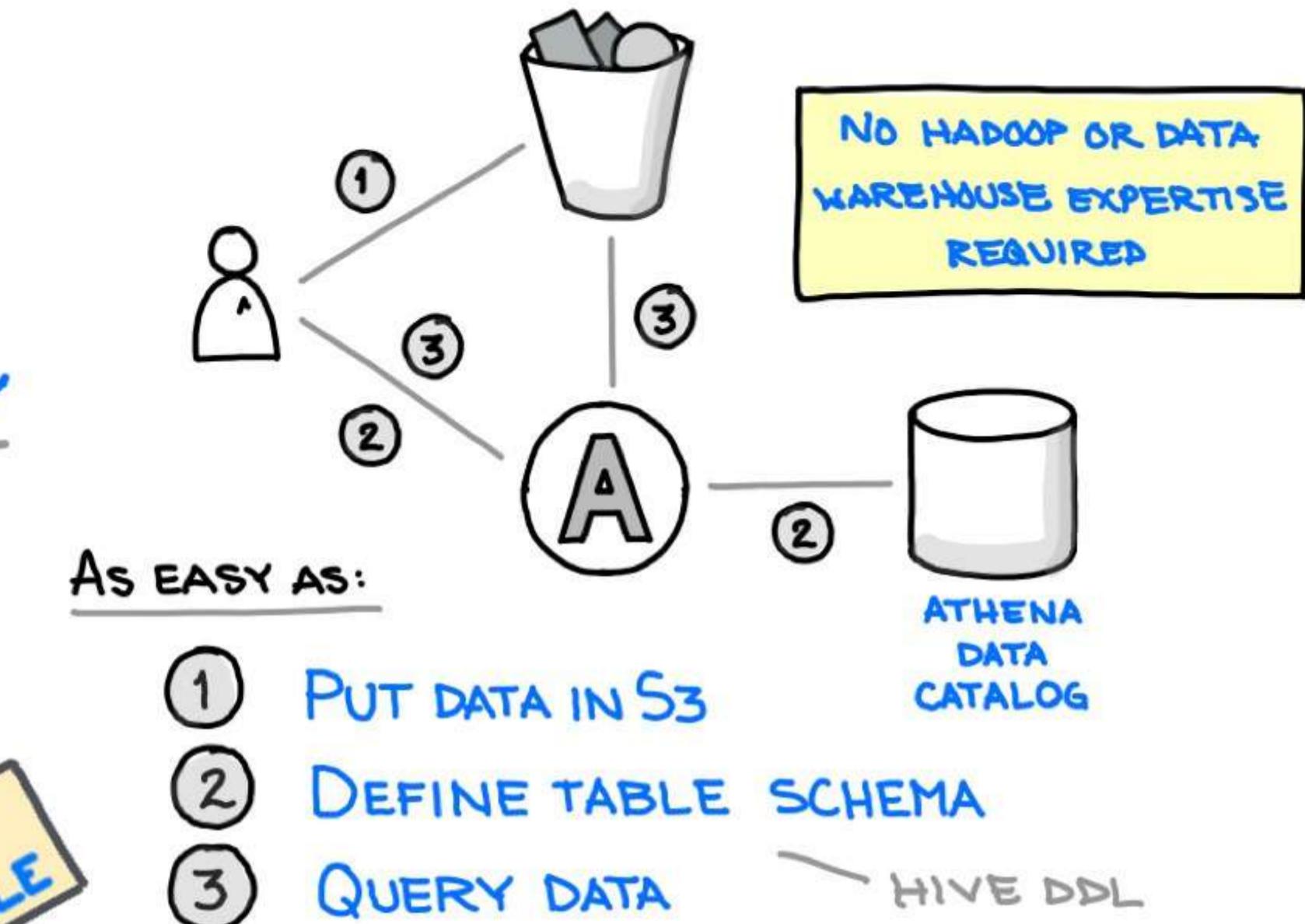
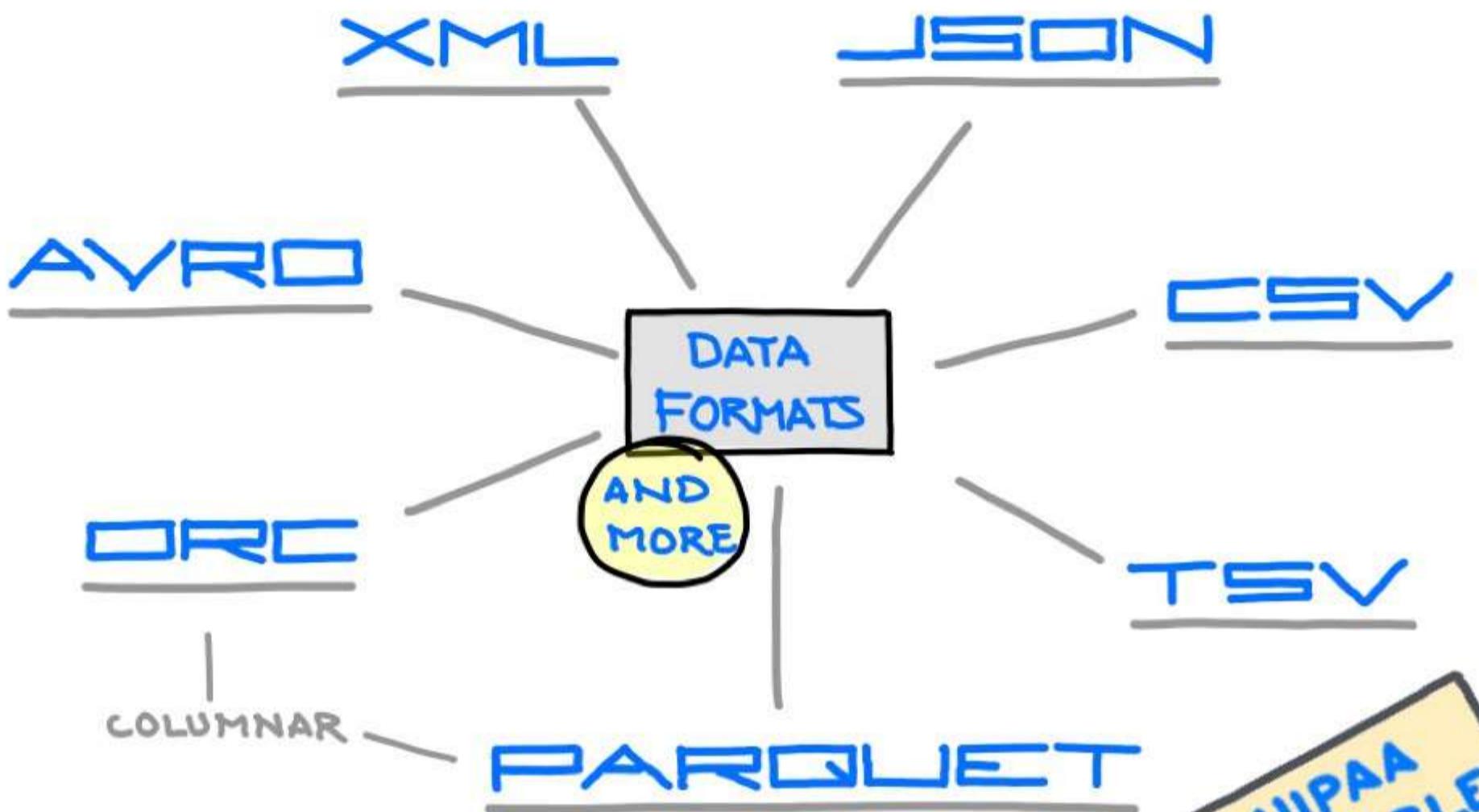
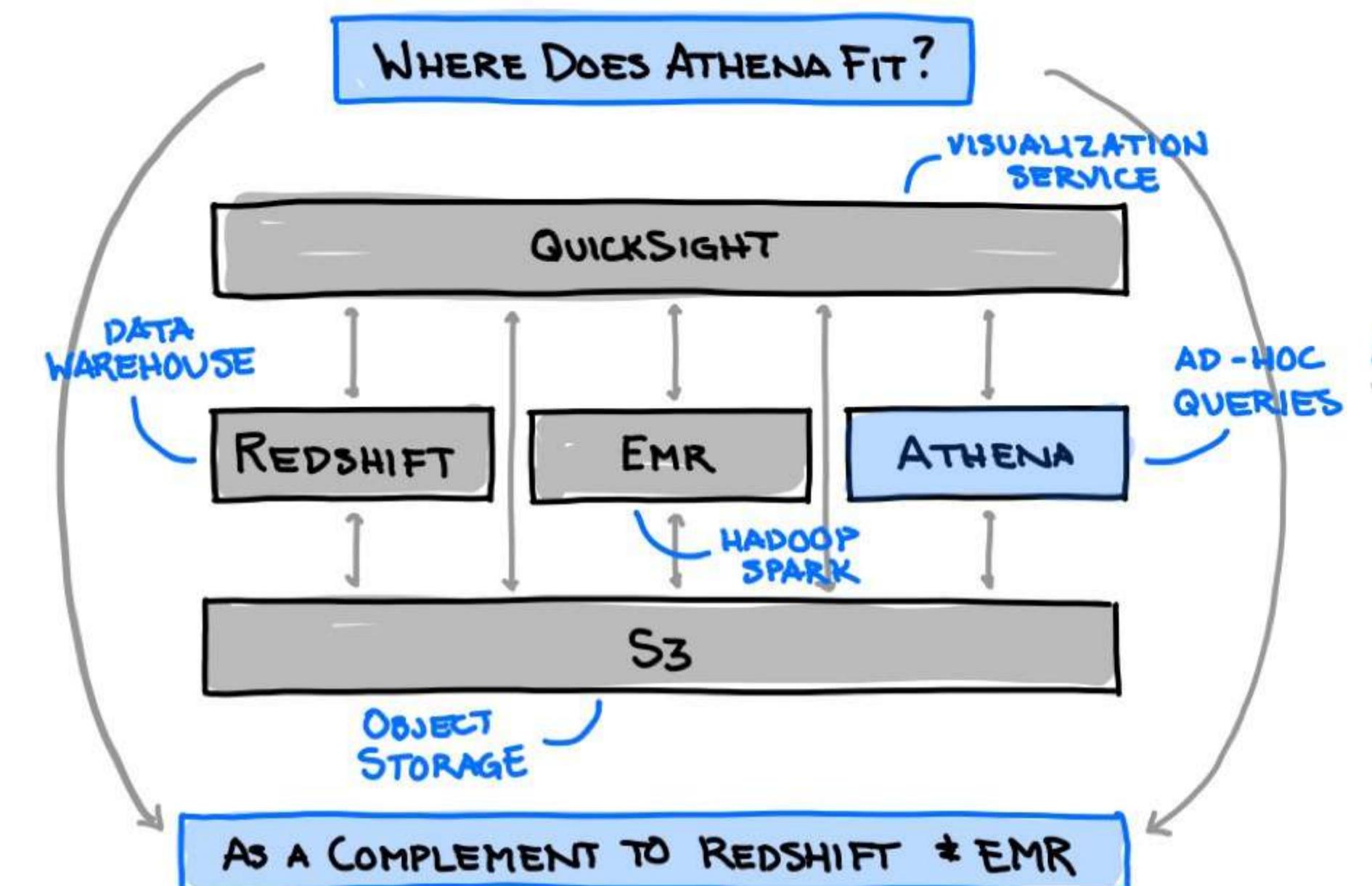


## PRICING

INSTANCE FEES: ON DEMAND, HOURLY RATE, 1 MINUTE MINIMUM, PER SECOND

STORAGE FEES: 14¢ / GB / MO (UP TO 6TB FOR TRAINING)

PROCESSING FEES: 1.6¢ / GB (IN/OUT)

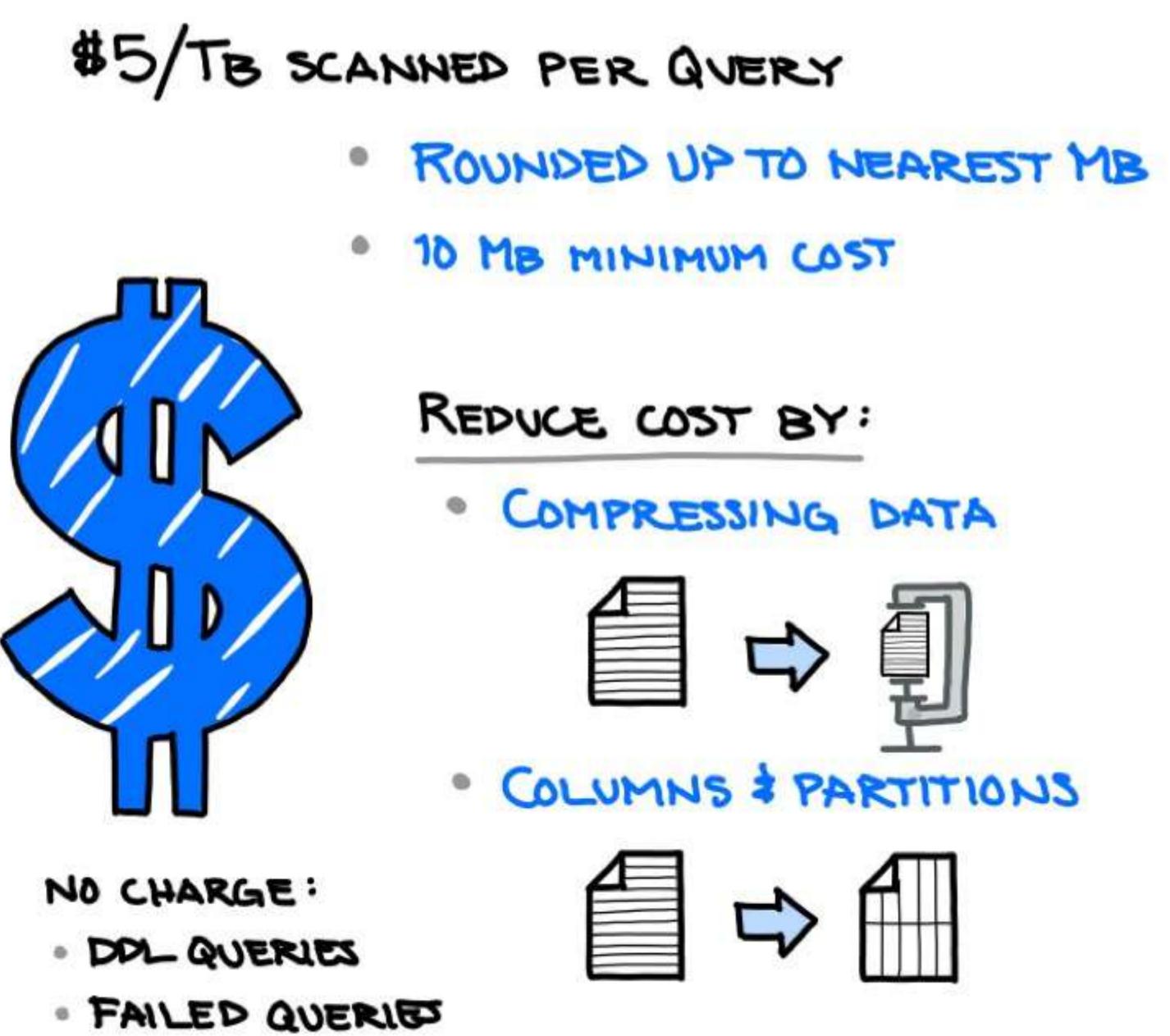
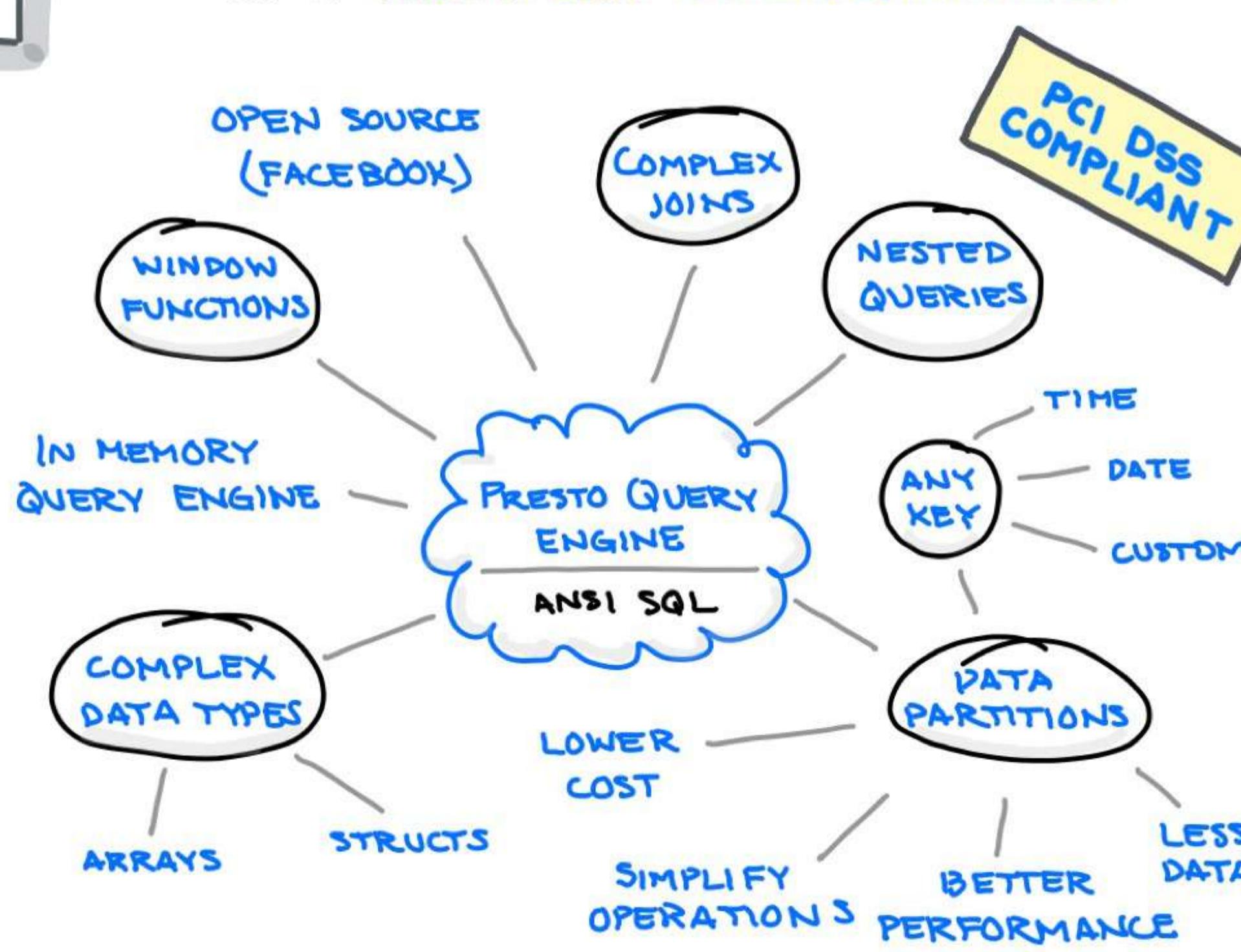
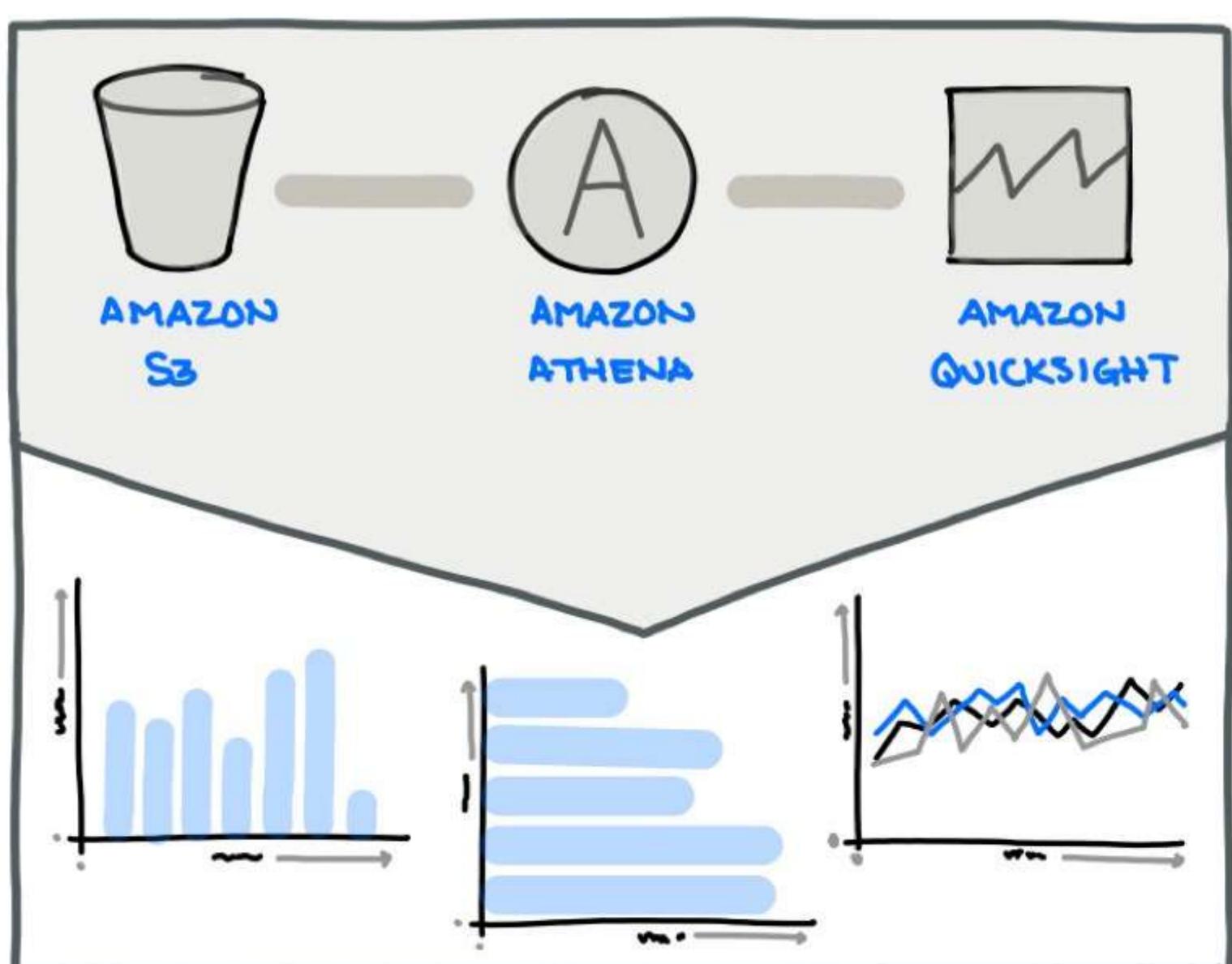
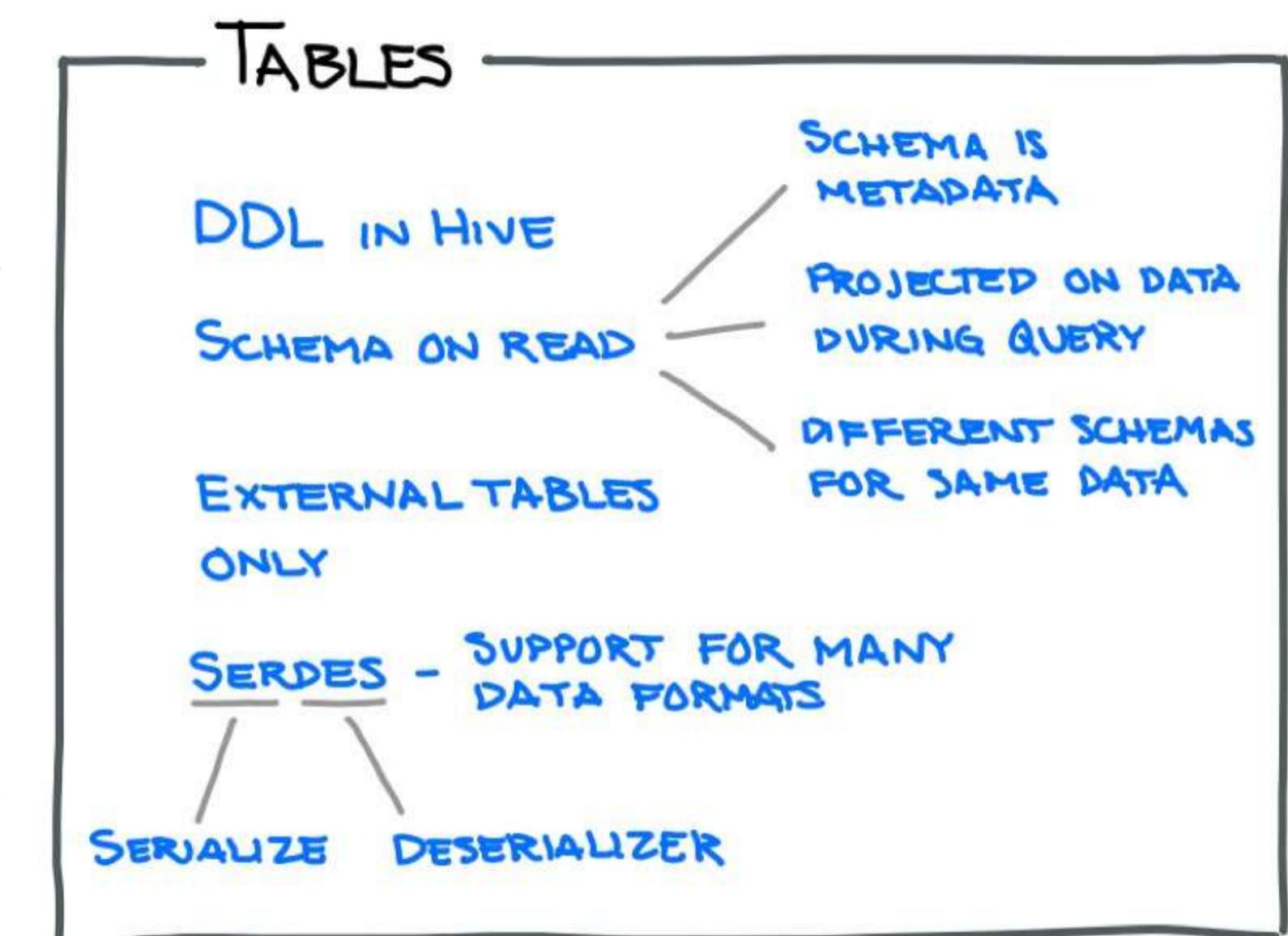


<b>SERVERLESS</b>	<b>HIGHLY AVAILABLE</b>
NO INFRA OR ADMIN	WARM COMPUTE POOLS
NO SPIN UP TIME	DATA IN S3
NO MAINTENANCE	MULTIPLE AZ
<b>CONVENIENT</b>	<b>PERFORMANT</b>
NO DATA LOADING	AUTO PARALLELIZATION
NATIVE DATA FORMATS	STREAMING RESULTS
NO ETL INVOLVED	COMPRESS / COLUMNAR

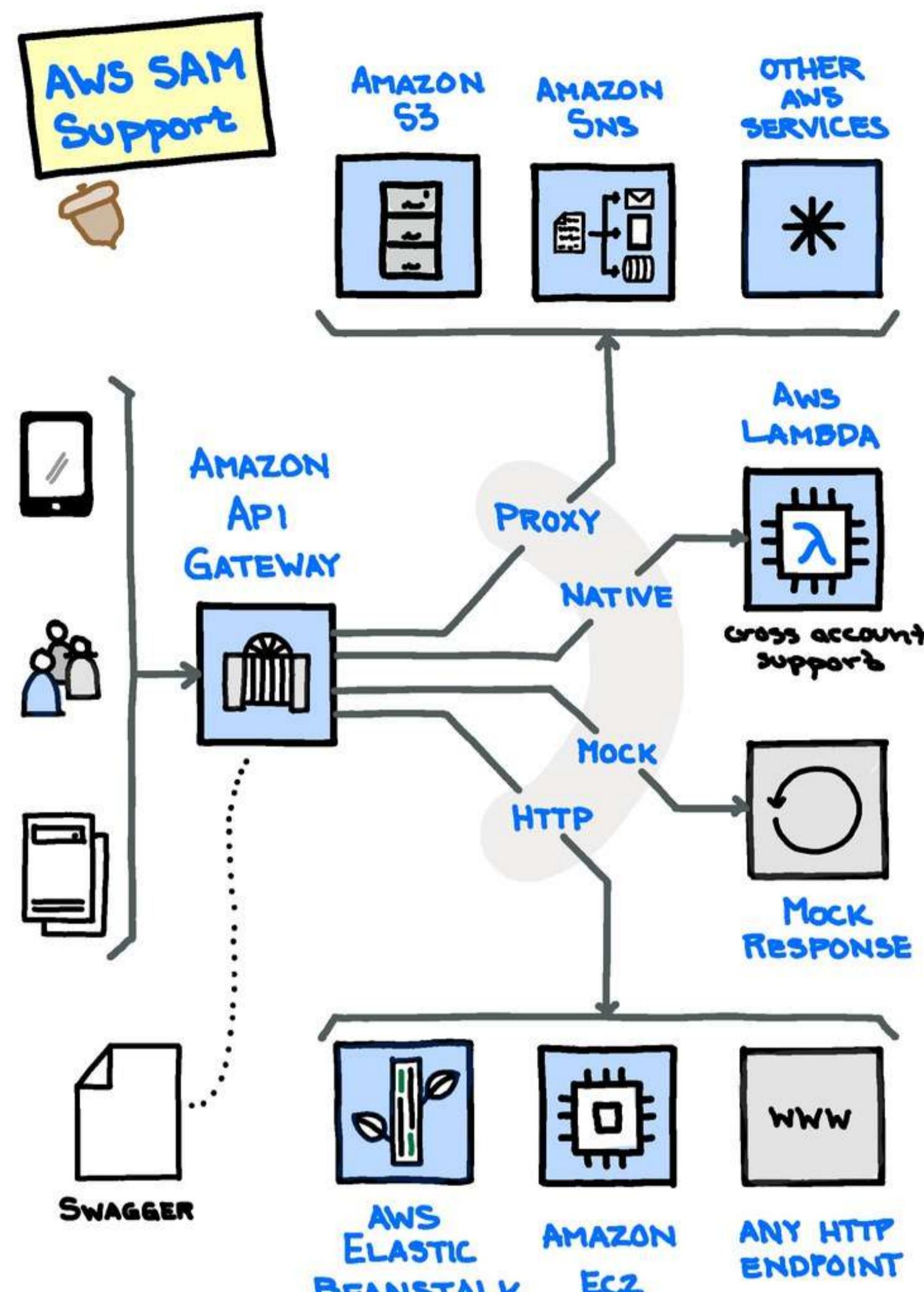
3/6/20 @awsgeek

# AMAZON athena

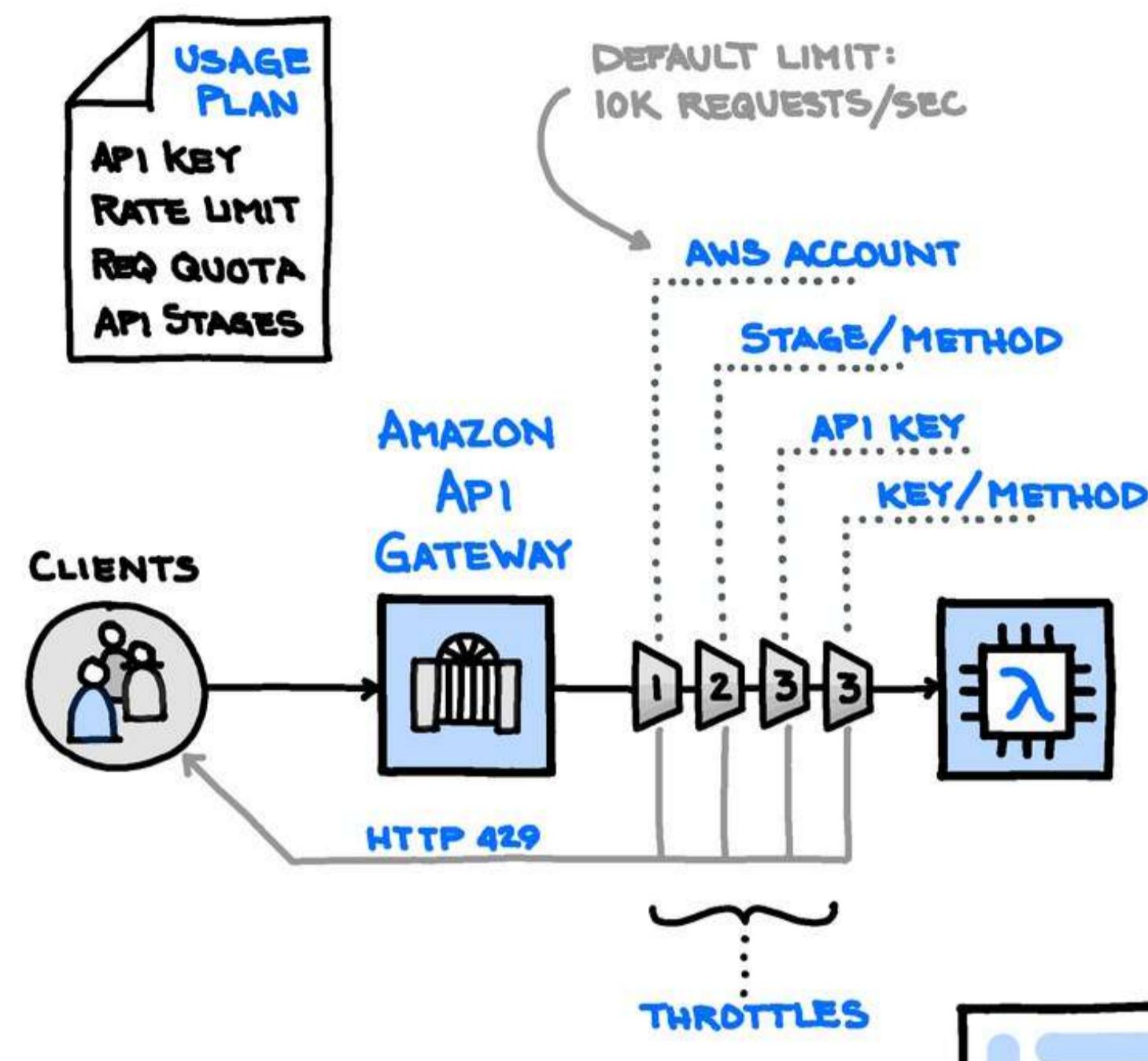
GOAL: MAKE IT EASY TO ANALYZE DATA IN S3



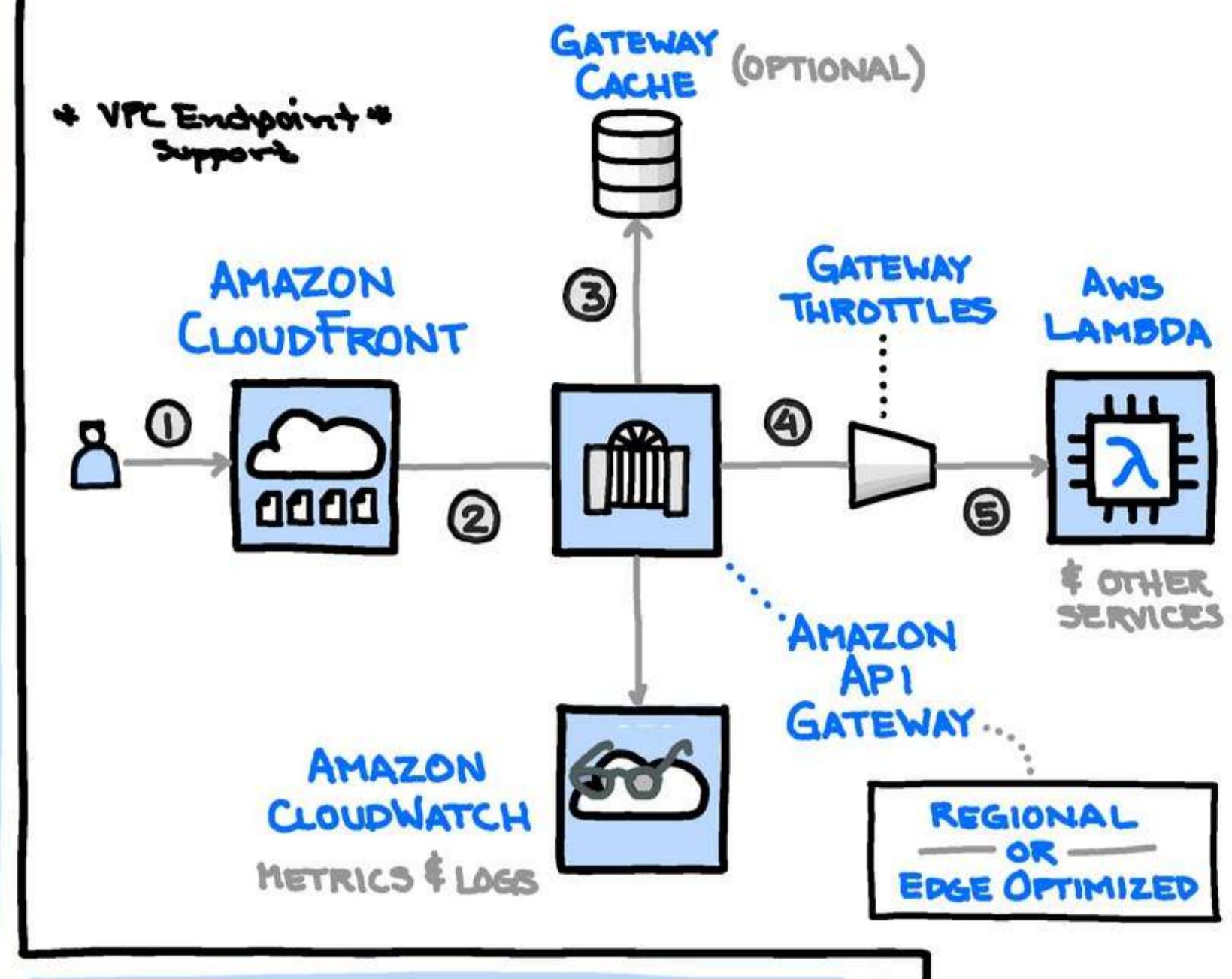
## THE INTEGRATIONS



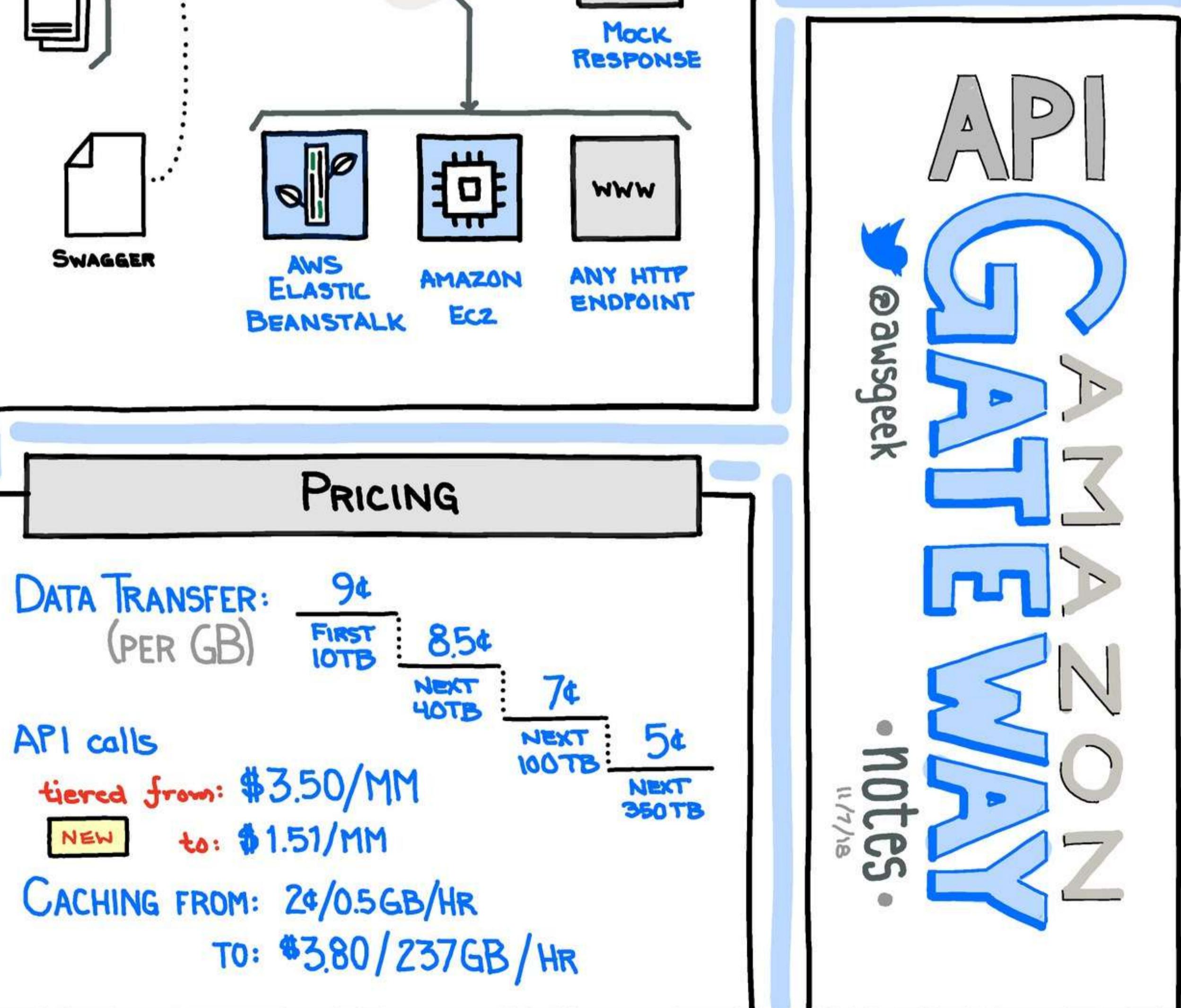
## THROTTLING

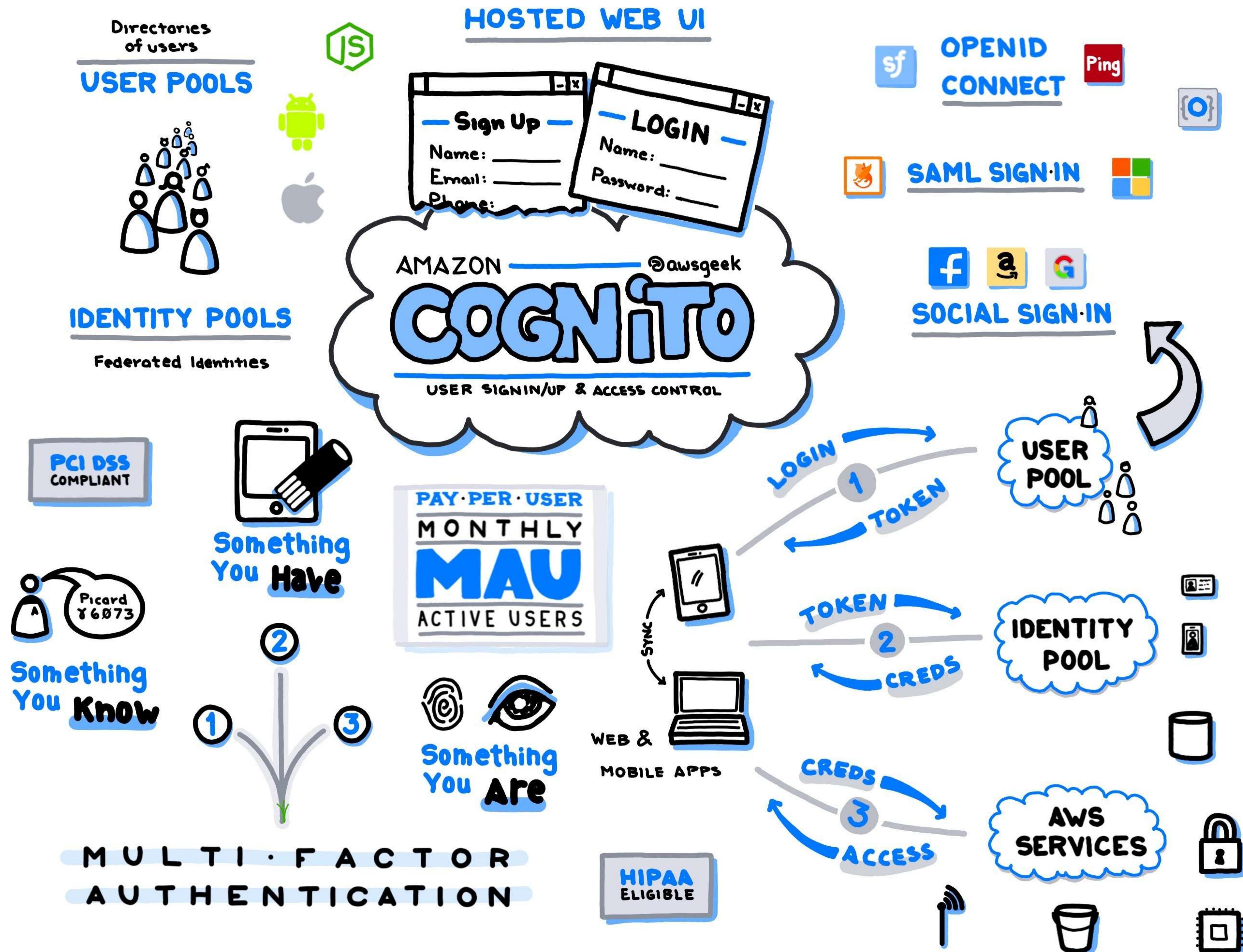


## UNDER THE HOOD



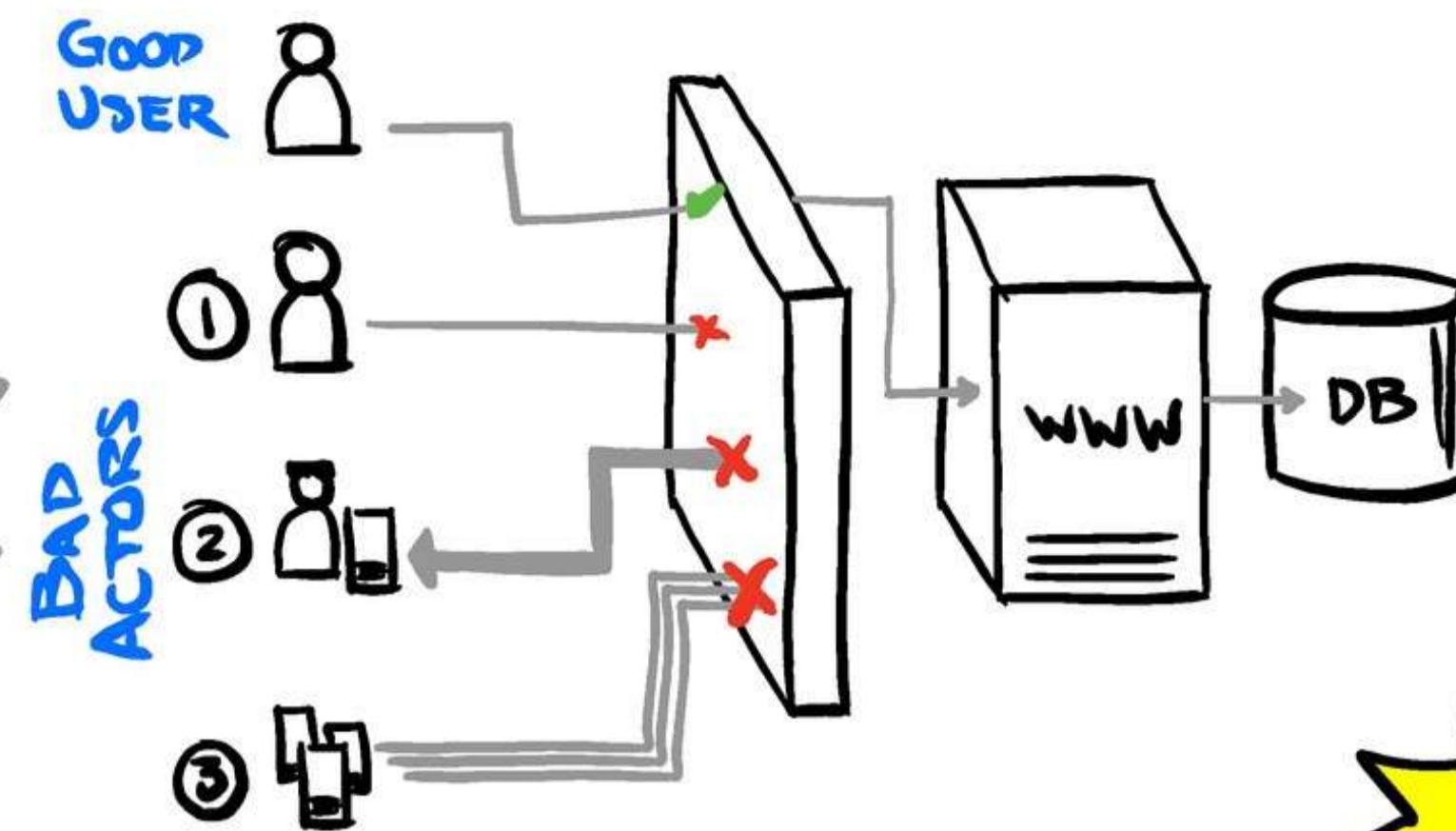
## EVOLUTION OF AN API



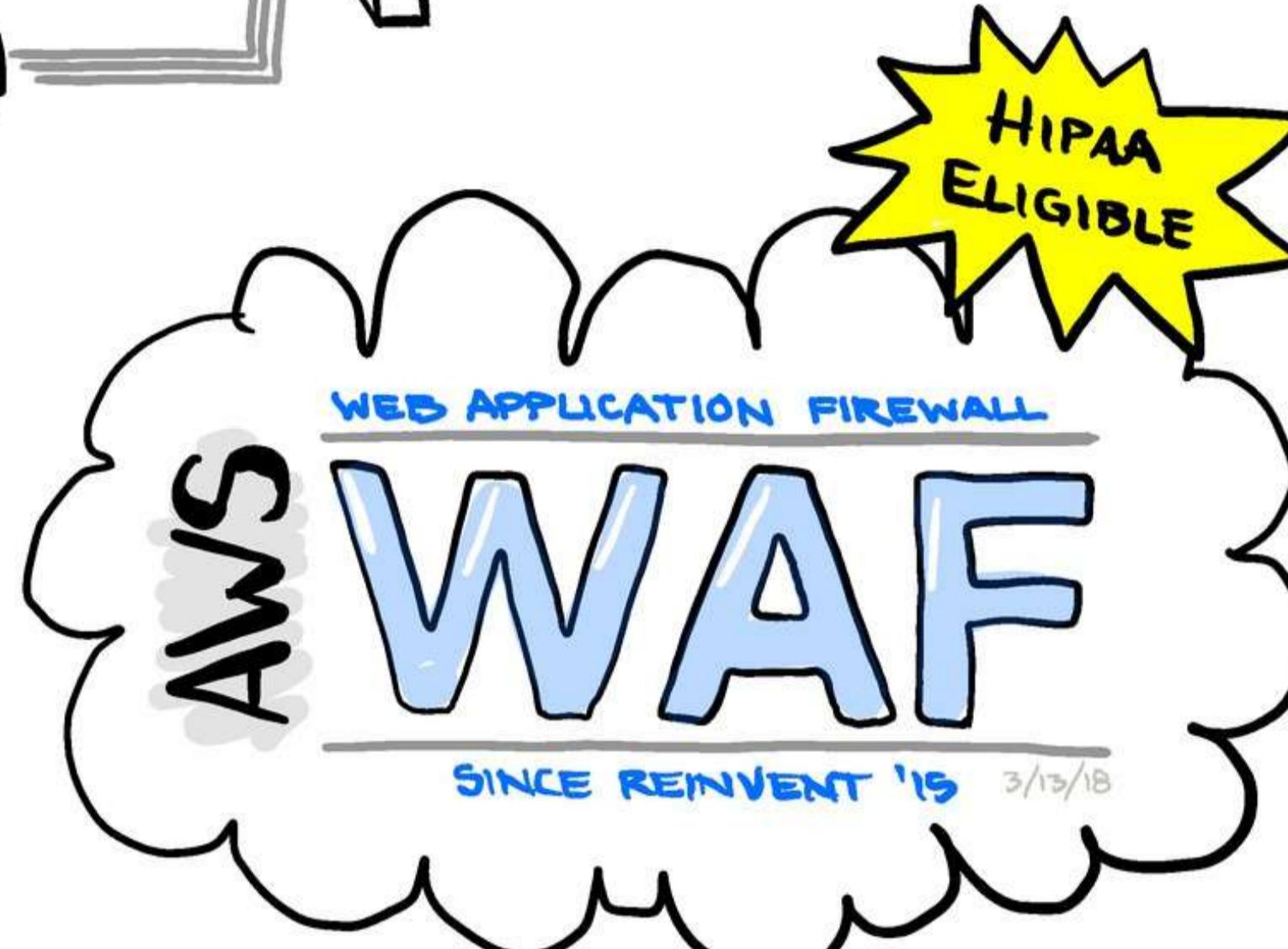
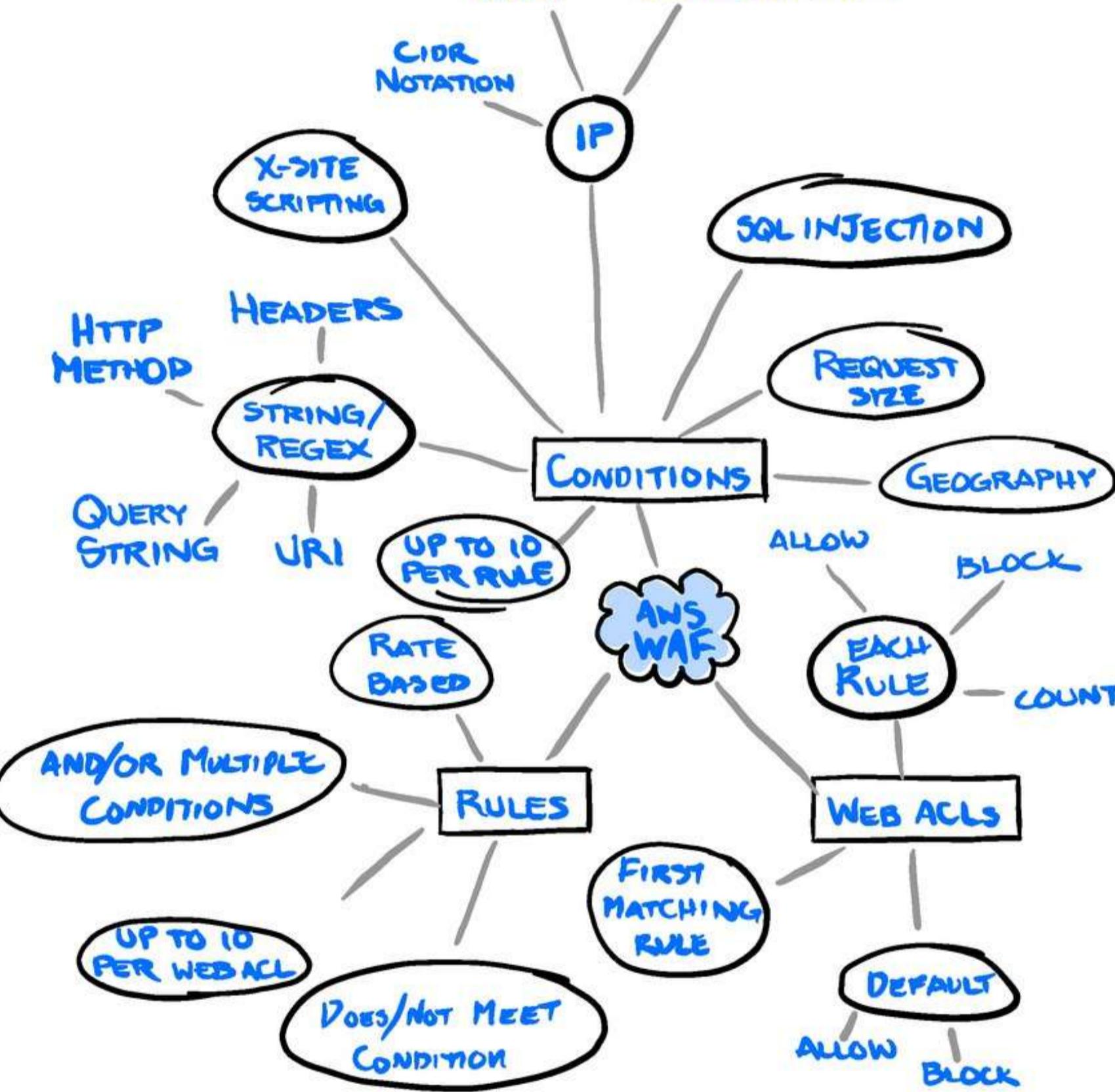


## COMMON WAF USE CASES

- PREVENT
  - ① MALICIOUS USERS
  - ② CONTENT ABUSE
  - ③ DDOS ATTACKS

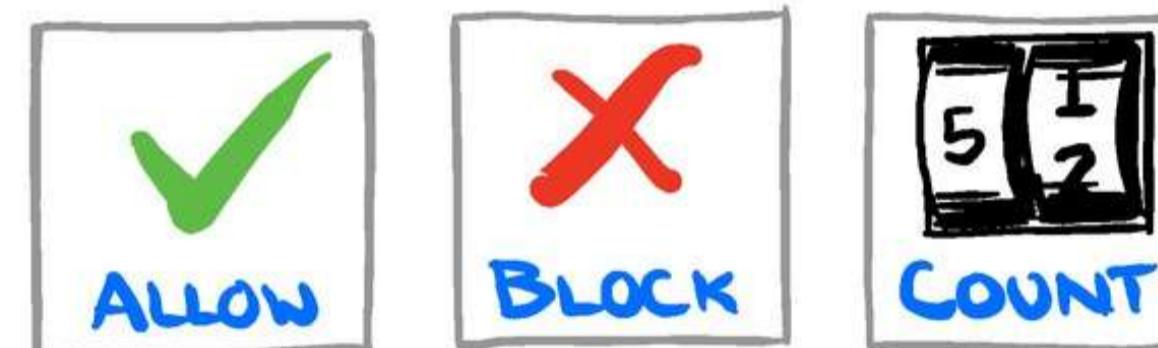


18,16,24,32 ONLY UPTO 10K PER CONDITION



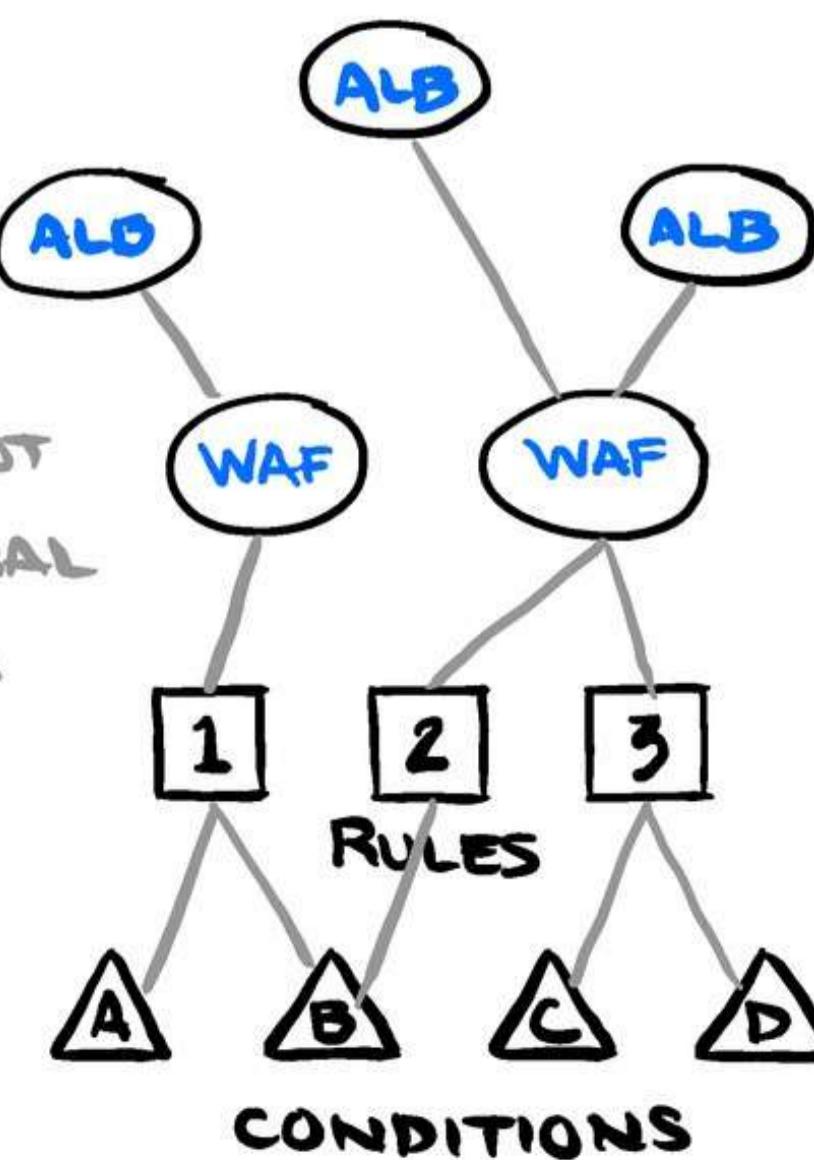
@awsgeek

jerry.hargrove@



\* ACL, RULE, CONDITION ARE EITHER GLOBAL OR REGION SPECIFIC

\* REGIONAL MAY NOT BE USED BY GLOBAL AND VISA-VERSA



## PRECONFIGURED PROTECTIONS

- BAD BOT/SCRAPER
- SQL INJECTION
- CROSS-SITE SCRIPTING
- HTTP FLOOD, SCANNER, PROBE
- IP WHITE/BLACK LIST
- KNOWN ATTACKER

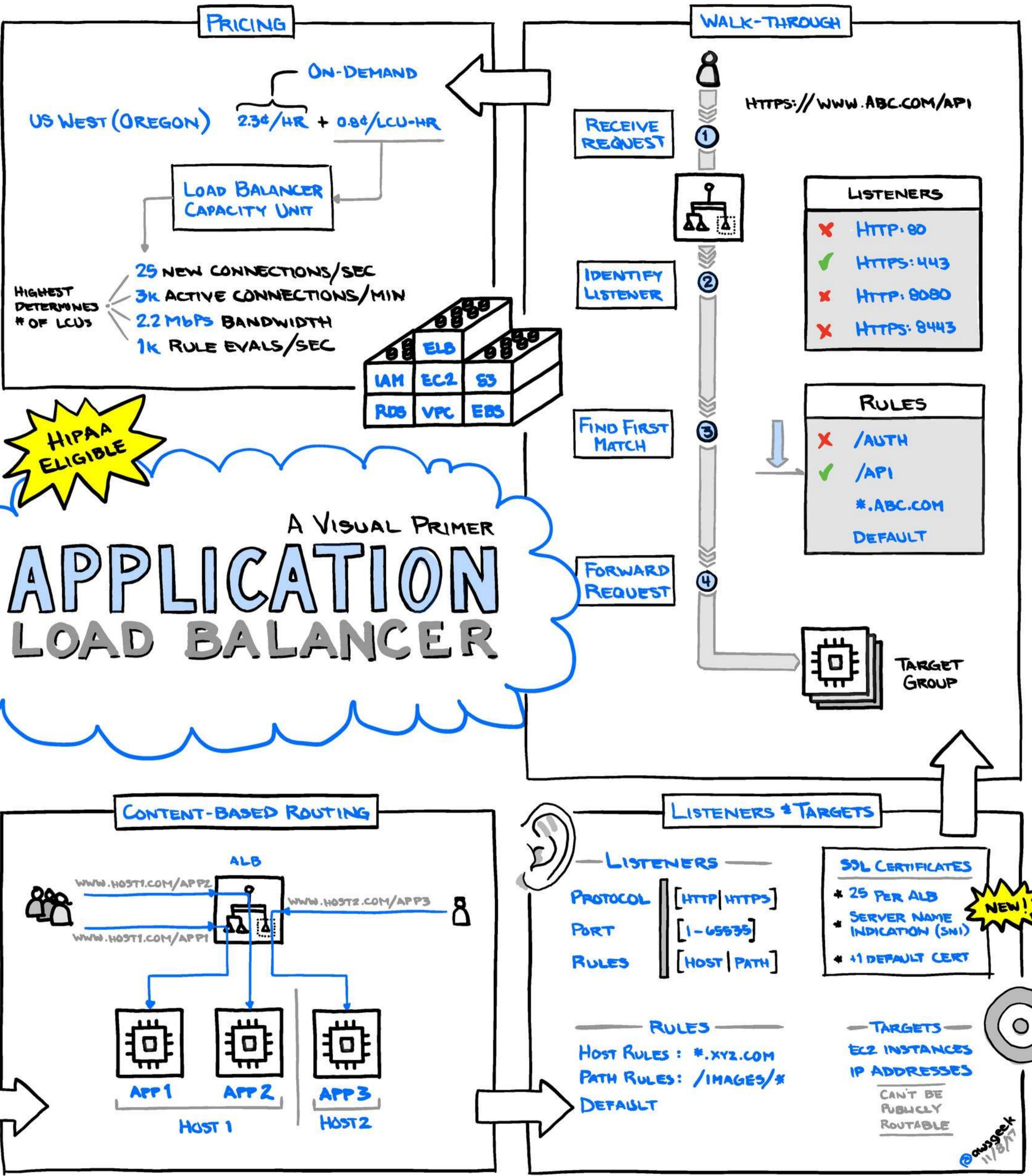
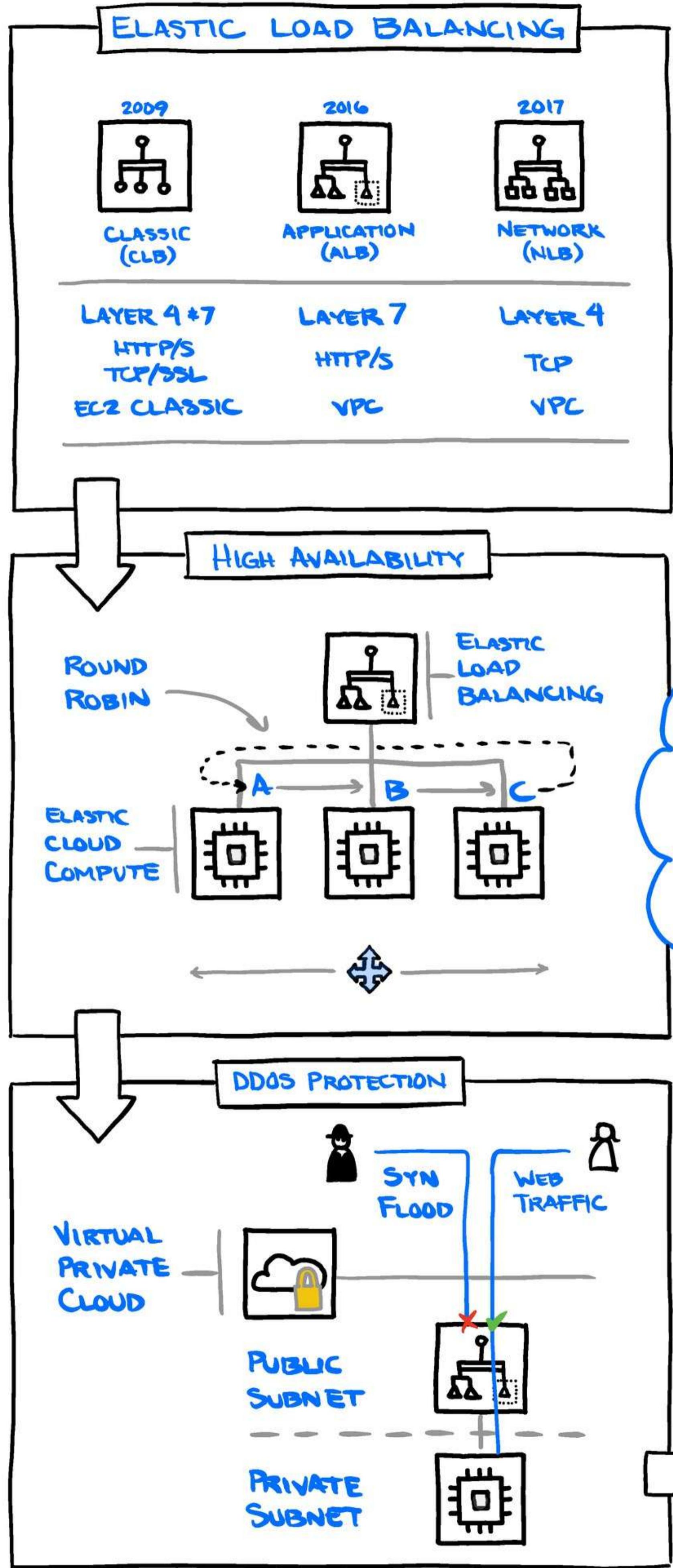
VIA CLOUDFORMATION  
NEW OR EXISTING WAF

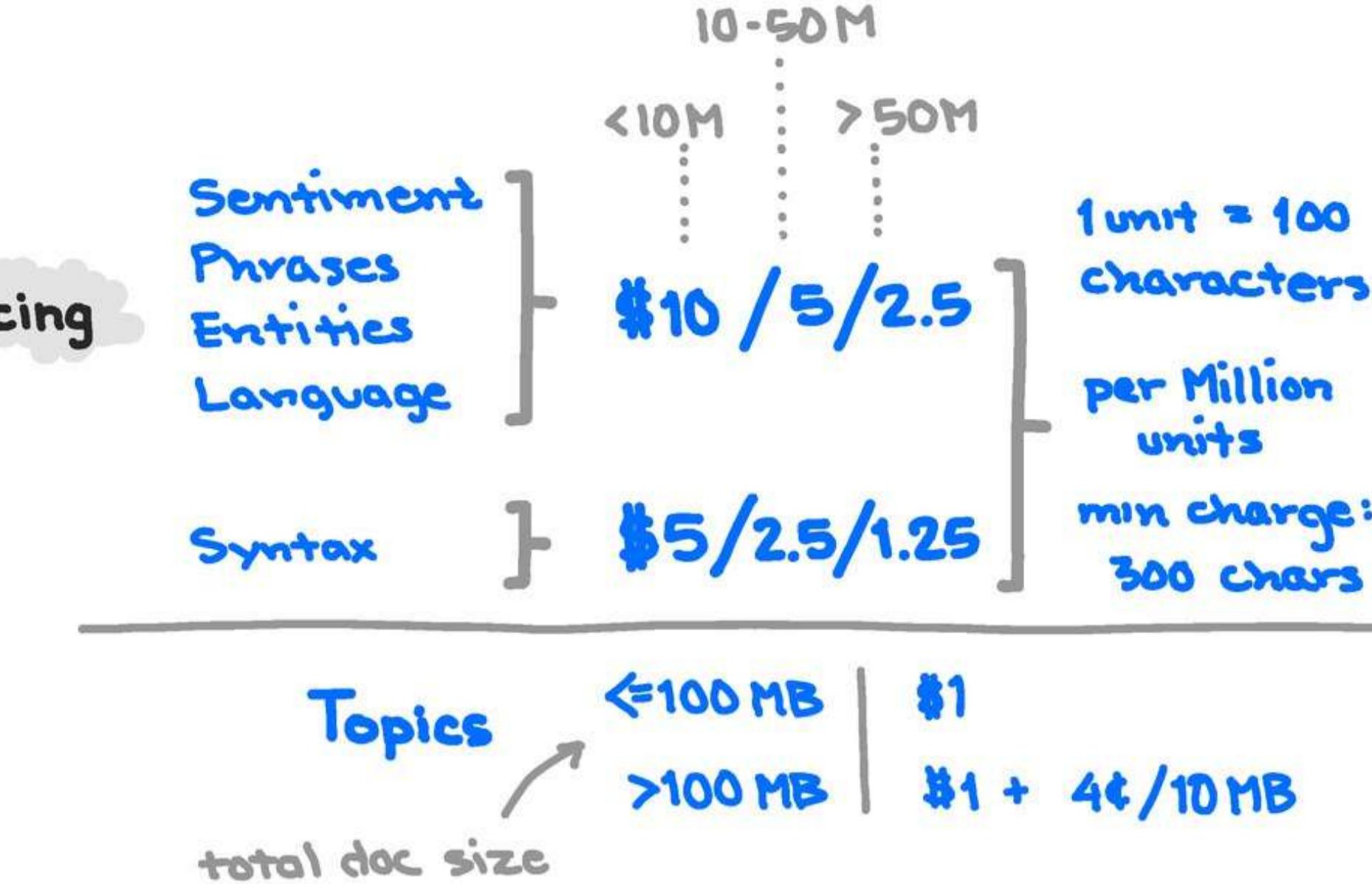
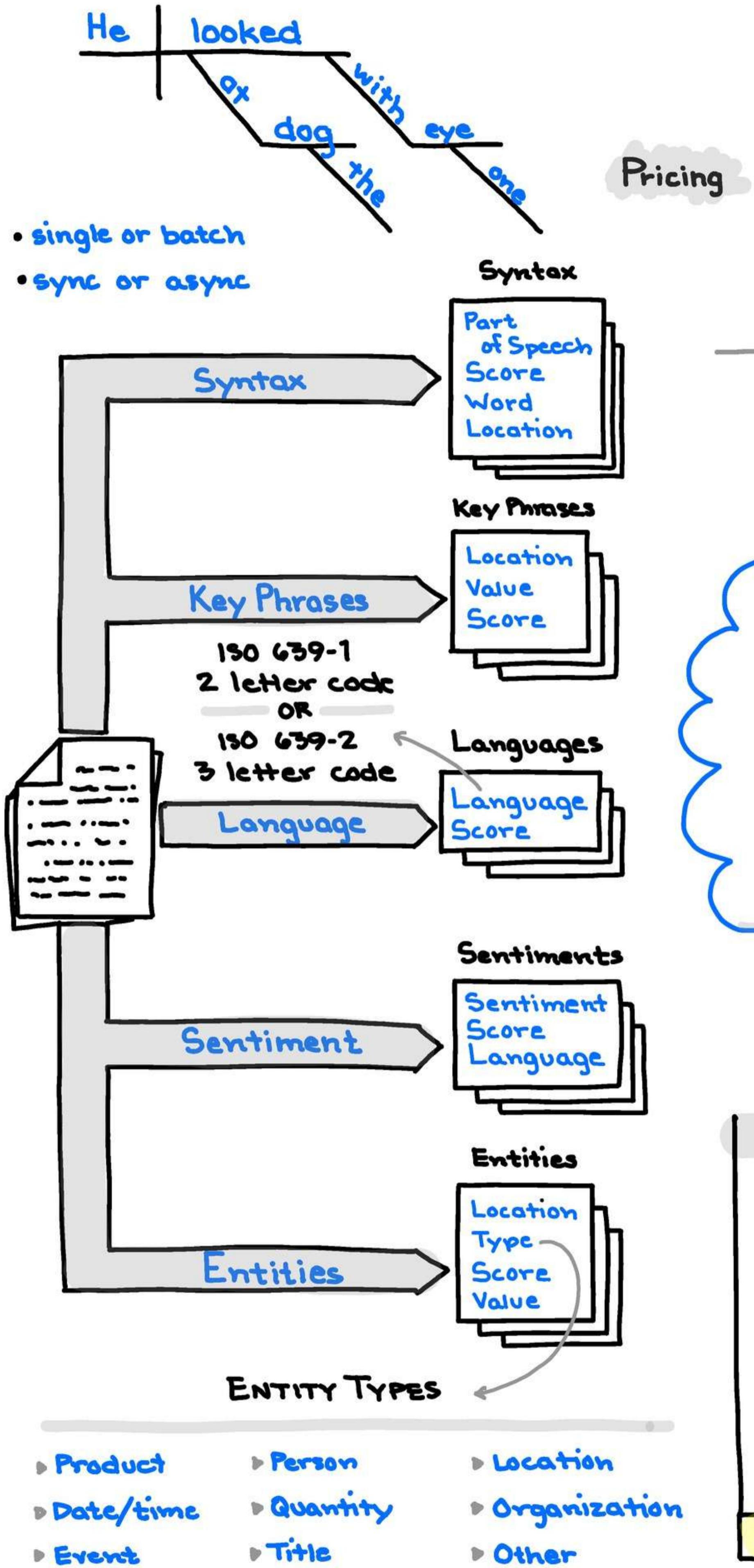


\$5/WEB ACL/Mo  
\$1/RULE/WEBACL/Mo  
60¢/MM REQUESTS

FOLLOW:  
Aws SECURITY BLOG





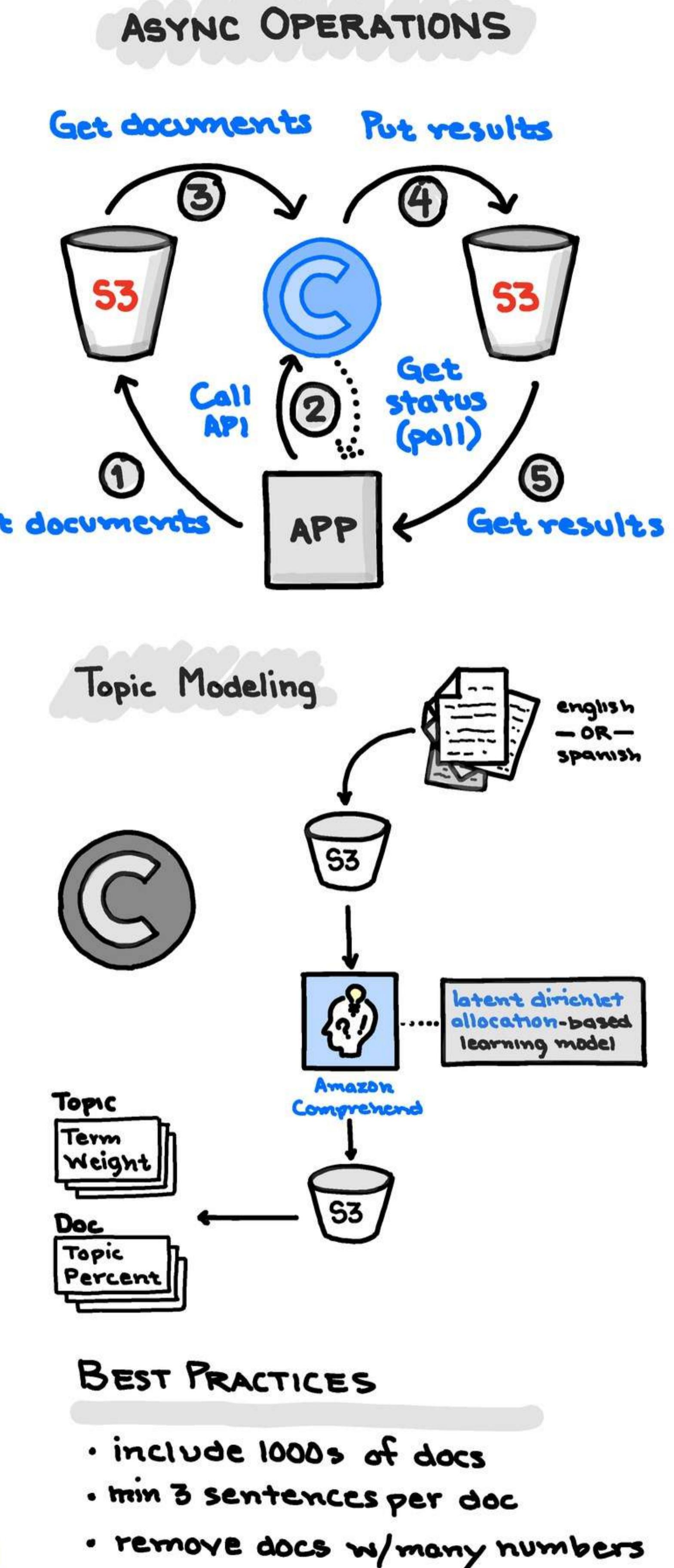


## DATA PRIVACY

### Your Comprehend data:

- may be used by Amazon for training
- may be accessed by Amazon employees
- may be moved to other regions

**you must opt out to stop**



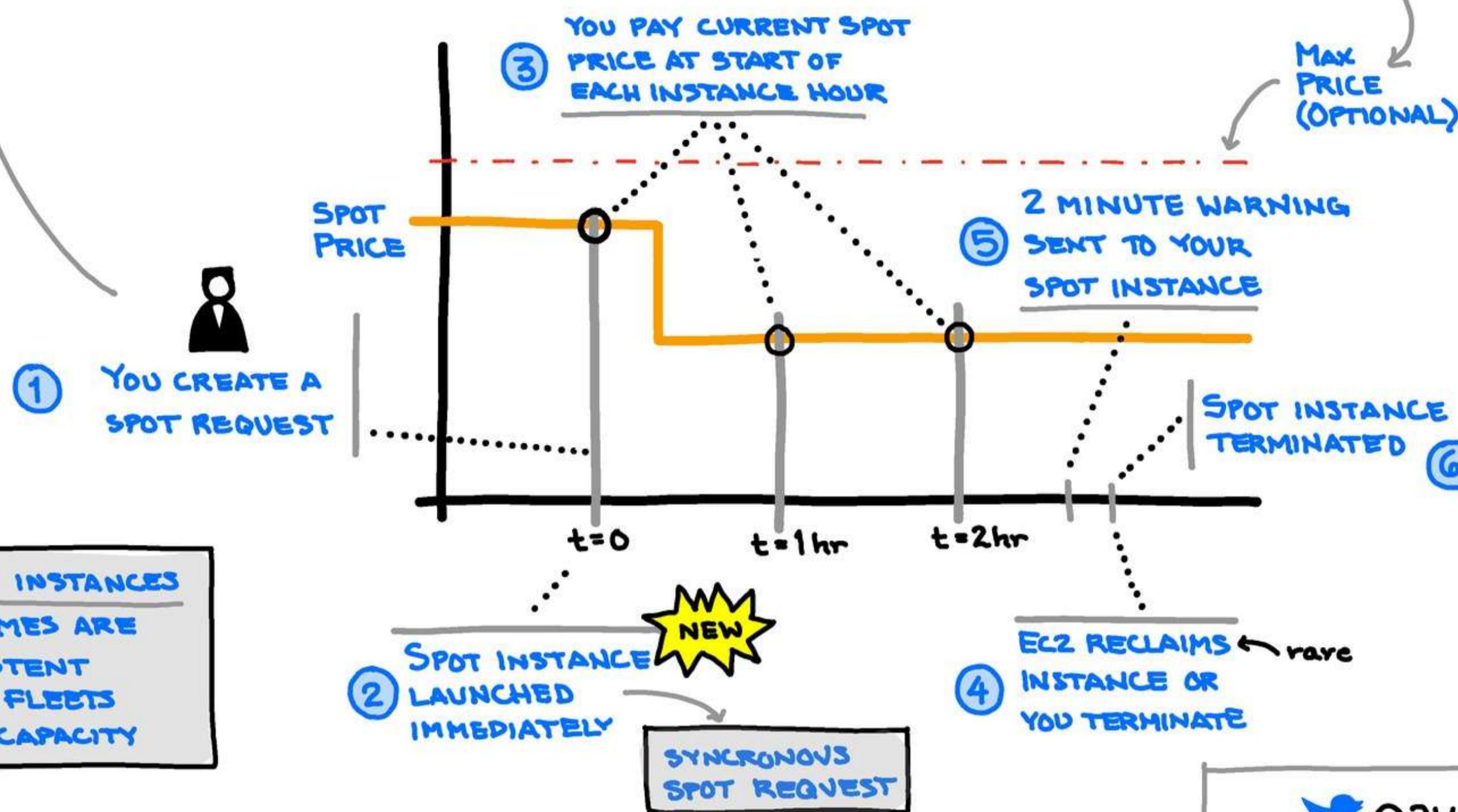
**SPOT REQUEST**

- INSTANCE TYPE
- INSTANCES COUNT
- MAXIMUM PRICE
- AVAILABILITY ZONE

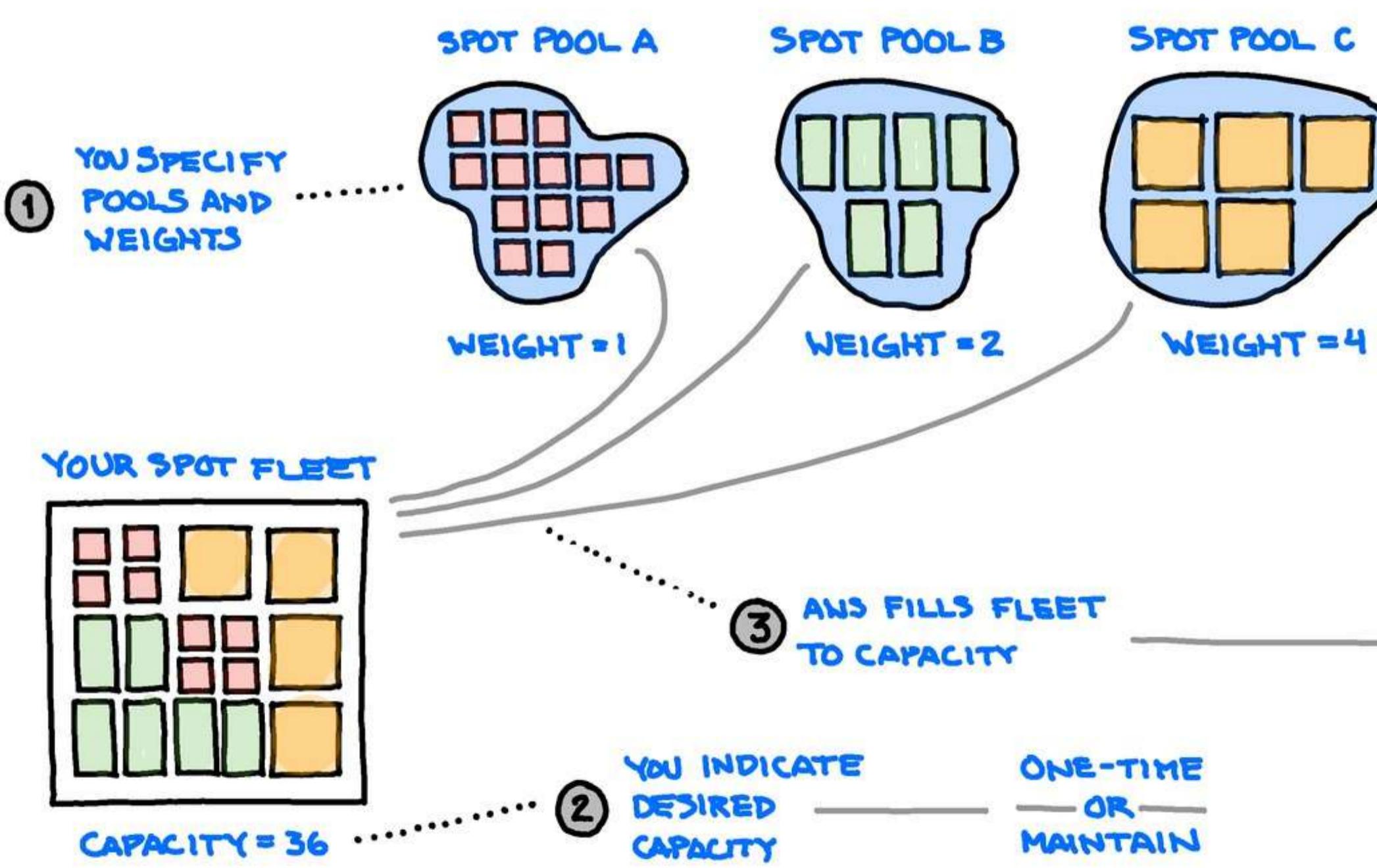
**SPOT POOL**

SAME INSTANCE TYPE  
SAME AVAILABILITY ZONE  
SAME OPERATING SYSTEM

BEHAVES LIKE  
OLD 'BID PRICE'

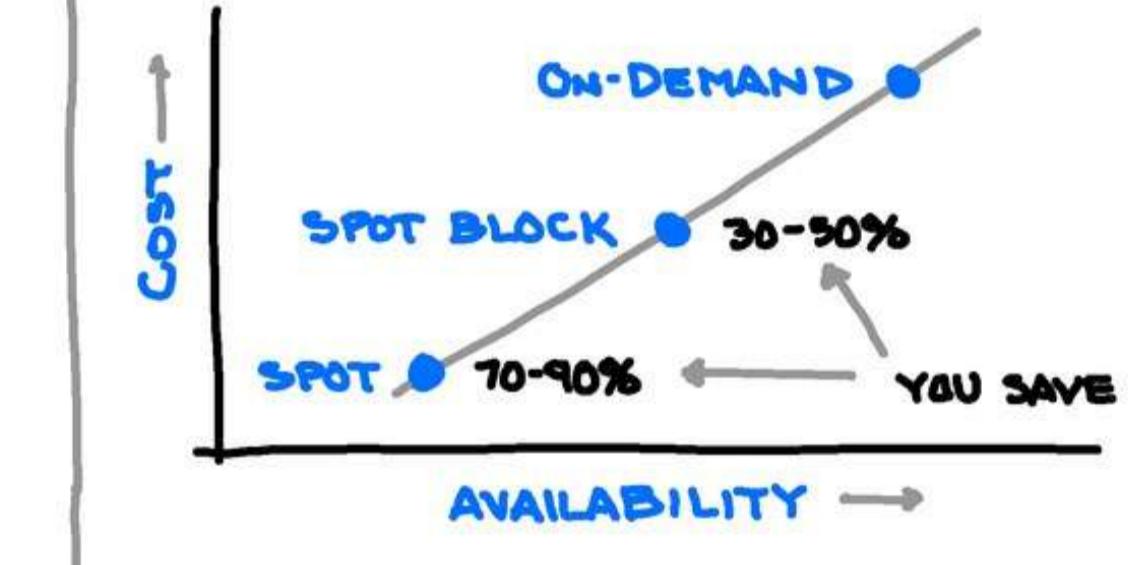
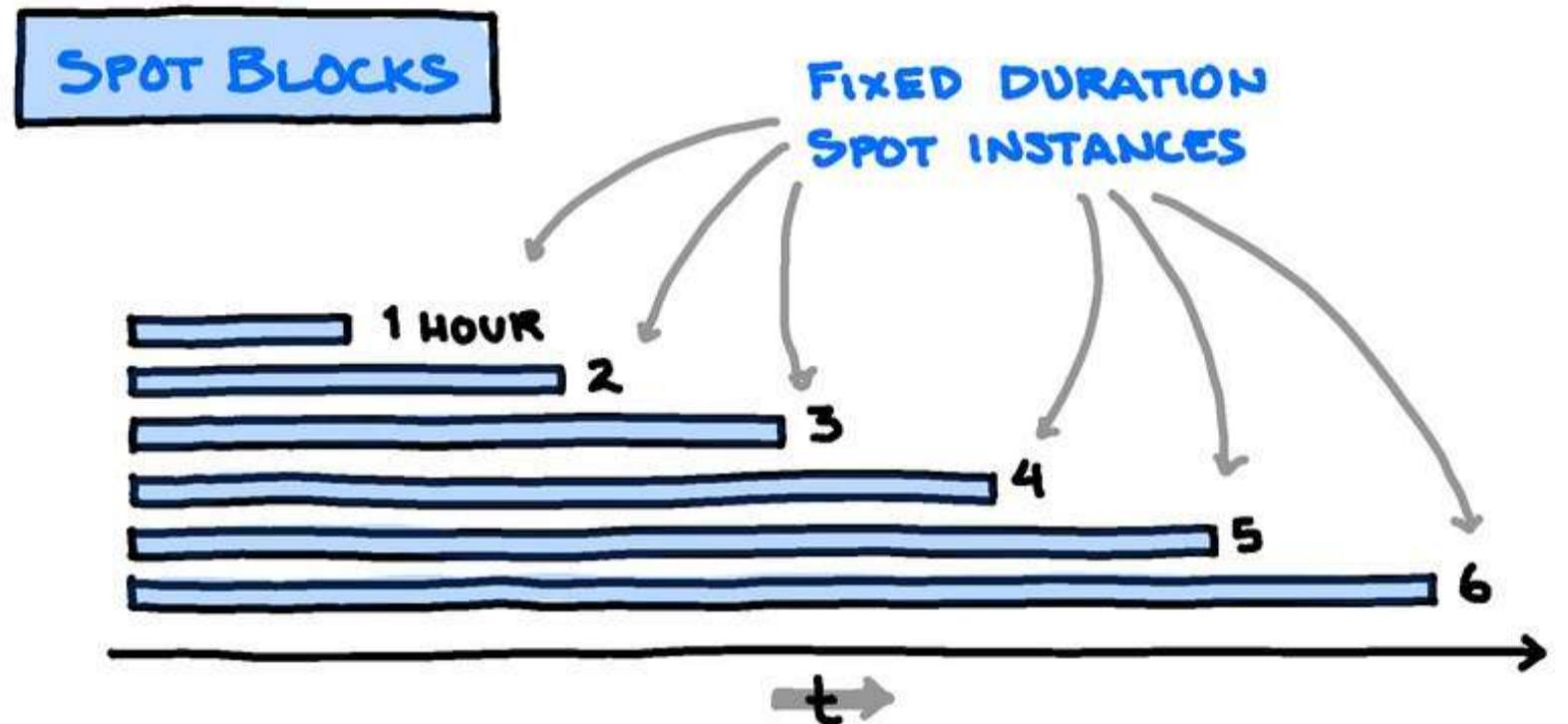
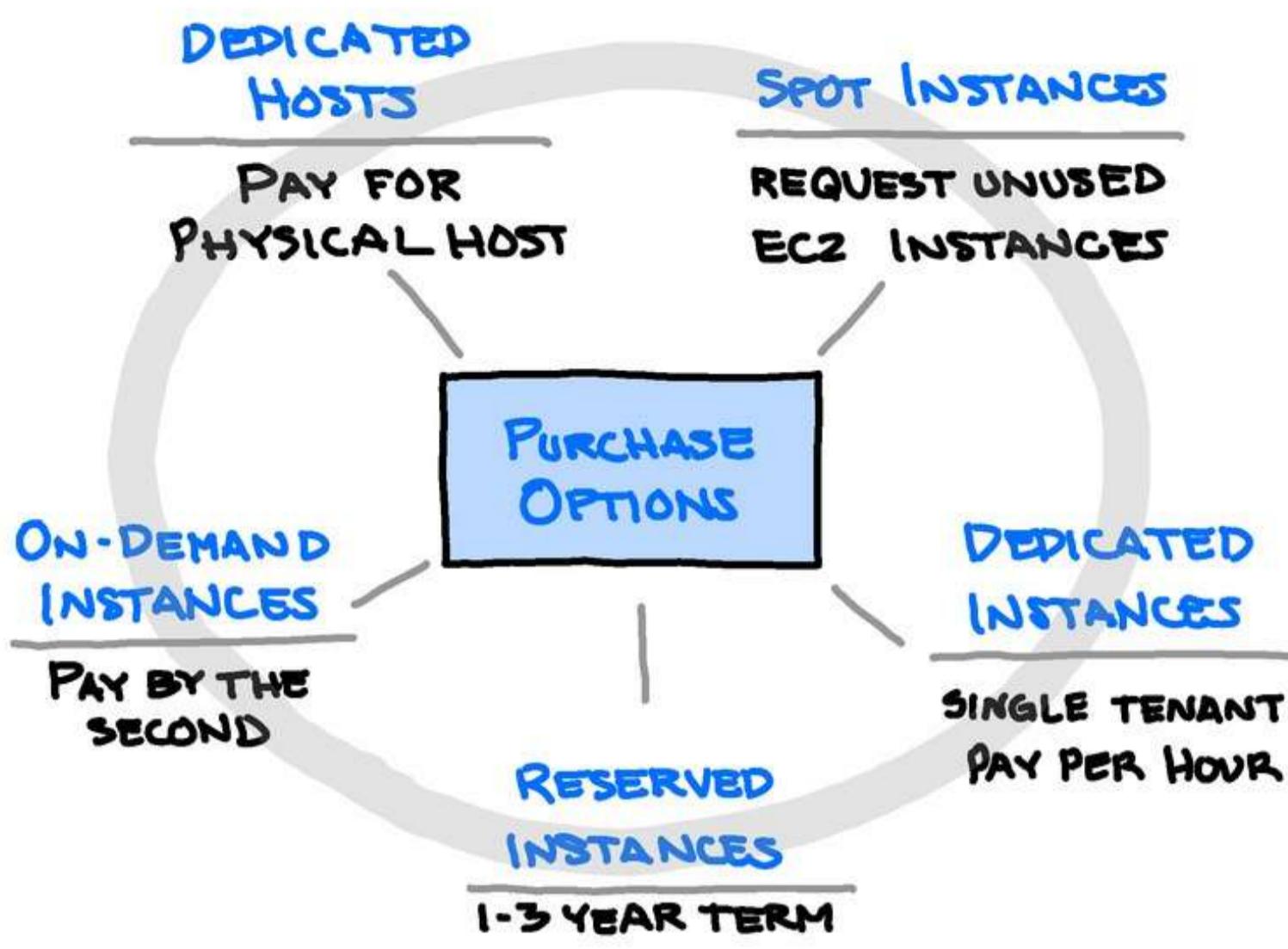


**NEW**  
HIBERNATE SPOT INSTANCES  
RAM & EBS VOLUMES ARE  
SAVED FOR PERSISTENT  
REQUESTS & SPOT FLEETS  
SET TO MAINTAIN CAPACITY



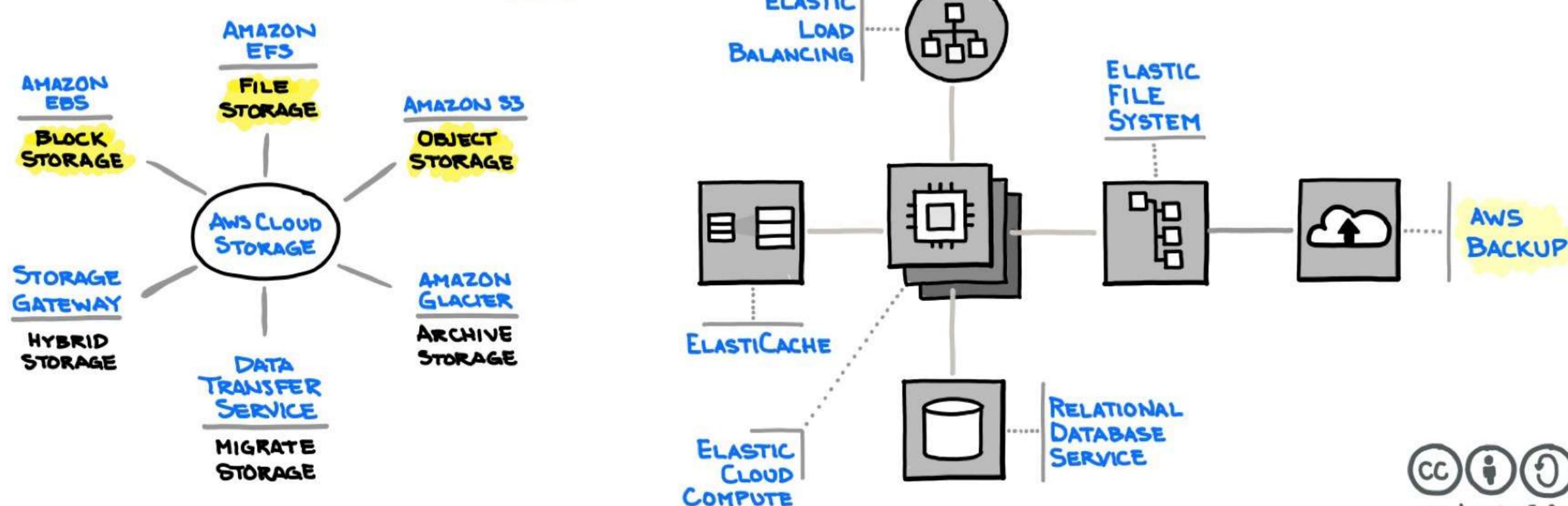
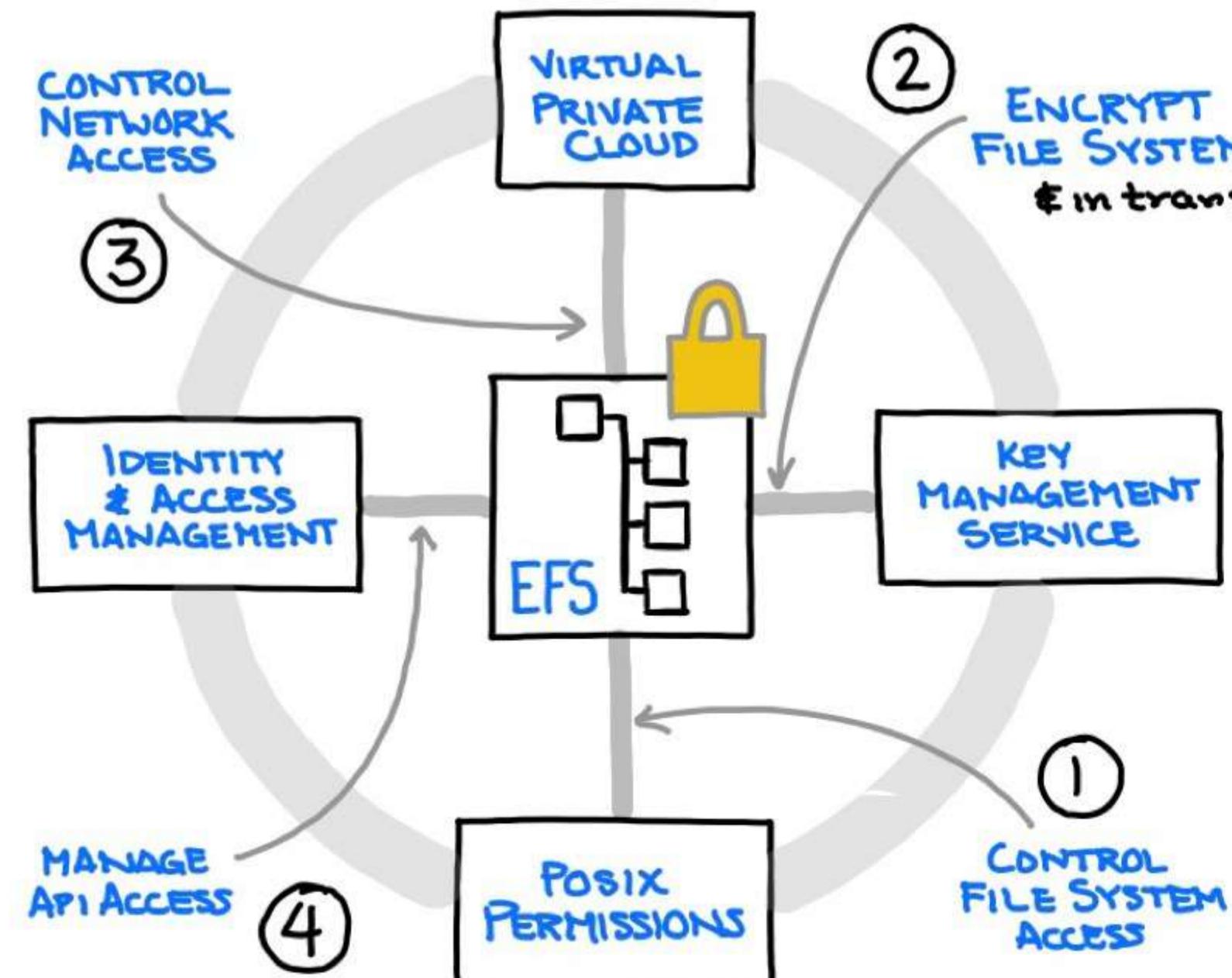
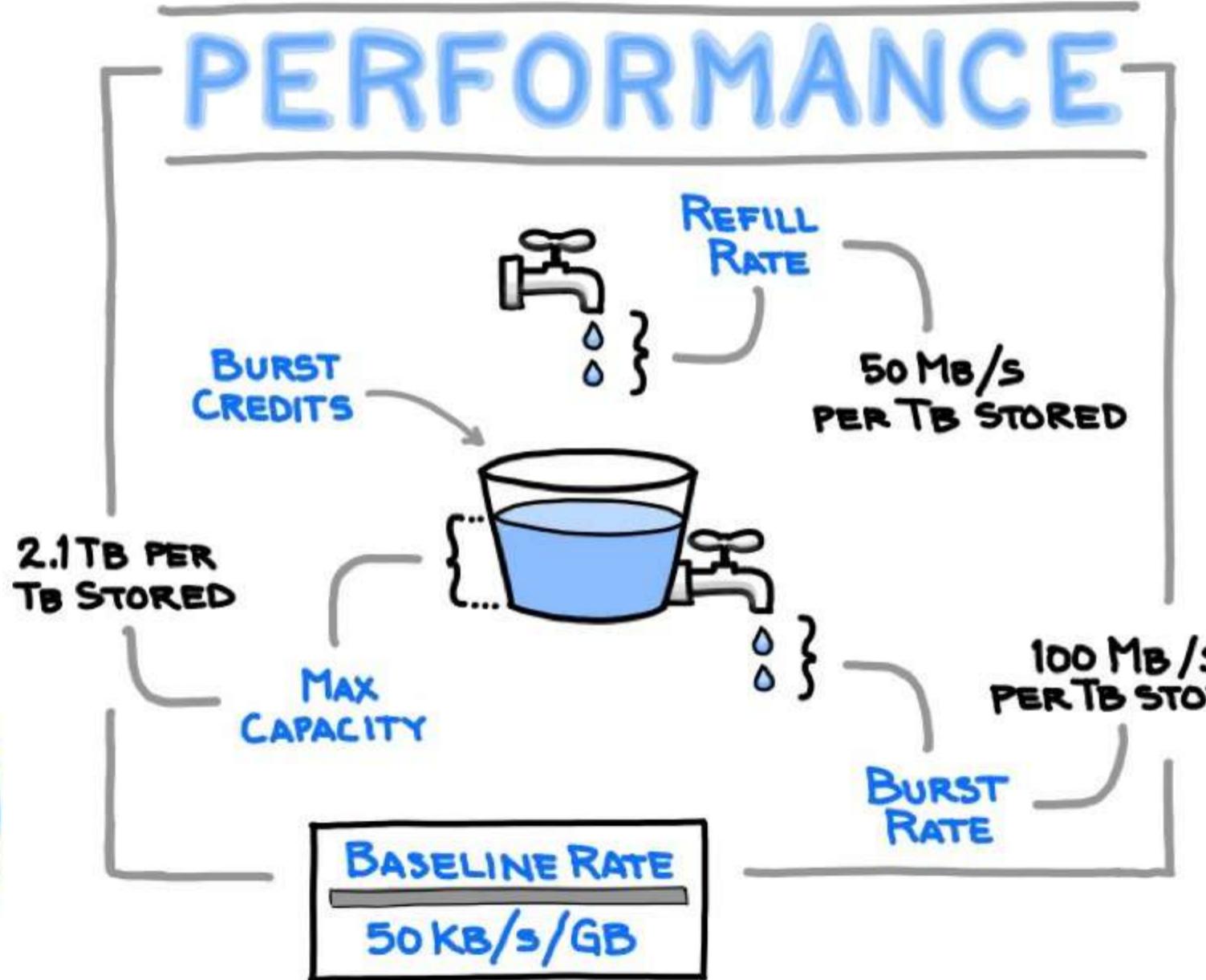
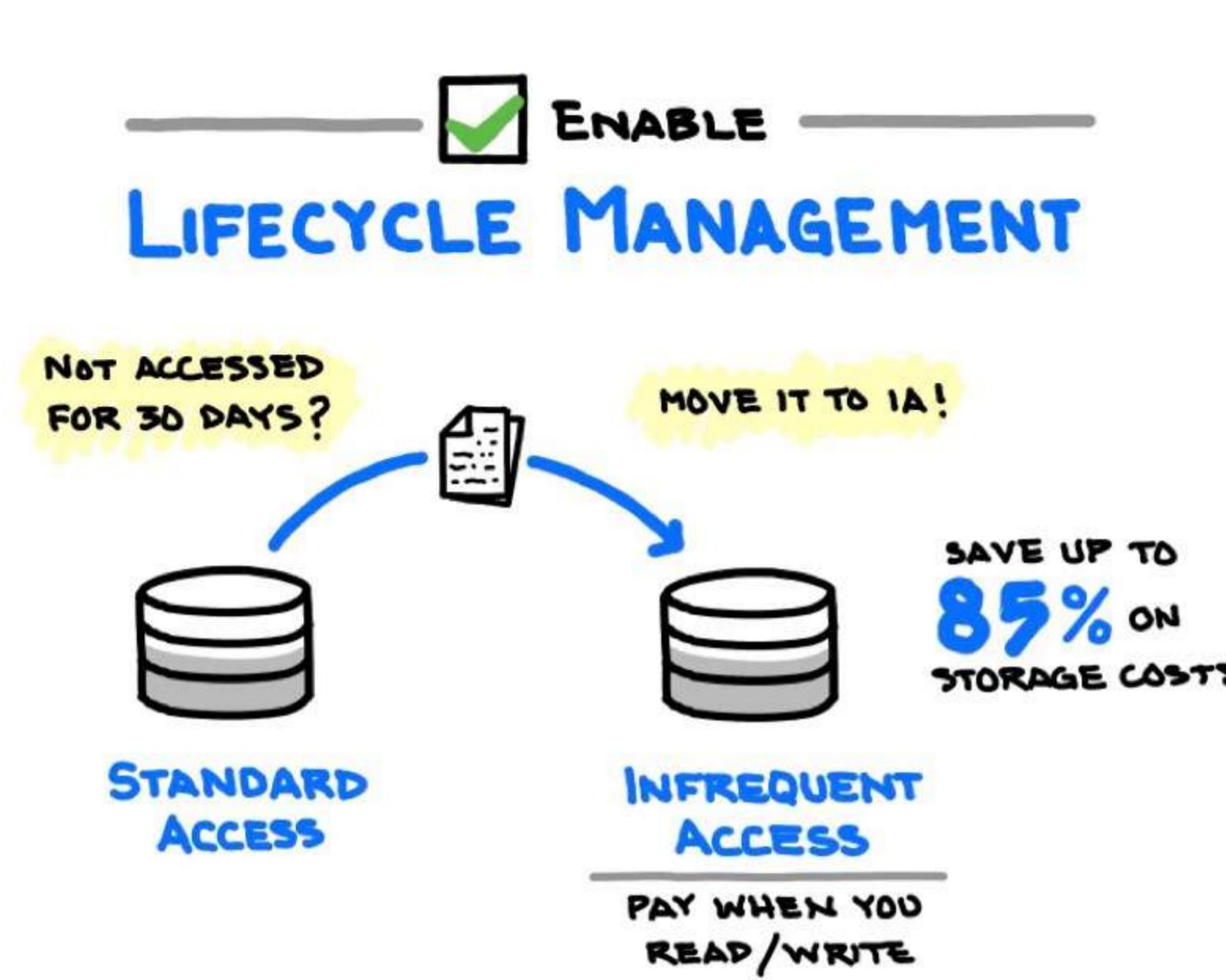
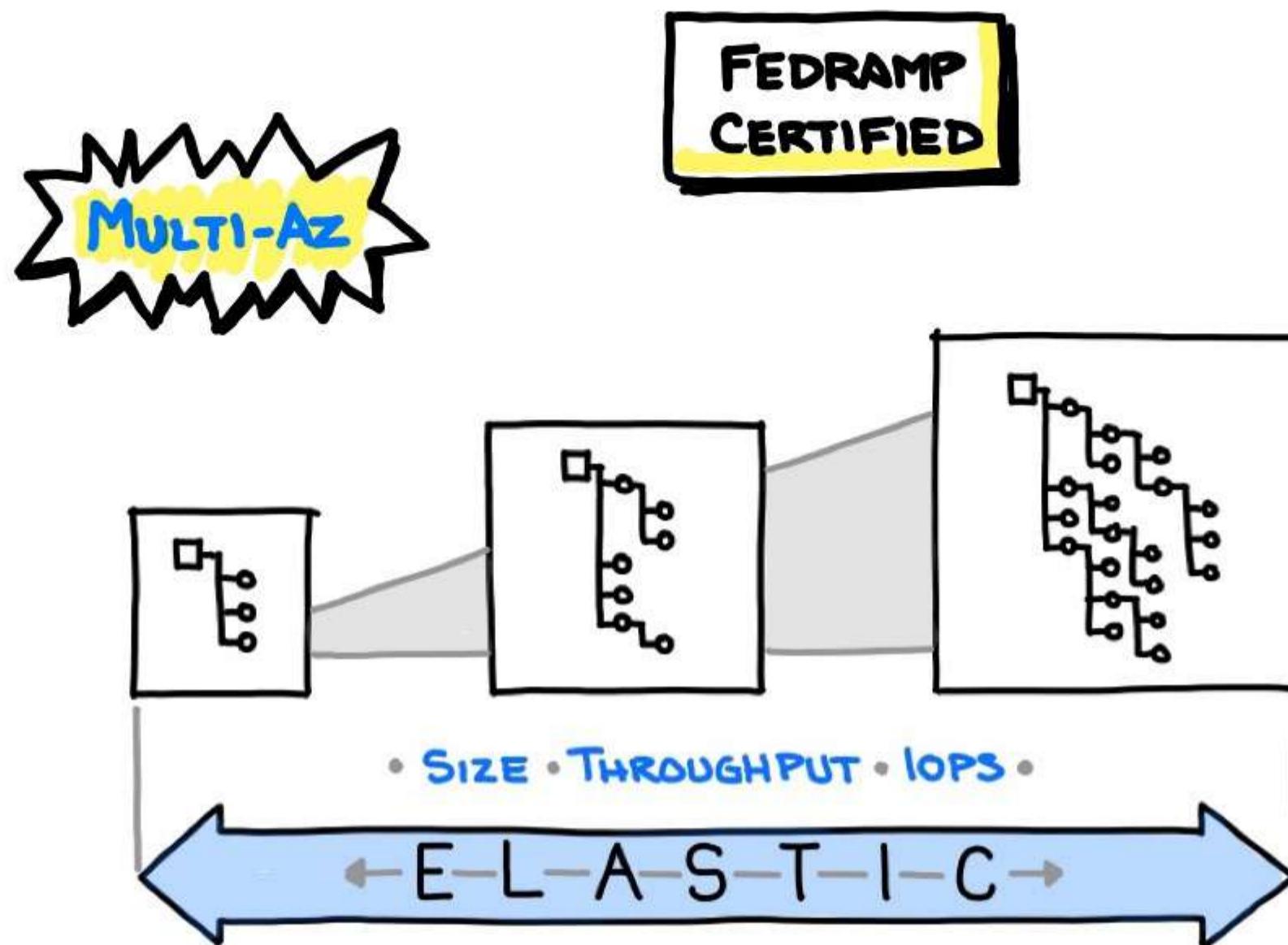
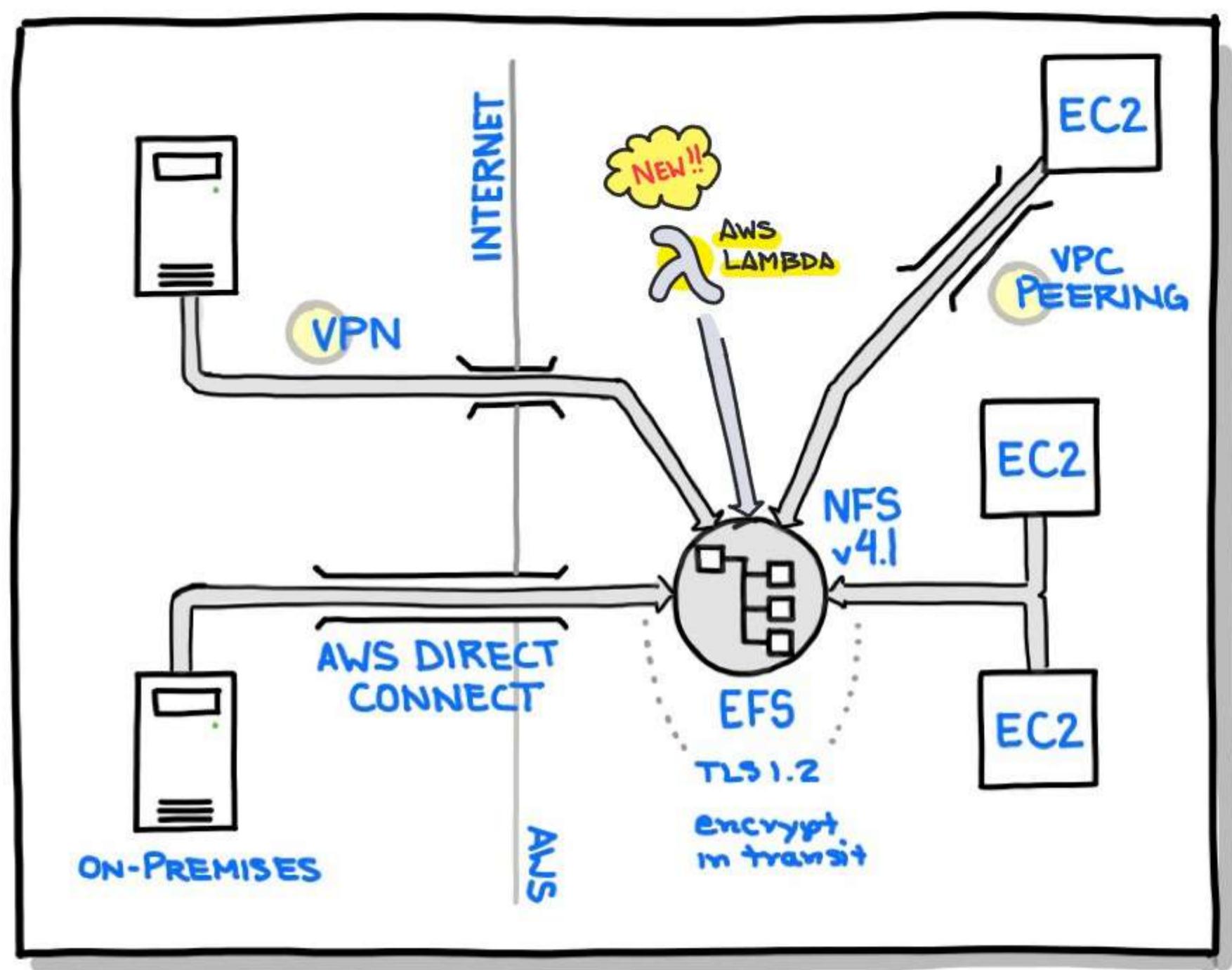
**ALLOCATION STRATEGY**

USE CHEAPEST POOL  
— OR —  
EQUALLY DISTRIBUTE



# AMAZON **Ec2** **SPOT** **INSTANCES**

11/29/17



# TIMELINE

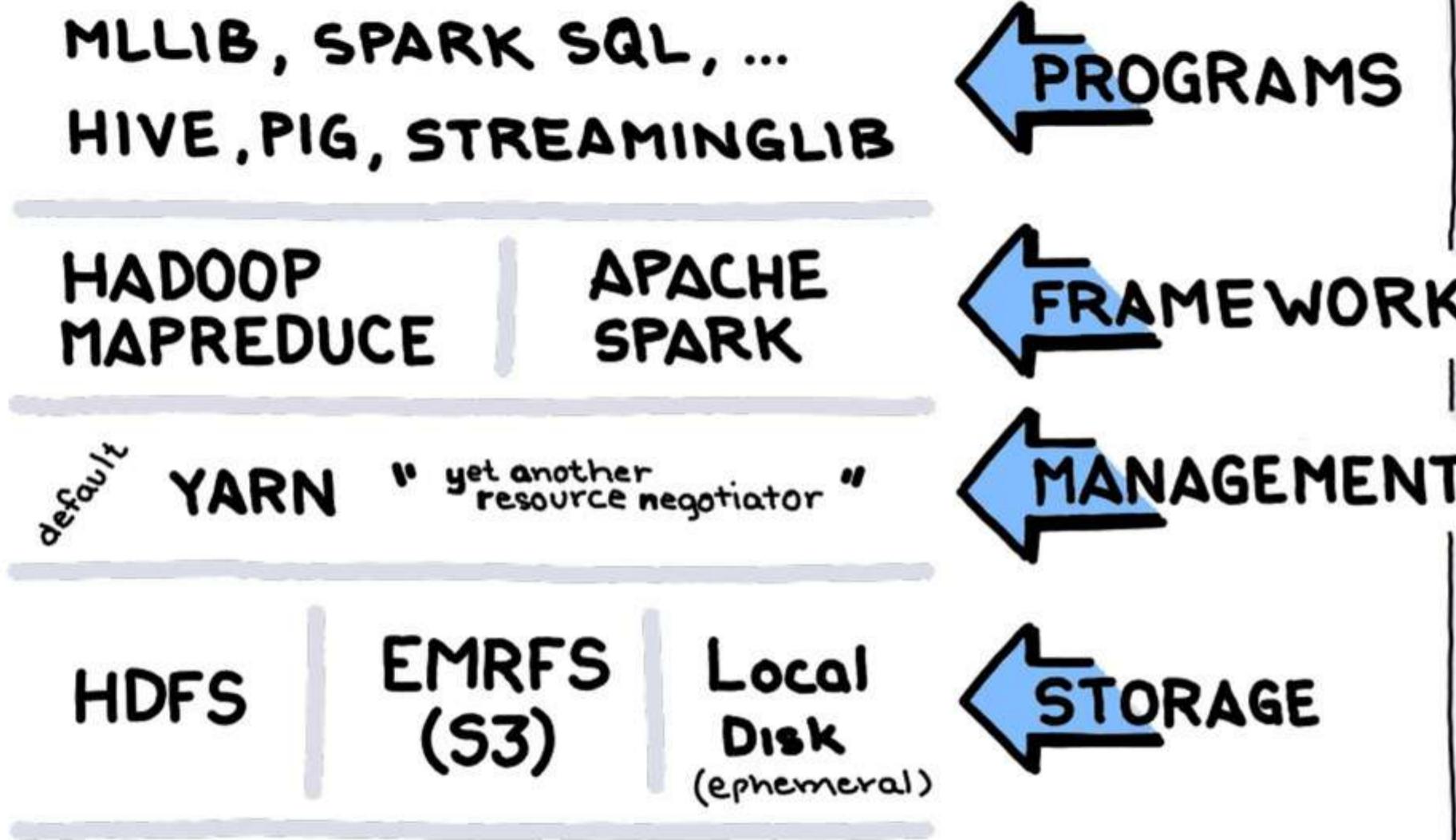
- 2009: BETA LAUNCH  
PIG & HIVE
- 10: CC1/GPU INSTANCES  
BOOTSTRAP ACTIONS
- 11: SPOT INSTANCES
- CC2 INSTANCES
- 12: HBASE
- DATA PIPELINE
- 13: S3 SSE
- IMPALA
- 14: IAM ROLES
- HUNK
- 15: APACHE SPARK
- PRIVATE SUBNETS
- CLOUDFORMATION
- FLINK
- 17: AUTO-SCALING
- MXNET
- NOTEBOOKS
- TENSORFLOW
- 2019: 99.9% SLA
- (a subset of enhancements since launch)



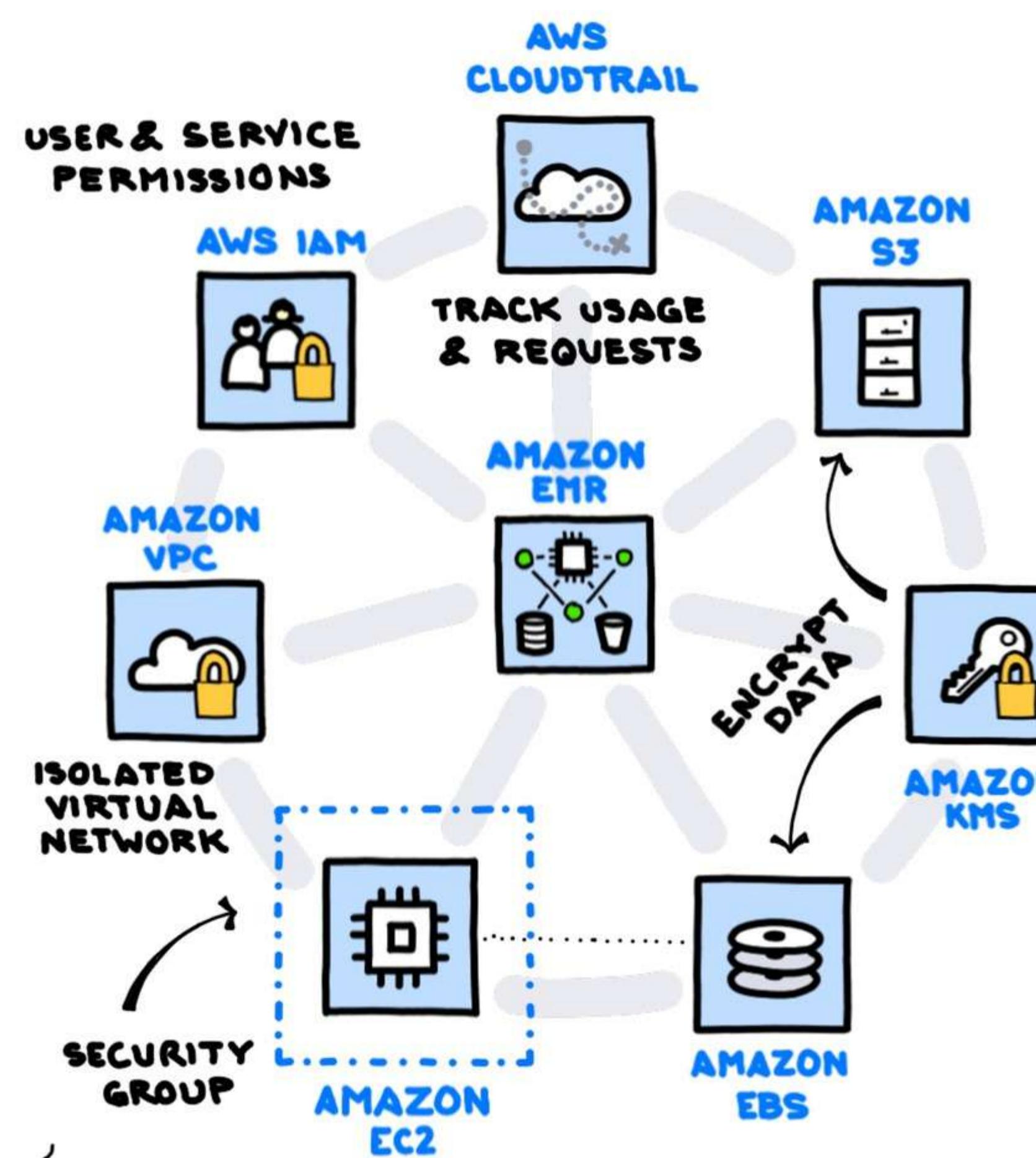
- MACHINE LEARNING
- REALTIME STREAMING
- CLICKSTREAM ANALYSIS
- GENOMICS
- ETL

- HOSTED HADOOP PLATFORM
- ELASTIC CLUSTERS
- CONSOLE, CLI & SDK ACCESS
- STORAGE OPTIONS
  - S3, EBS, RDS
  - DYNAMODB
  - REDSHIFT
  - GLACIER

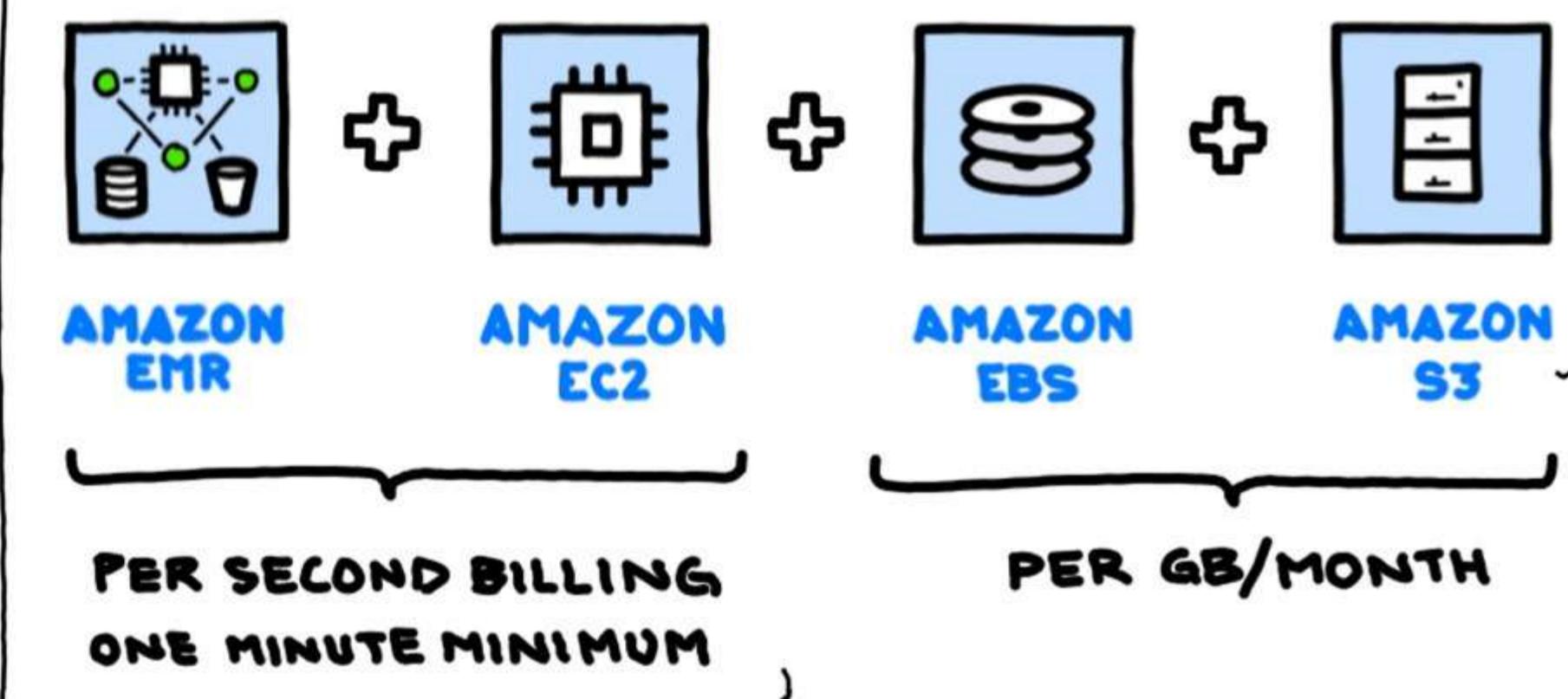
# LAYERS



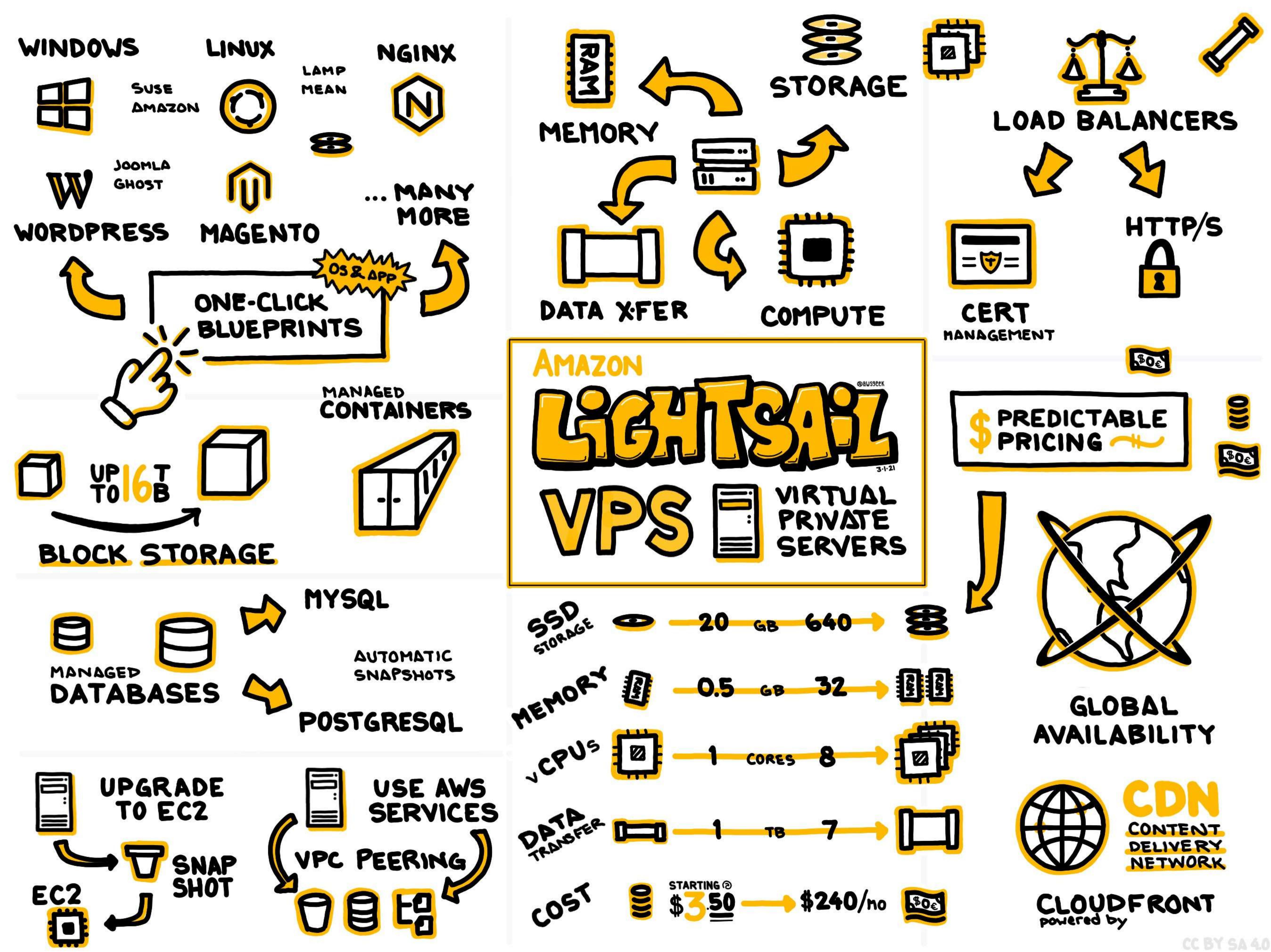
# SECURITY

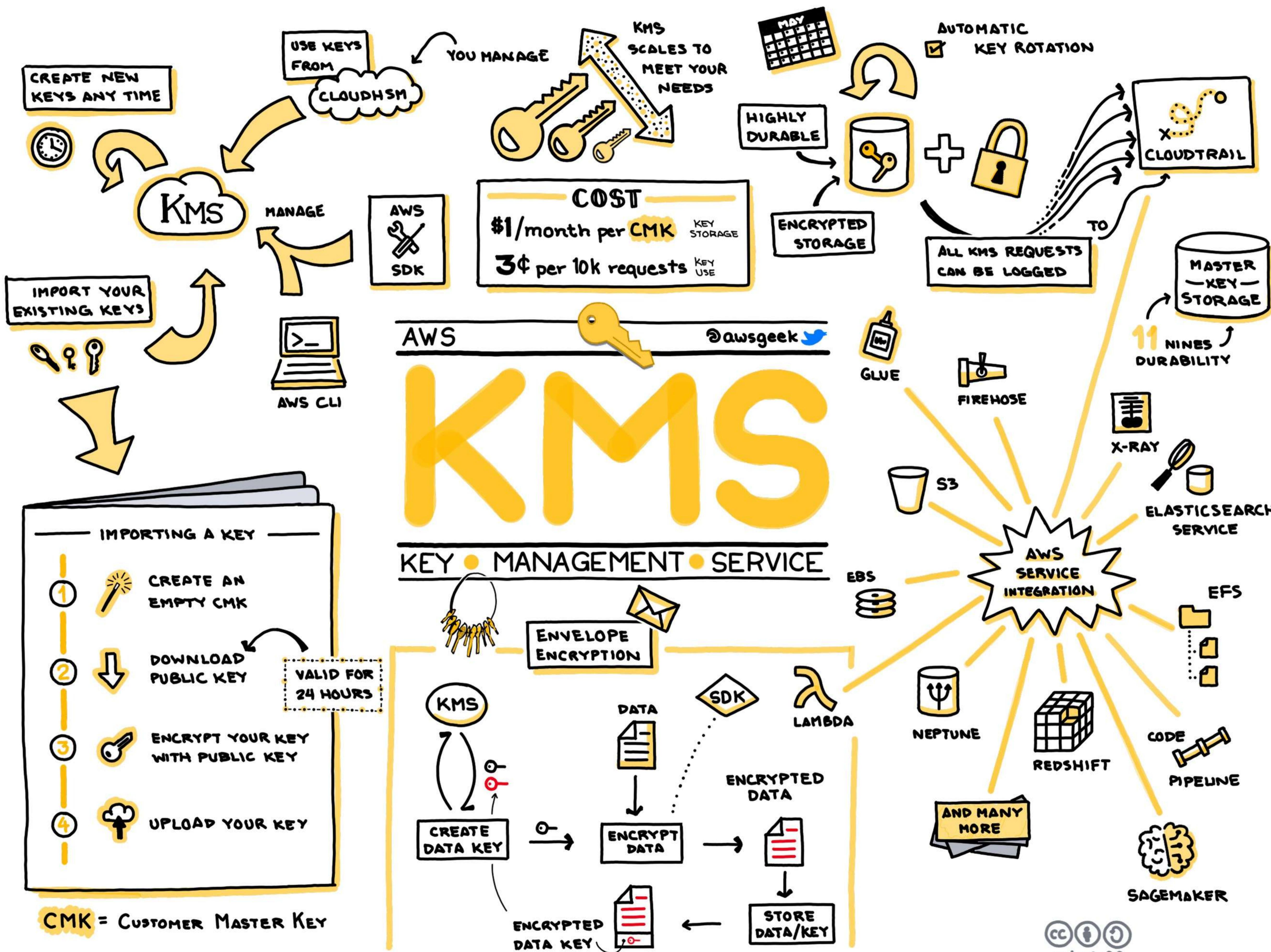


# PAY-AS-YOU-GO PRICING ...



*use*  
**EC2 SPOT** for HADOOP TASK NODES up to **90%** SAVINGS





# Compliance

PCI



ISO



HIPAA

Soc  
1,2,3

# AWS · ELASTIC

@awsgeek

# BEANSTALK

5/30/20

C#

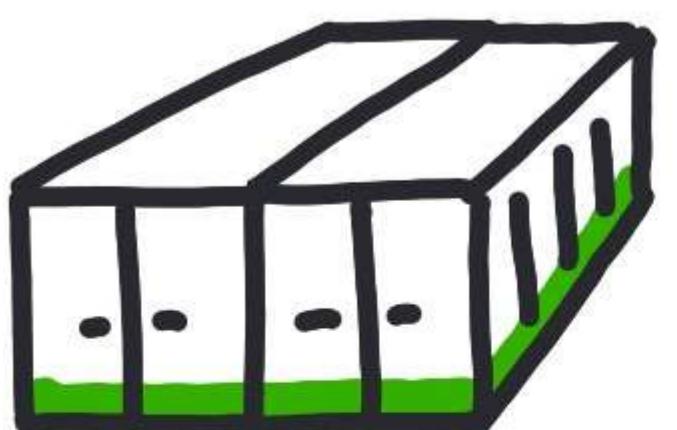
JS

ELASTIC  
BEANSTALK

dotNET



JAVA



DOCKER CONTAINERS

Python

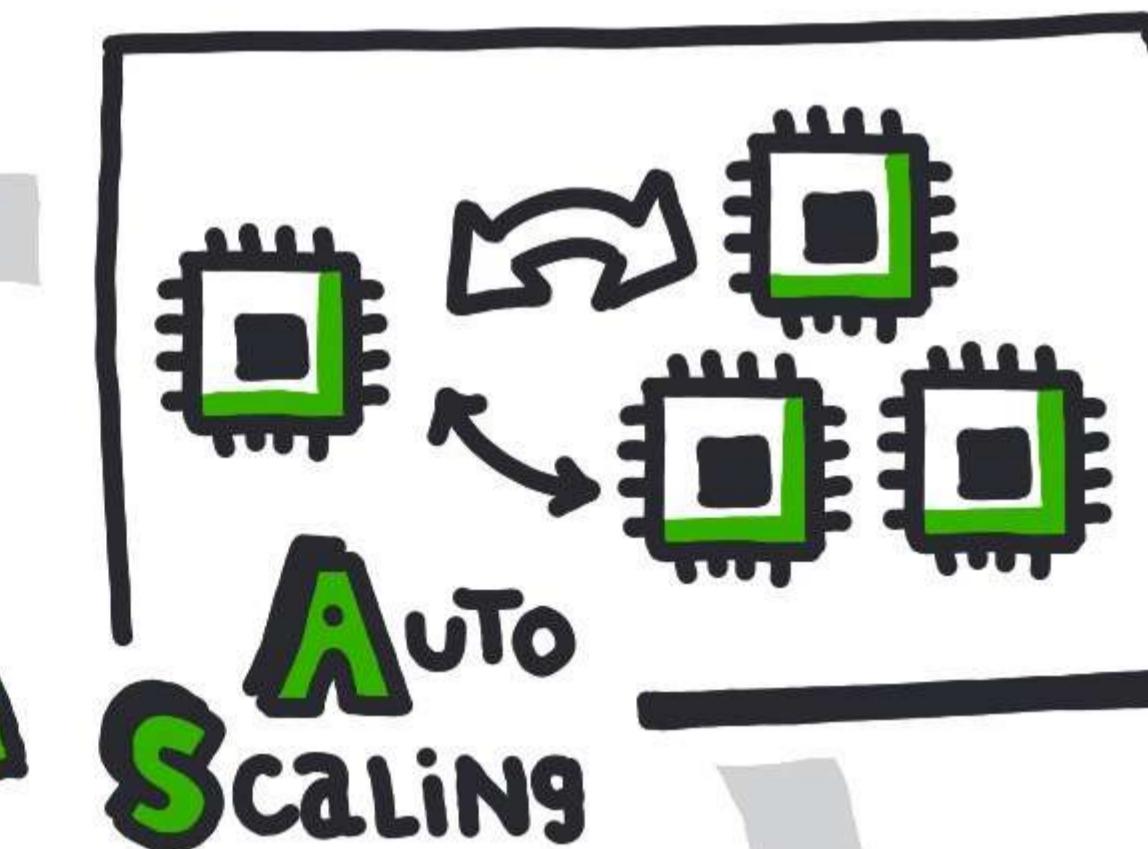
Console  
SDK  
CLI



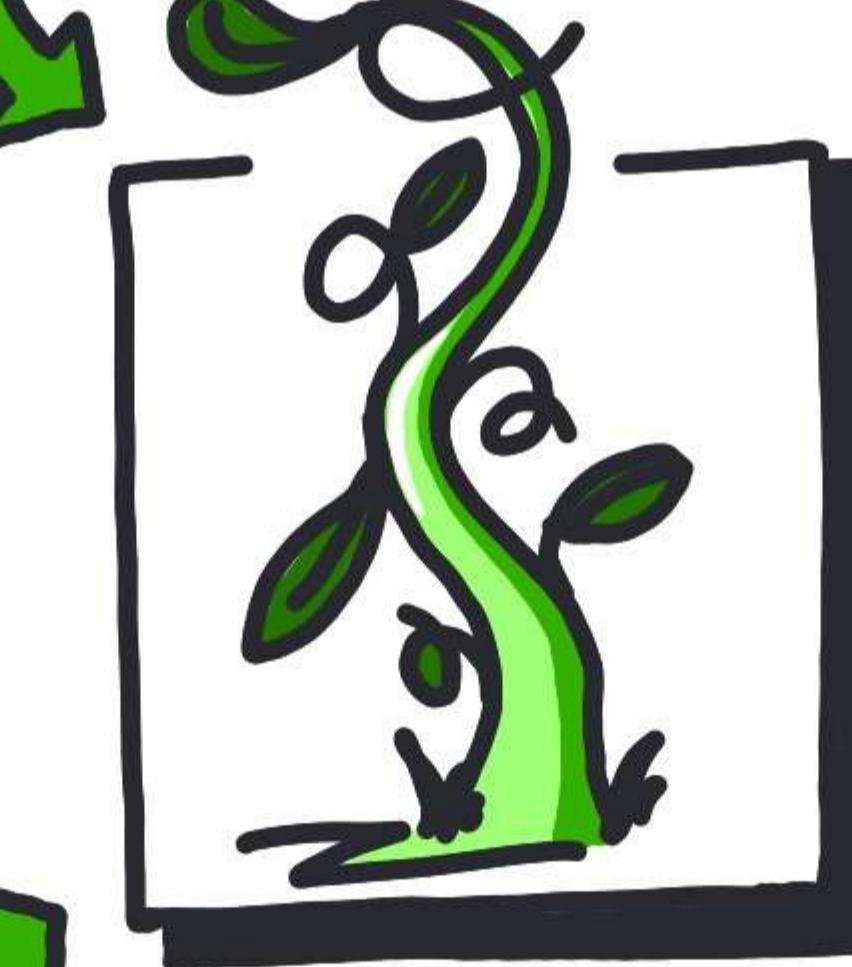
ADMIN



IAM VPC



△ ELBs  
△ MULTI-AZ

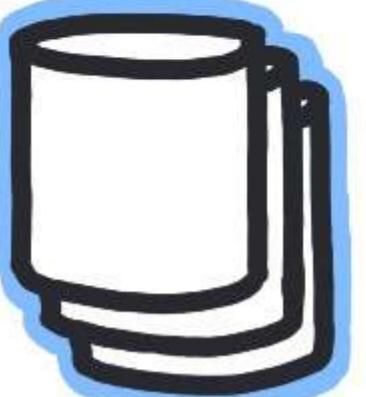


MONITORING



CLOUDWATCH  
ALERTS  
NOTIFICATIONS

## DOMAIN



REPOSITORIES

## REPOSITORY



PACKAGE VERSIONS

## PACKAGE

1. Name
2. Namespace
3. Versions
4. Metadata

## ASSET



FILE

aws

# CodeArtifact

• SOFTWARE • ARTIFACT • REPOSITORY •

SECURE, SCALABLE, & COST EFFECTIVE ARTIFACT MANAGEMENT FOR SOFTWARE DEVELOPMENT

Maven

Central

NuGet.org

npm



PyPI



AWS  
Code  
Artifact

- AWS Managed -  
Centralized  
Repository

Maven

Gradle

NuGet

npm

twine

pip



Java



.Net



Python



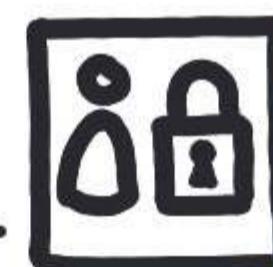
JavaScript



Public Repos



AWS KMS  
ENCRYPTION



AWS IAM | RESOURCE PROTECTION

Development  
Teams

CI/CD  
Systems

## PAY-PER-USE



BYTES STORED

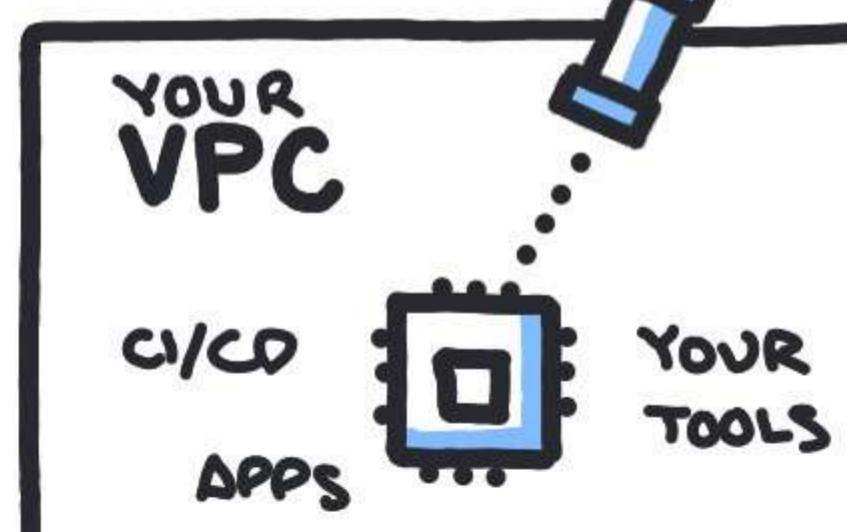
## DATA TRANSFER



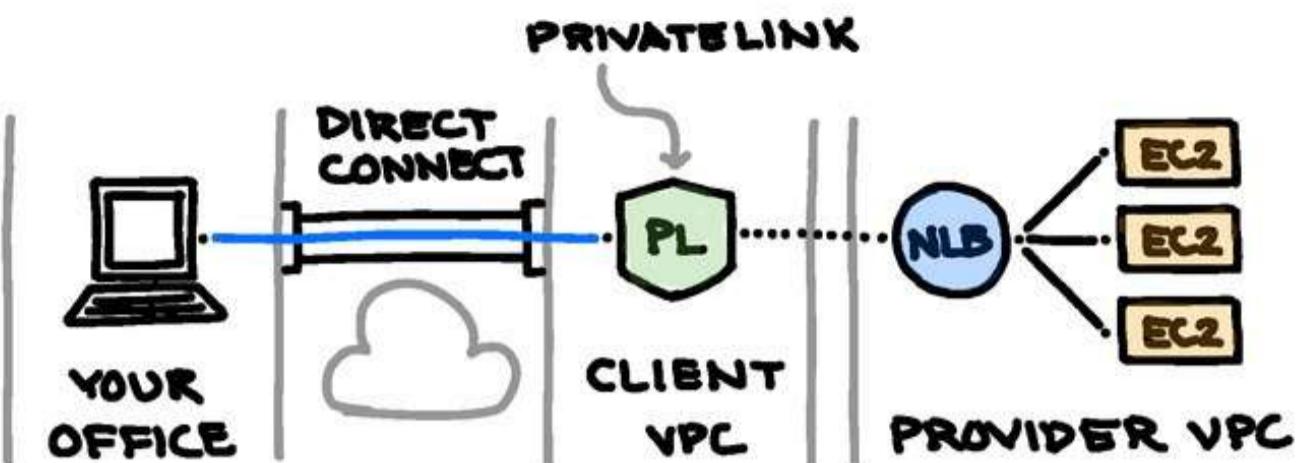
API CALLS  
005



PRIVATE  
LINK



PRIVATELINK ADDRESSES ARE PRIVATE  
NO PUBLIC IP ADDRESSES!!



EXPOSED AS ENI IN CLIENT VPC  
CAN APPLY SECURITY GROUPS TO ENI

NO CROSS-REGION SUPPORT

BOTH REGIONAL & ZONAL DNS NAMES

USE FOR BETTER AVAILABILITY, LATENCY  
(REMEMBER, ZONES DIFFER BY ACCOUNT)

MY 'A' MAY NOT BE YOUR 'A'

FOR CUSTOMERS & PARTNERS

EXPOSE YOUR SERVICE IN OTHER VPCS

LIFECYCLE EVENTS VIA SNS

NOW CALLED  
"GATEWAY ENDPOINTS"

FOR AWS SERVICES

BUILDS ON ENPOINTS: S3, DYNAMO DB

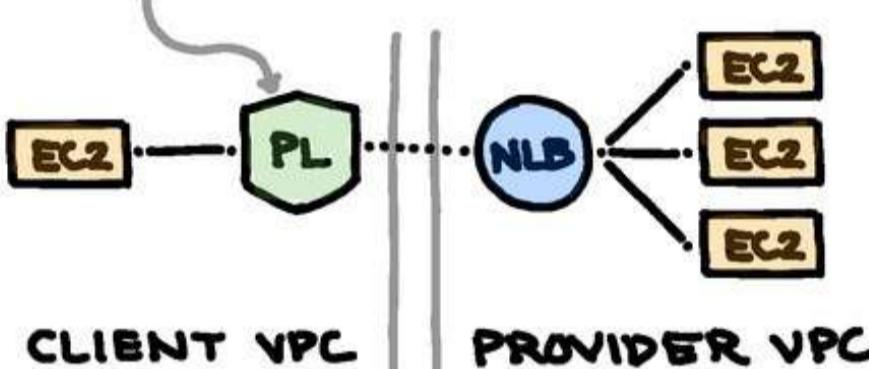
CLOUDWATCH, SNS, SAGEMAKER  
KINESIS, CODEBUILD, CONFIG

EC2, API GATEWAY, AWS SERVICE CATALOG

ELB, CLOUDFORMATION

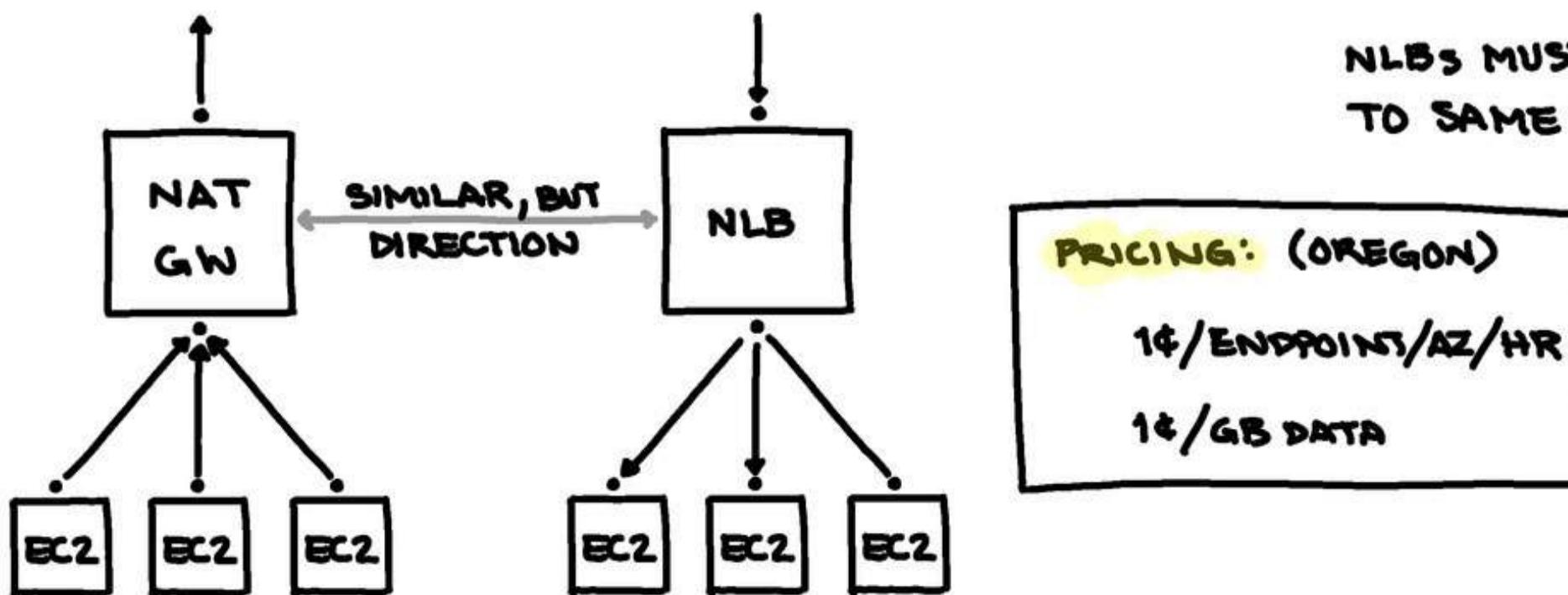
EC2 SYSTEMS MANAGER

PRIVATELINK

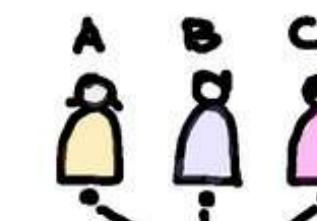


## EFS — NAT GW — NLB — PRIVATELINK HYPERPLANE NODES

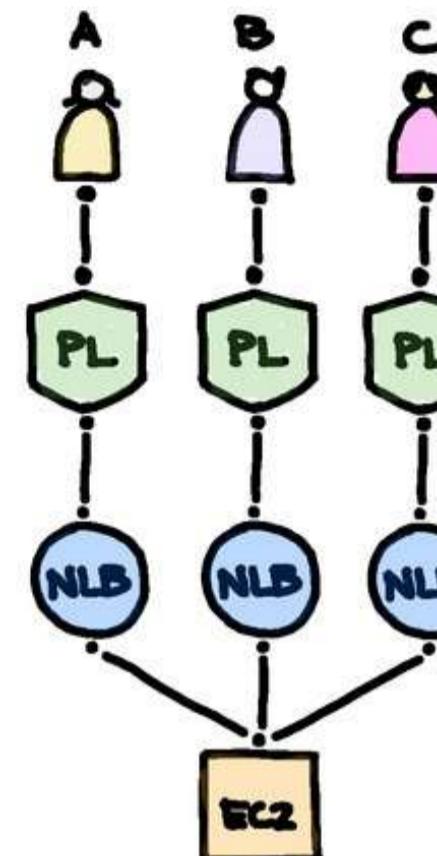
- BASED ON S3 LOAD BALANCER ARCHITECTURE
- HYPERPLANE NODES ARE REALLY EC2 INSTANCES
- USED BY AWS TO MANAGE STATE & ROUTE PACKETS



CUSTOMER



CUSTOMER



HOW TO DIFFERENTIATE TRAFFIC?

- 1 USE ACCOUNTS/PASSWORDS/TOKENS
- 2 USE DIFF LISTENER PORTS ON TARGETS
- 3 USE PROXY PROTOCOLV2 PREAMBLE

PREFERRED, BUT REQ'S CODE PATCH

UNDER THE HOOD: AWS HYPERPLANE

NOT A PROXY!  
DOESN'T TERM CONNECTIONS  
S3 LOAD BALANCER EVOLVED  
USED BY EFS, NAT GW, & NLB  
RUNS ON EC2 IN EC2  
DISTRIBUTED & TRANSACTIONAL



SHARED,  
MULTI-TENANT



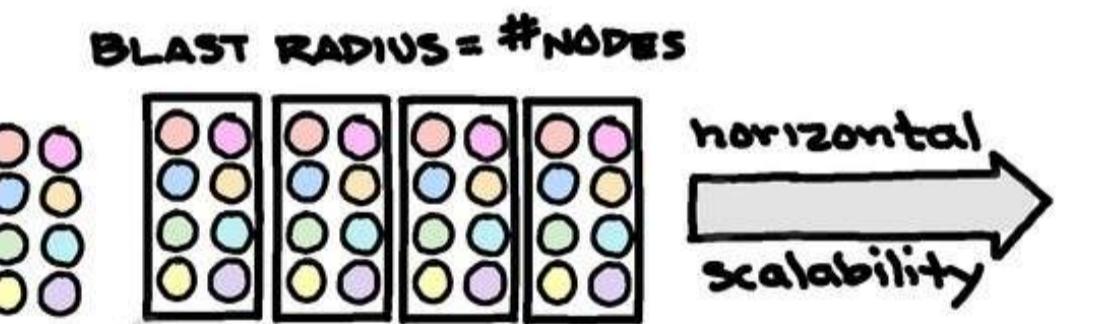
DEFAULT 5GB/S CAPACITY  
SCALABLE TO TB/S IN 5GB/S INCR

REAL TIME, DISTRIBUTED  
CONSENSUS PROBLEM

NAT GW MUST ENSURE ALL CONNECTIONS TO DEST  
IP/PORT COME FROM UNIQUE SOURCE PORT

NLB'S MUST SELECT & ROUTE CONNECTIONS  
TO SAME TARGET

GOOD

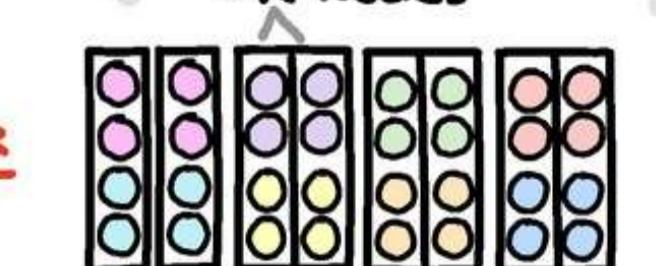


CASCADING FAILURES  
OR NOISY NEIGHBORS

IMPACT  
EVERYONE

each shard has  
#N nodes

for redundancy  
SIMPLE SHARDING



each shard has  
#C customers  
reduces blast radius

minimize  
blast radius

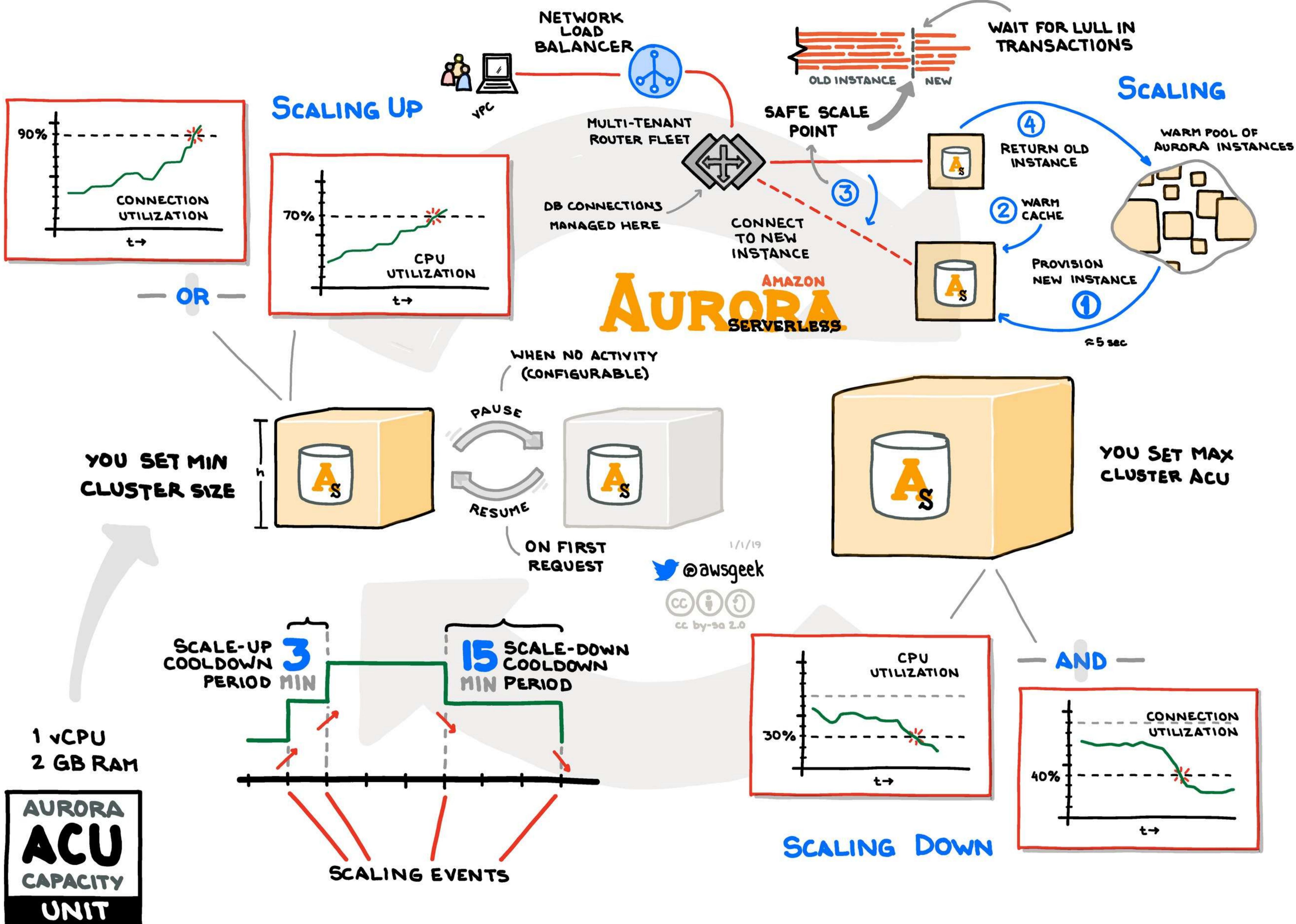
BEST  
SHUFFLE SHARDING

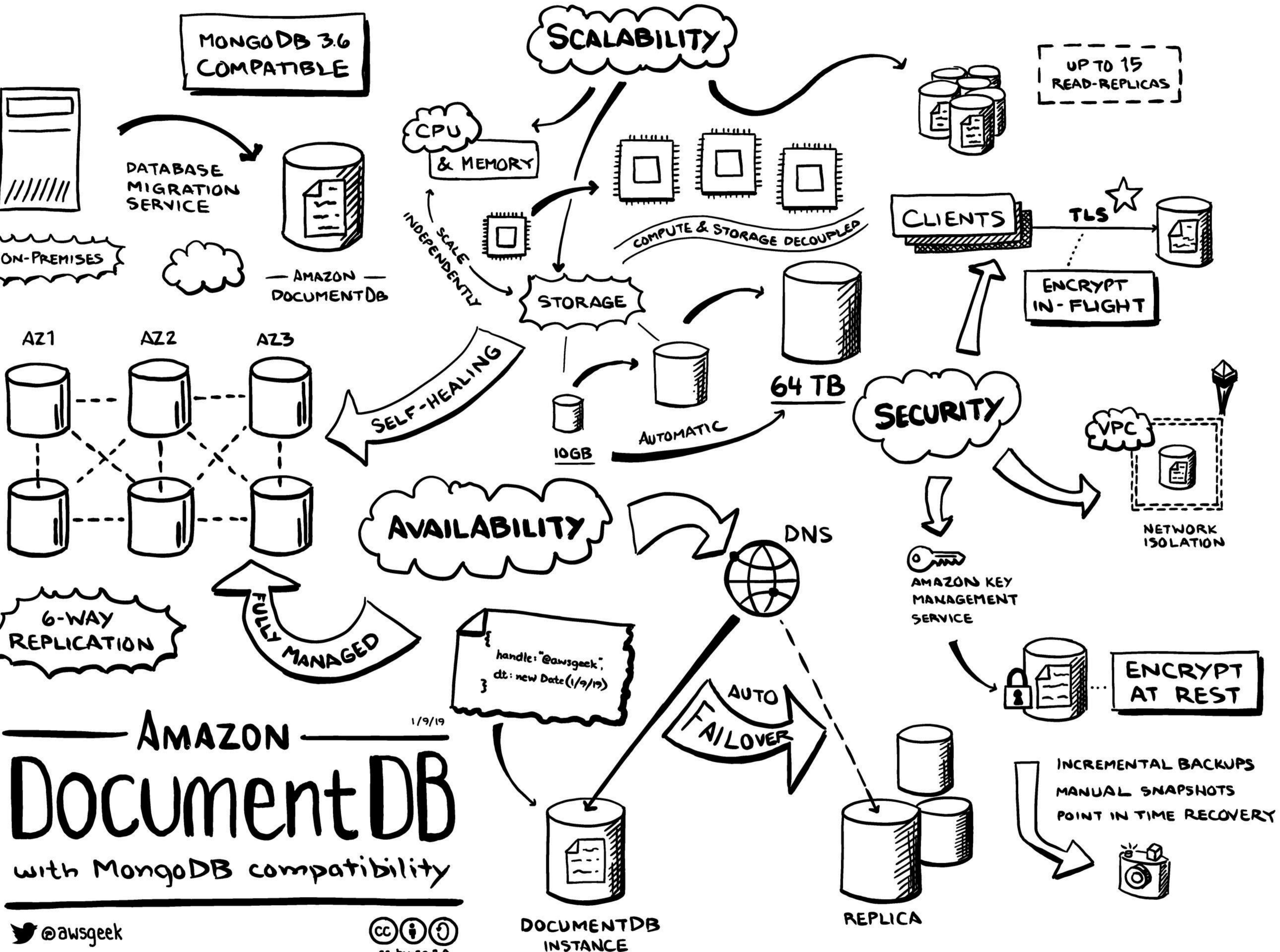


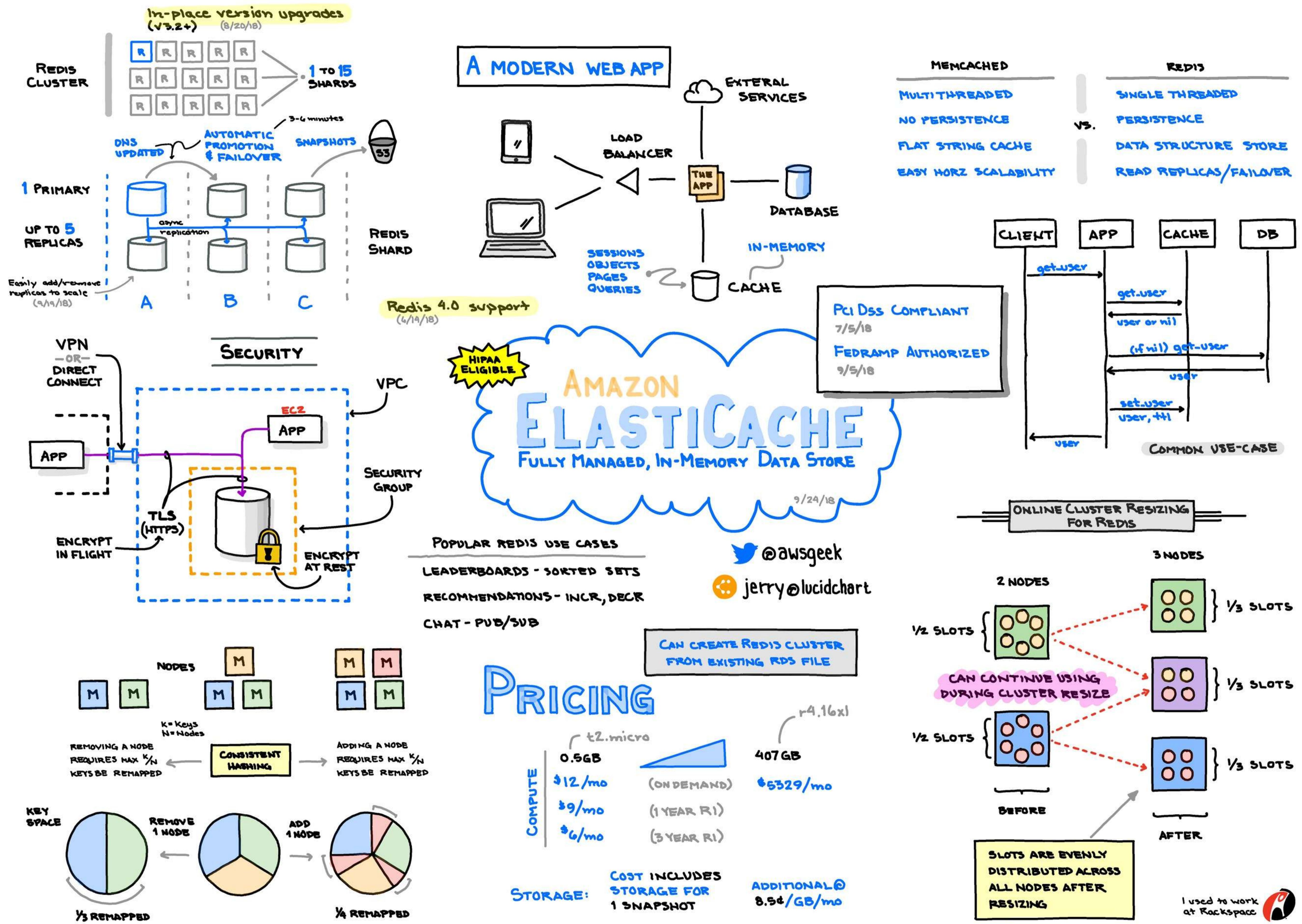
requires fault  
tolerant client

DEALING WITH NOISY NEIGHBORS? SHUFFLE SHARDING

- GIVE EACH CUSTOMER N RANDOM NODES AMONG MANY
- ONLY A SMALL PERCENTAGE WILL OVERLAP
- ISOLATE REALLY NOISY NEIGHBORS







**SOCIAL NETWORKING**  
GROUP FRIENDS WHO LIKE OR DISLIKE SIMILAR THINGS

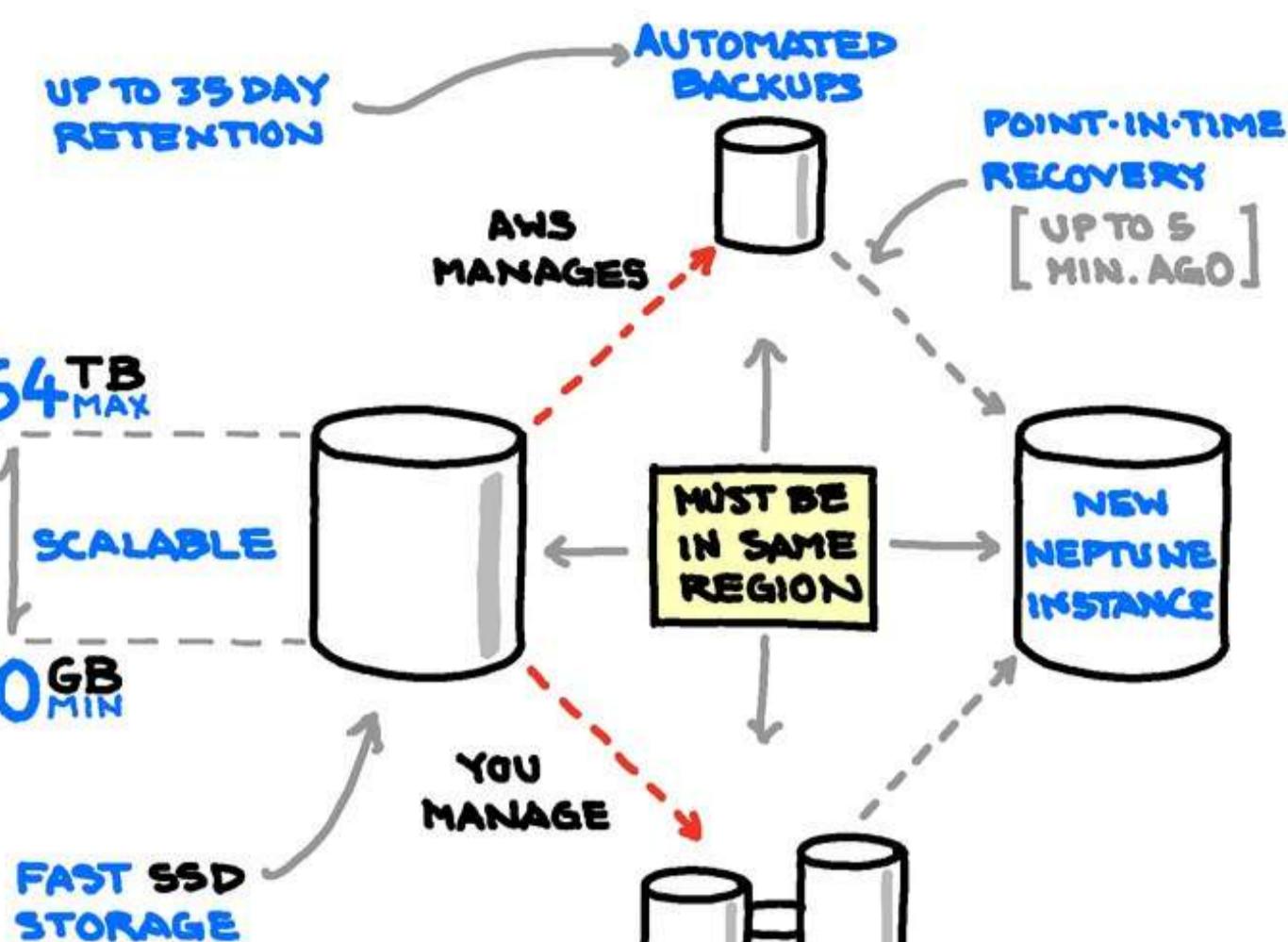
**RECOMMENDATION ENGINE**  
MAKE PURCHASE SUGGESTIONS BASED ON OTHER USERS WITH SIMILAR INTERESTS

**FRAUD DETECTION**  
DETECT CONNECTIONS TO KNOWN FRAUD SCENARIOS

**KNOWLEDGE GRAPHS**  
STORE AND QUERY INFO & RELATIONSHIPS BETWEEN USERS

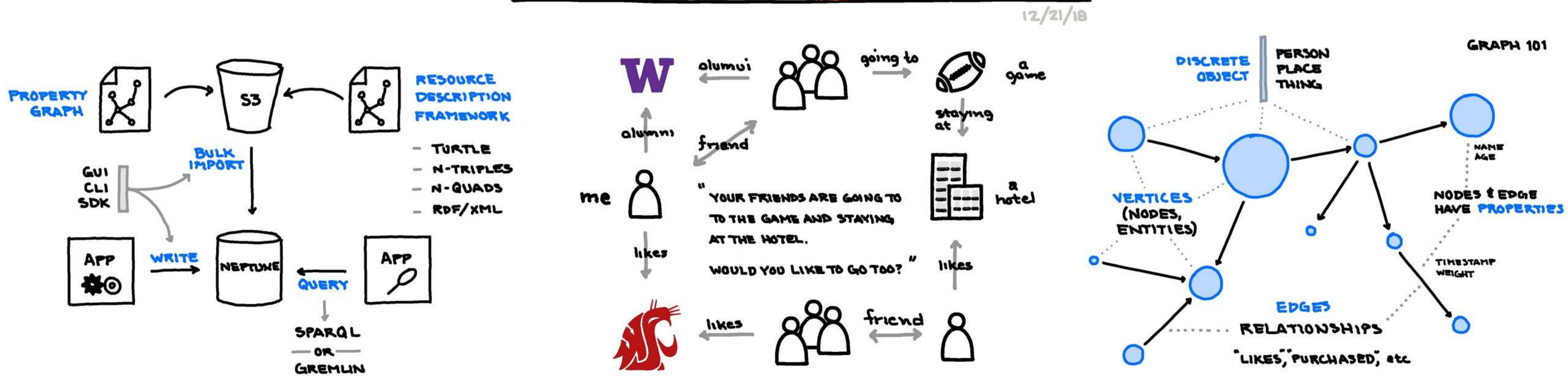
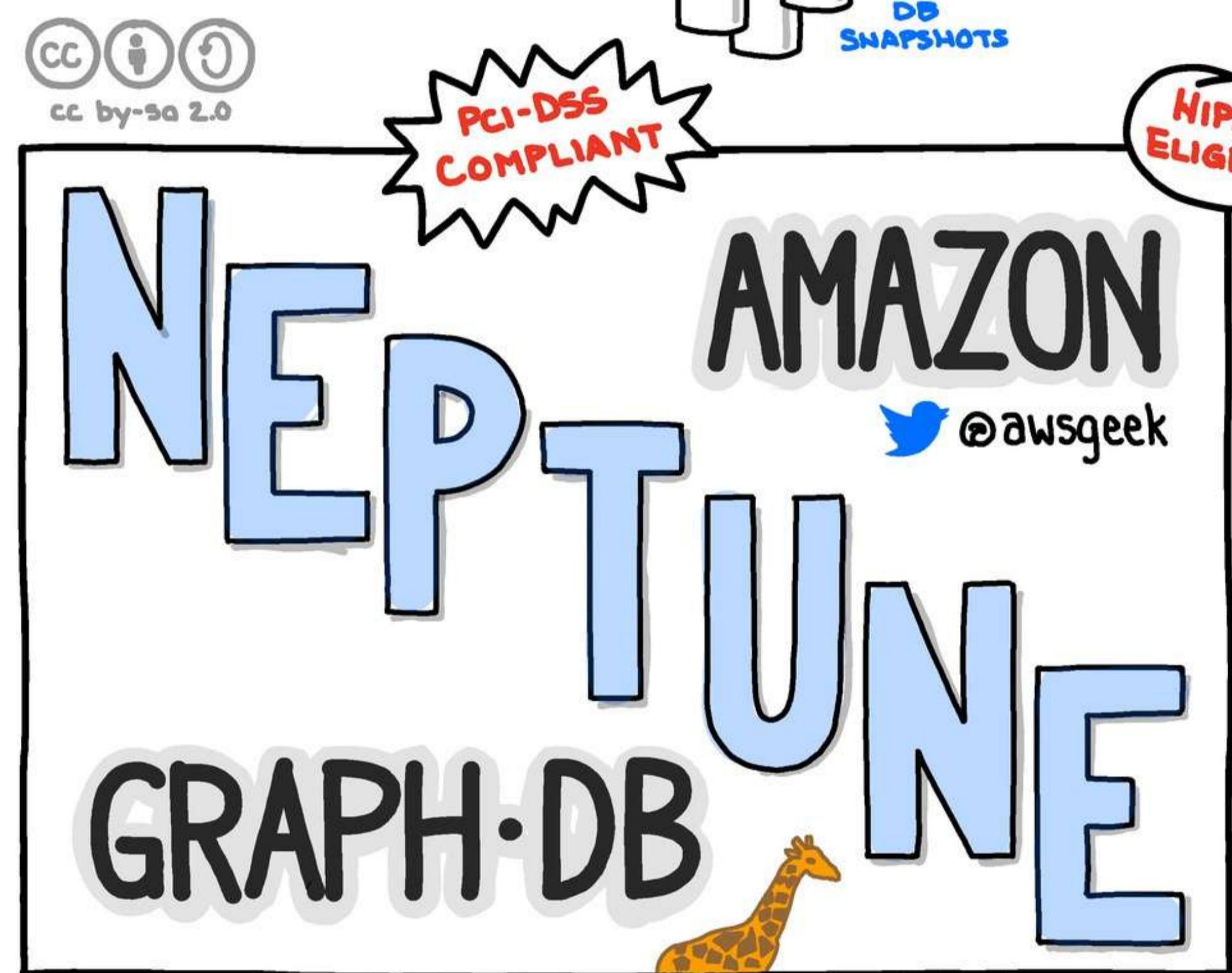
**LIFE SCIENCES**  
SECURELY STORE AND PROCESS PATIENT & HEALTHCARE DATA

**NETWORK/IT OPS**  
STORE NETWORK TOPOLOGY & DISCOVER RELATIONSHIPS BETWEEN HOSTS

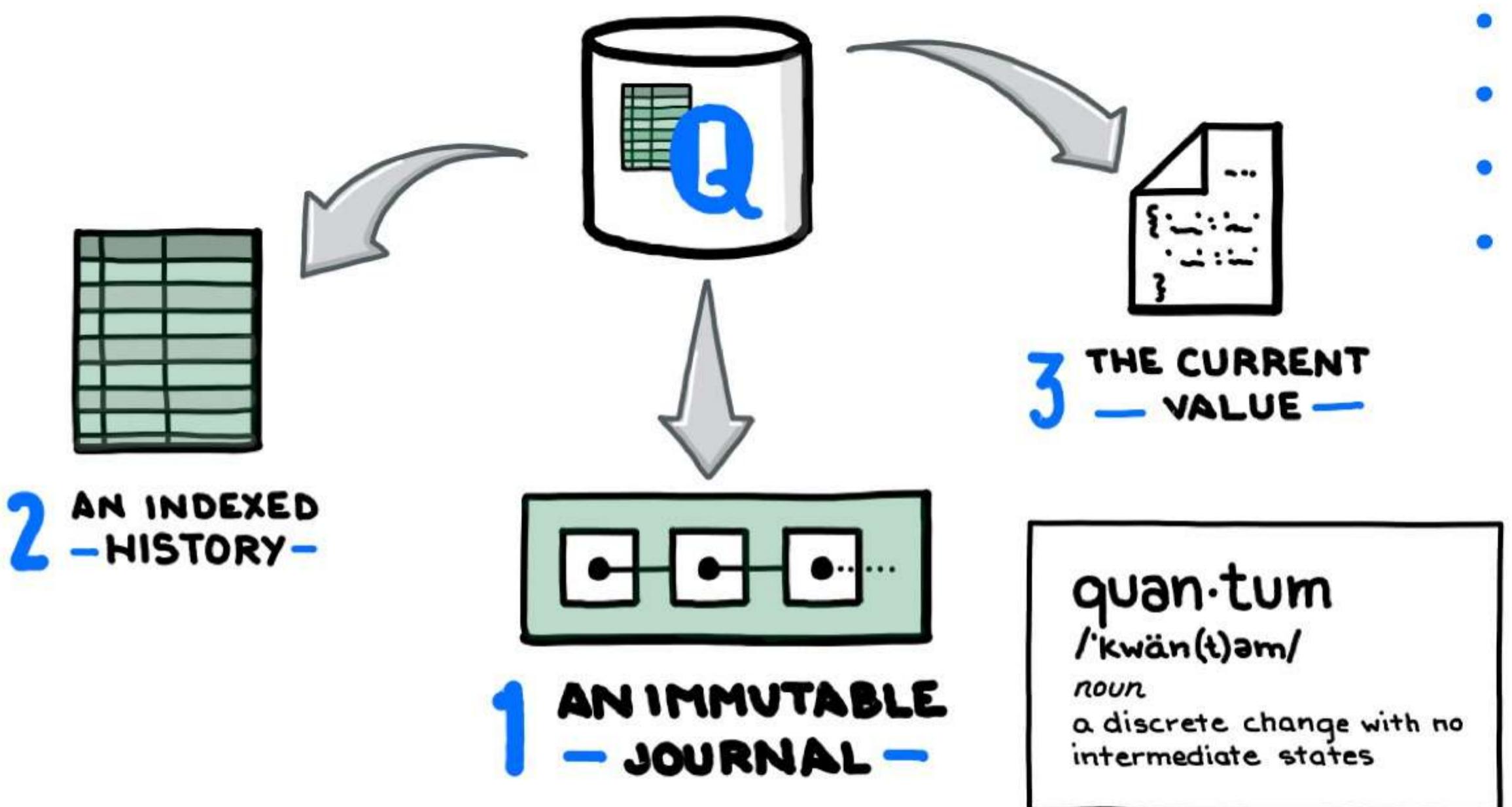


# PRICING

ON-DEMAND	PRIMARY - PER HOUR REPLICAS - SAME	STARTING AT 35¢/HR FOR R4.LG
STORAGE	10¢/GB/MO	
BACKUPS	20¢/MILLION REQUESTS	per 16KB read 4KB write
DATA TRANSFER	Up to db size, free \$3 rates after	
	In ... Free Out ... 2¢/GB to other region ... 9¢/GB to internet	



## WHAT IS A QUANTUM LEDGER DB?



### DATABASE

- FULLY TRANSACTIONAL
- ACID FUNCTIONALITY
- DOCUMENT DATA MODEL
- UN/STRUCTURED DATA

### STREAMING

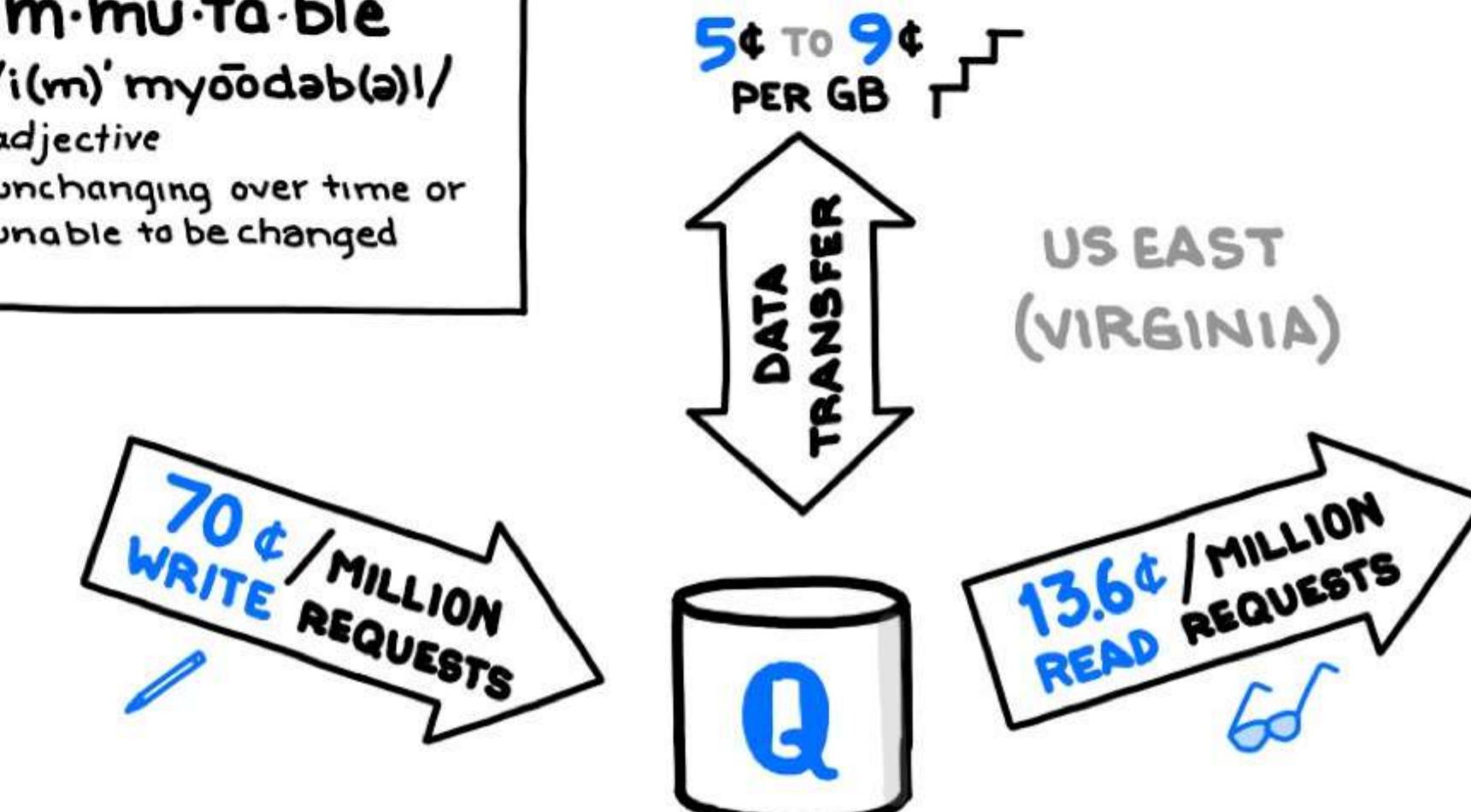
- NEAR REAL TIME
- KINESIS DATA STREAMS

### SERVERLESS

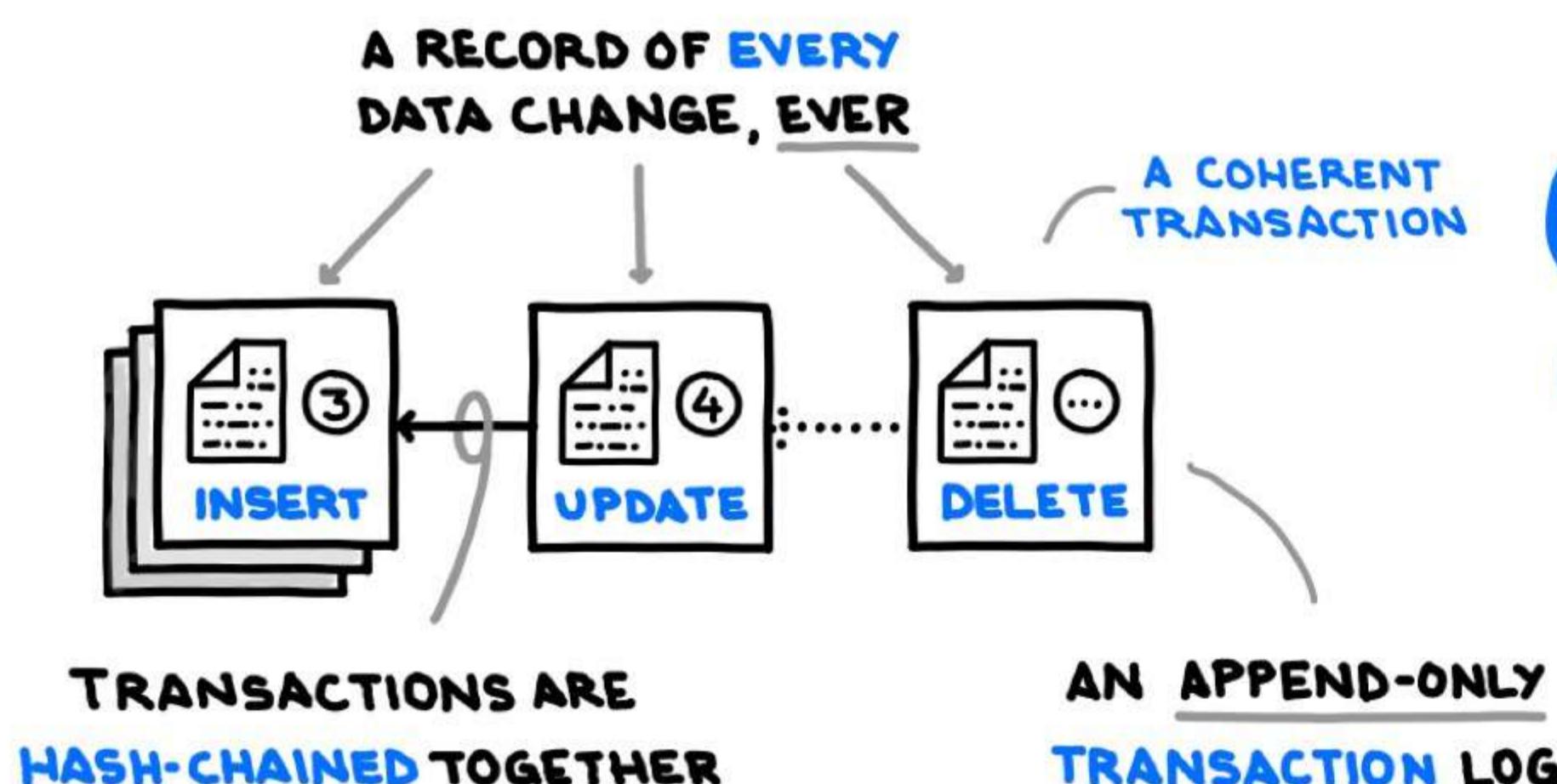
- NO NODE PROVISIONING
- NO IO PROVISIONING

## How Much Does QLDB Cost?

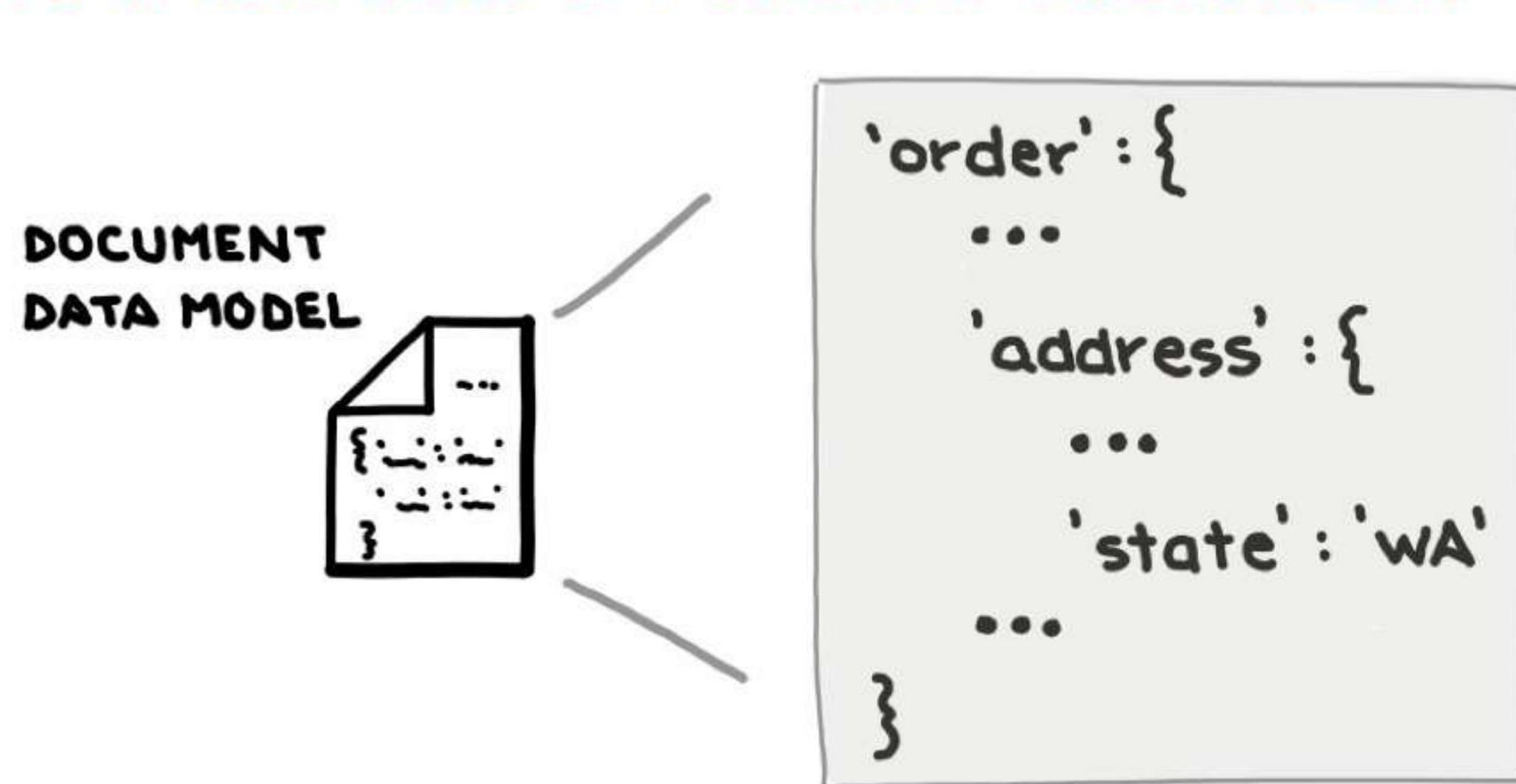
im·mu·ta·ble  
*/i(m)'myooðab(ə)b/*  
adjective  
unchanging over time or  
unable to be changed



## WHAT IS AN IMMUTABLE JOURNAL?



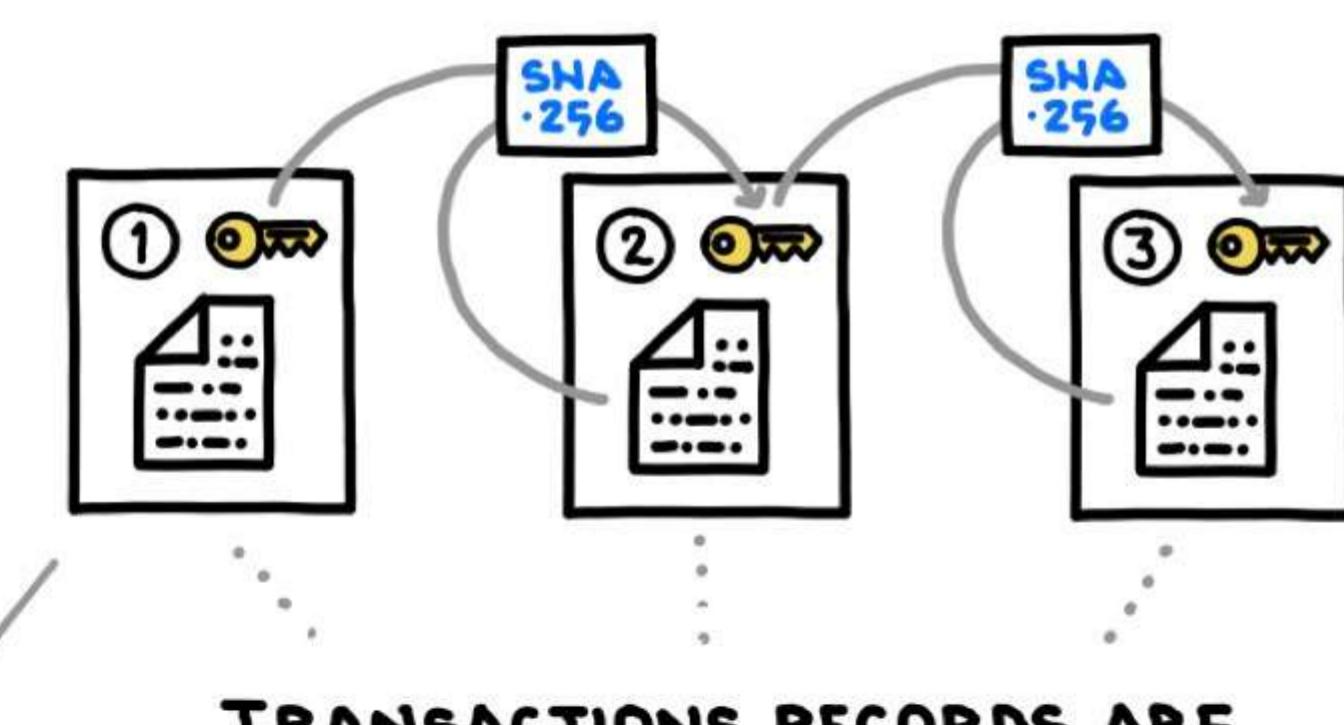
## How is Data Stored/Queried?

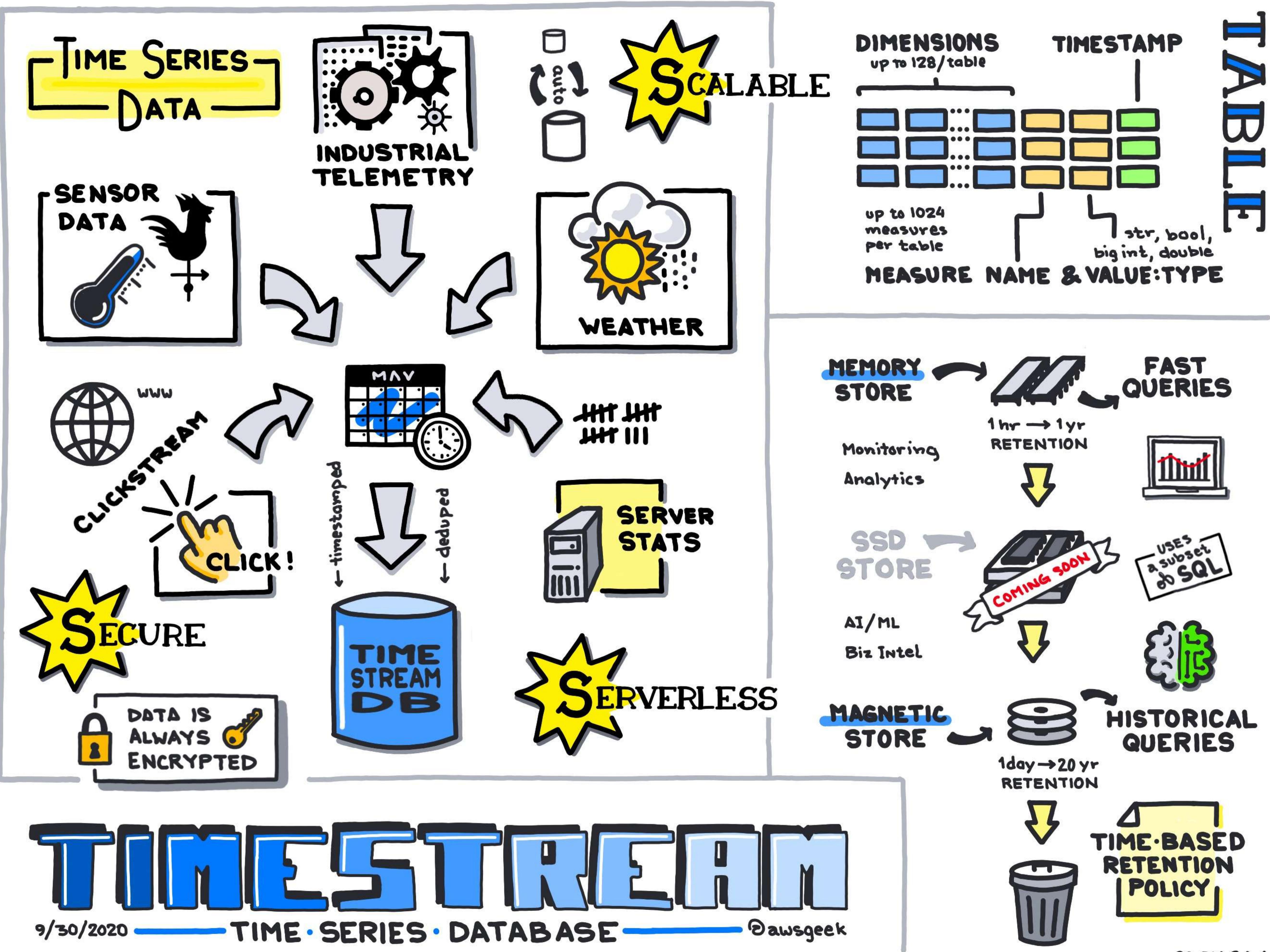


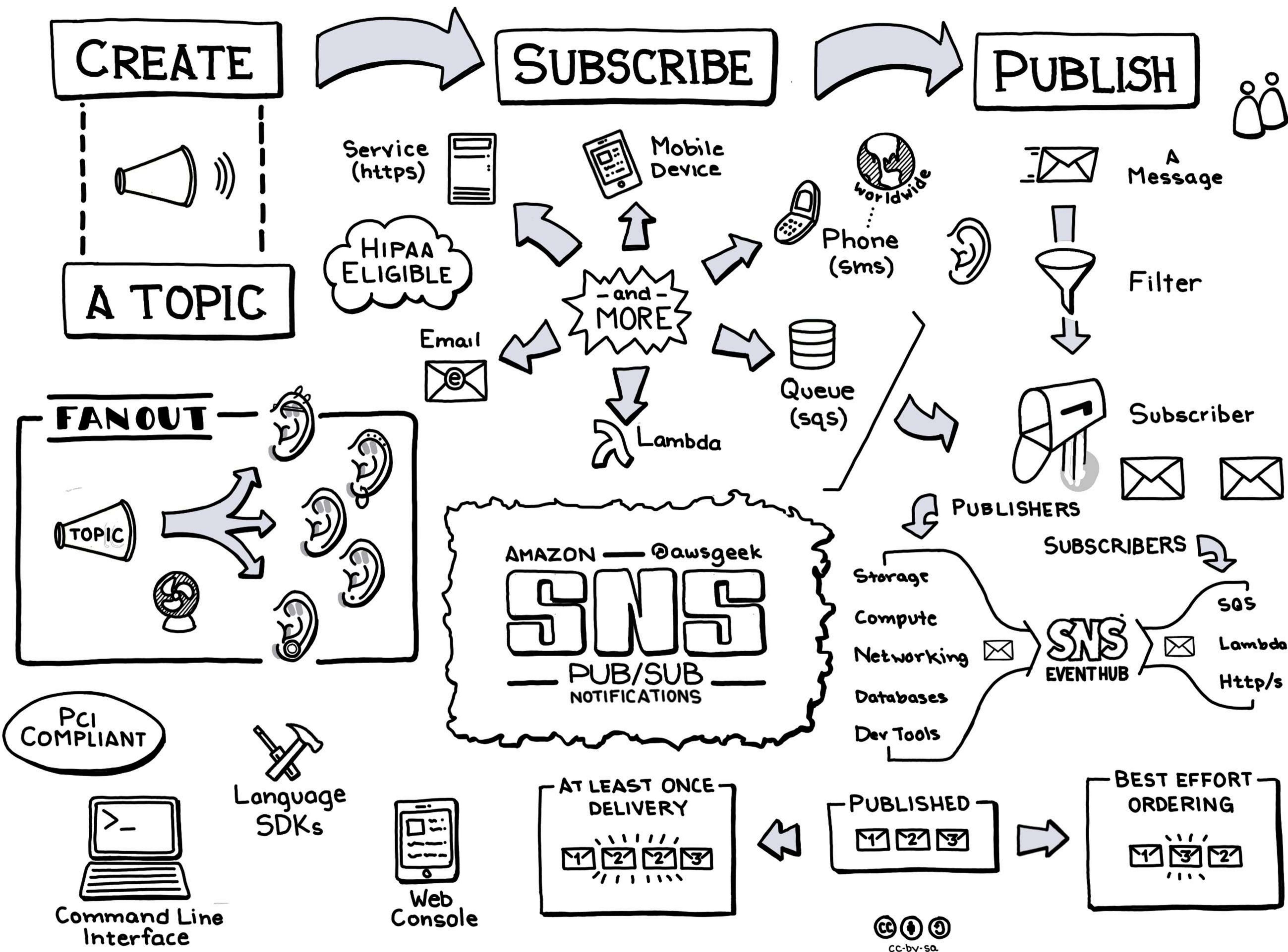
### FOR SYSTEM OF RECORD APPS

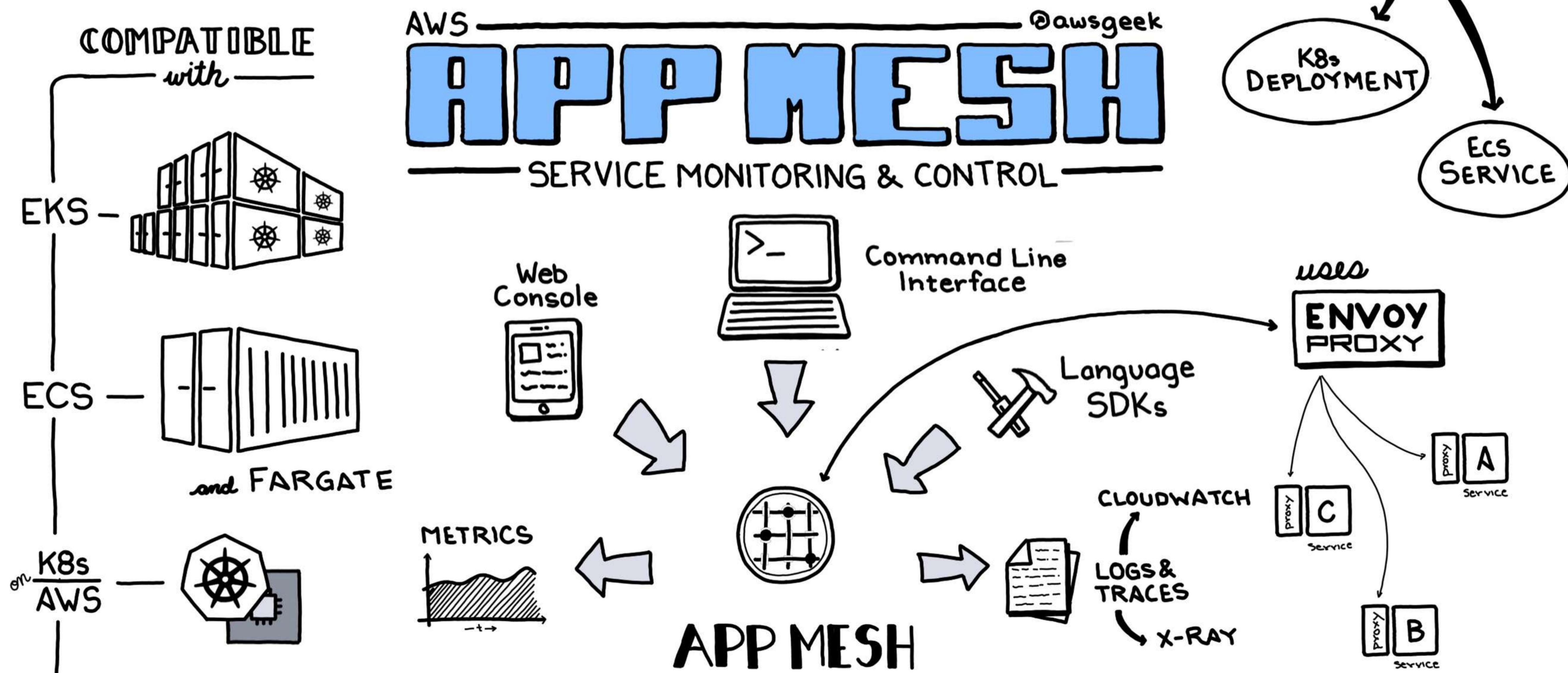
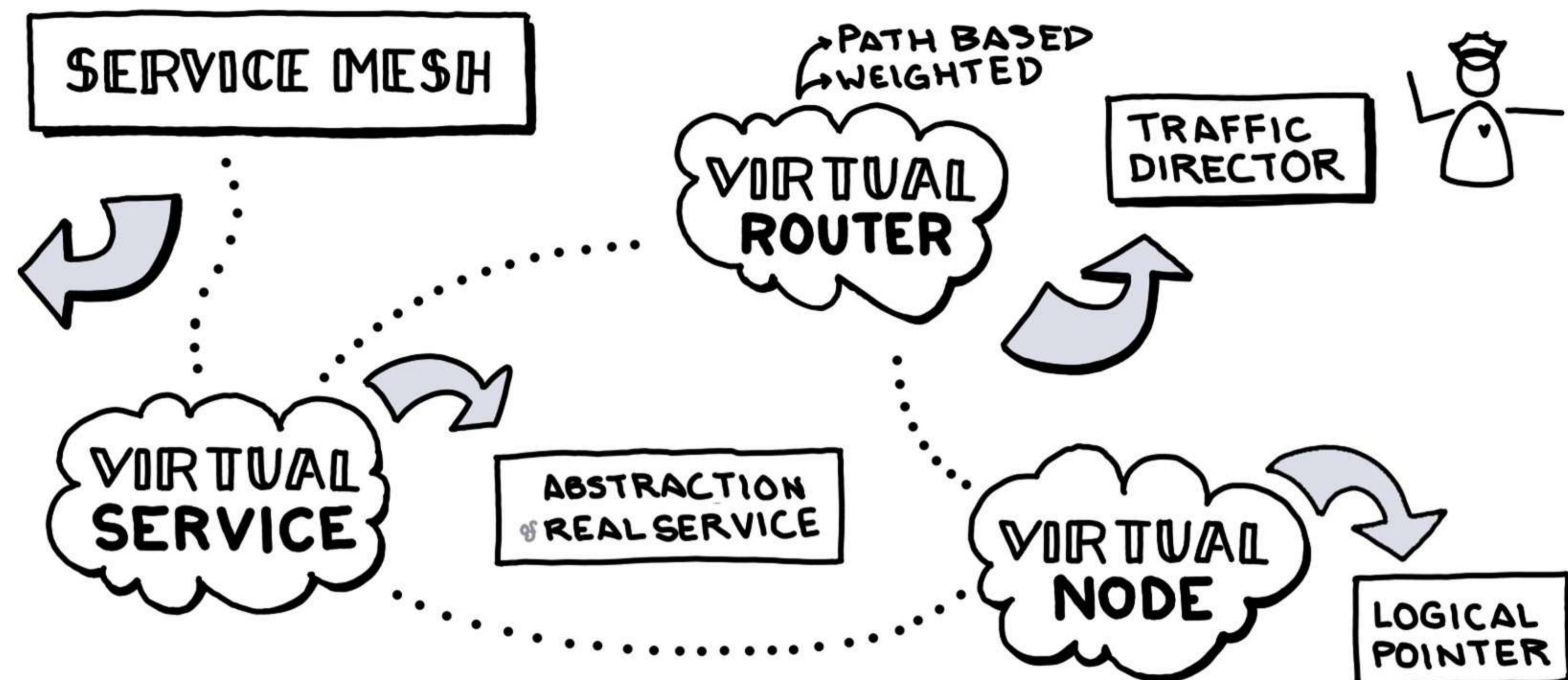
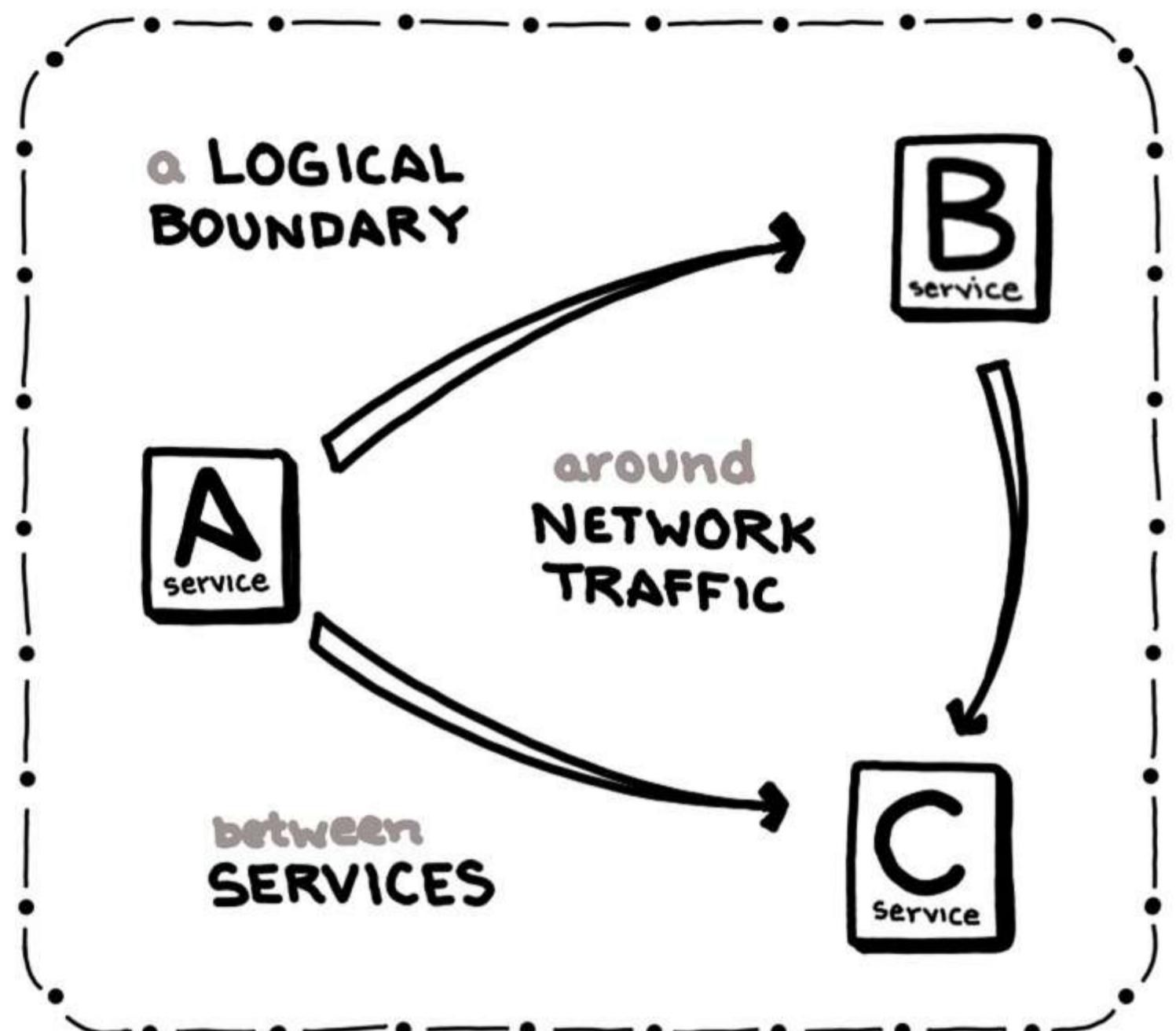
- MANUFACTURING • HR
- INSURANCE • FINANCE
- SUPPLY CHAIN • PAYROLL

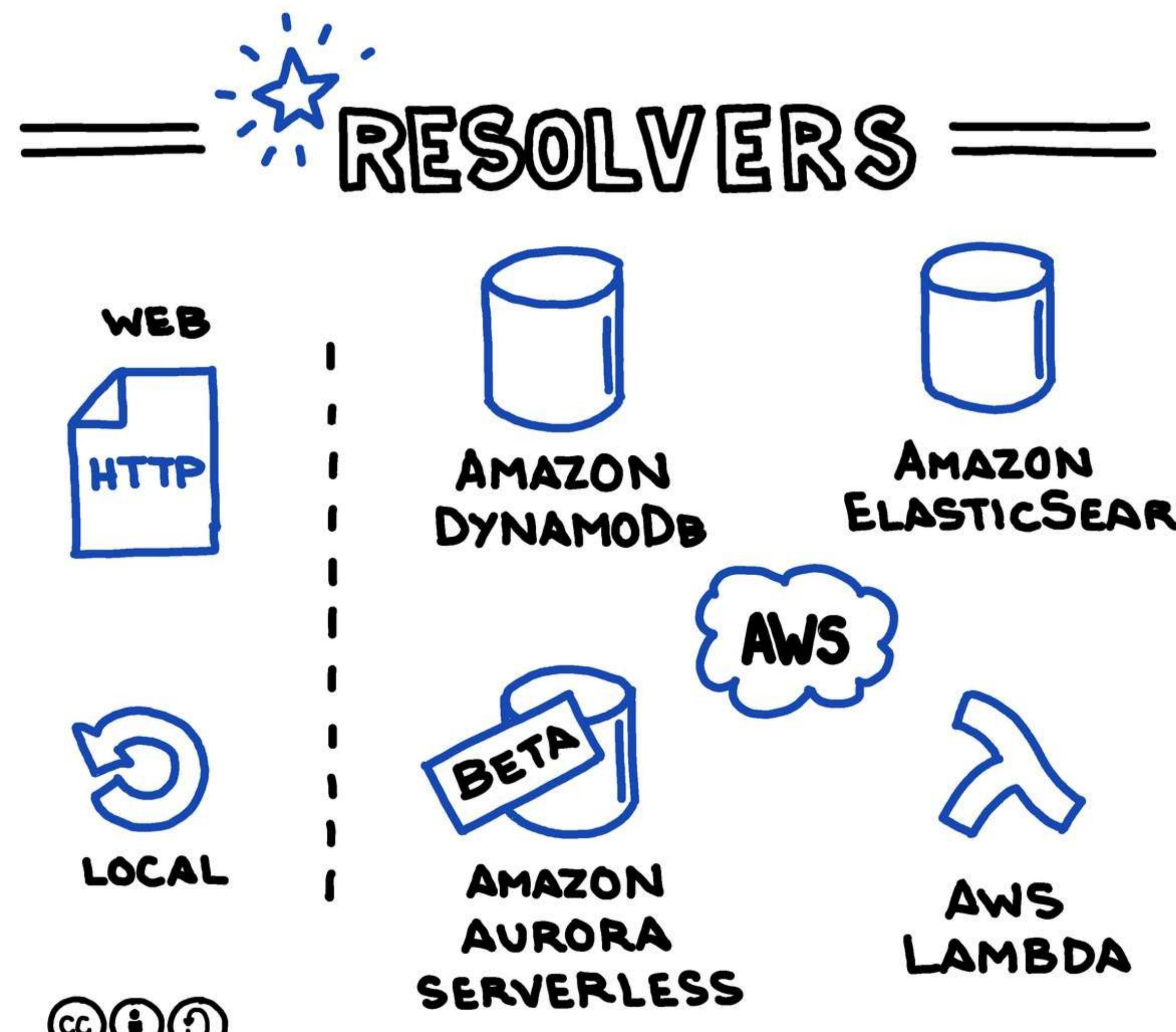
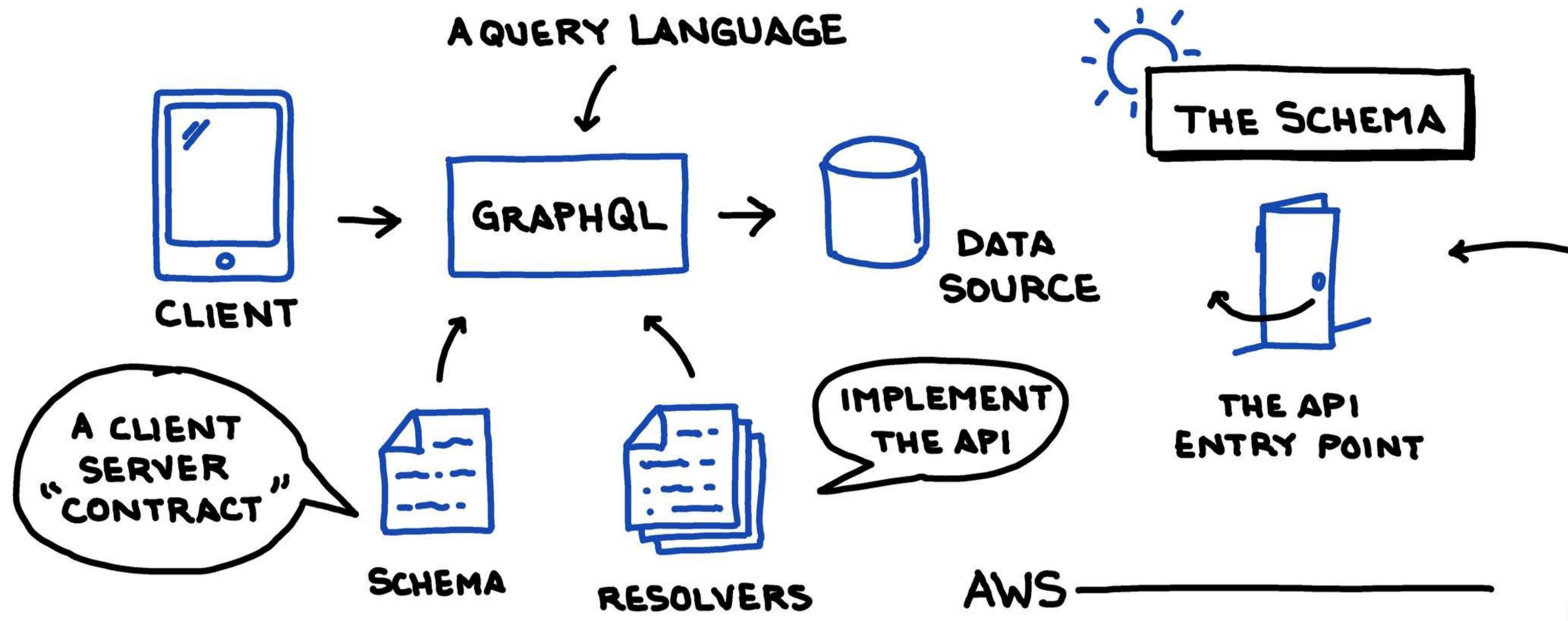
CHANGES  
IMMEDIATELY  
DETECTABLE











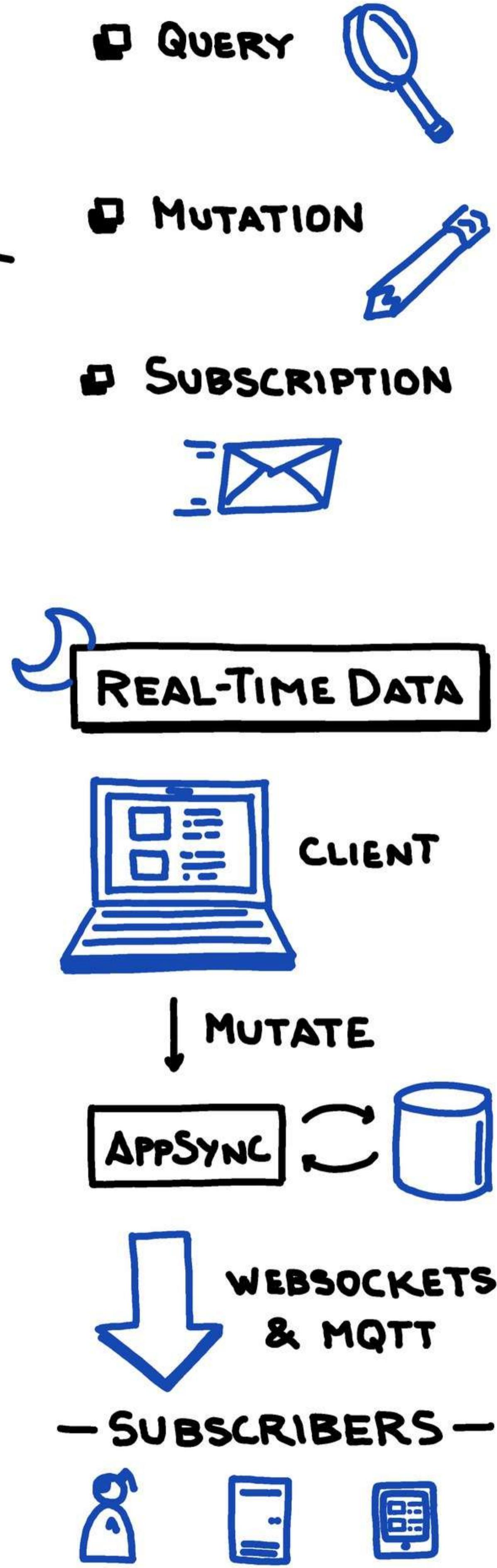
AWS — APPSYNC  
MANAGED • GRAPHQL

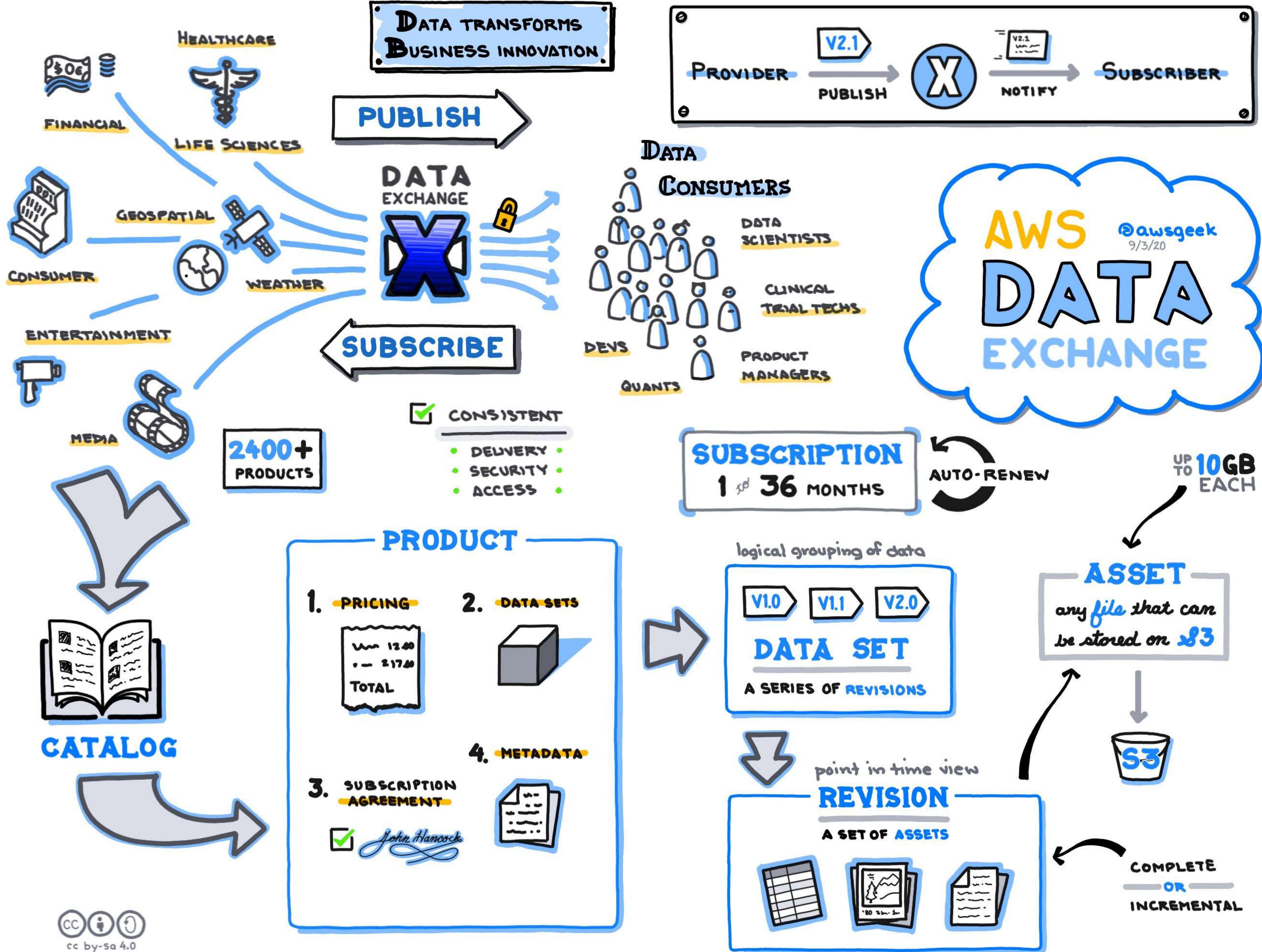
1/23/19

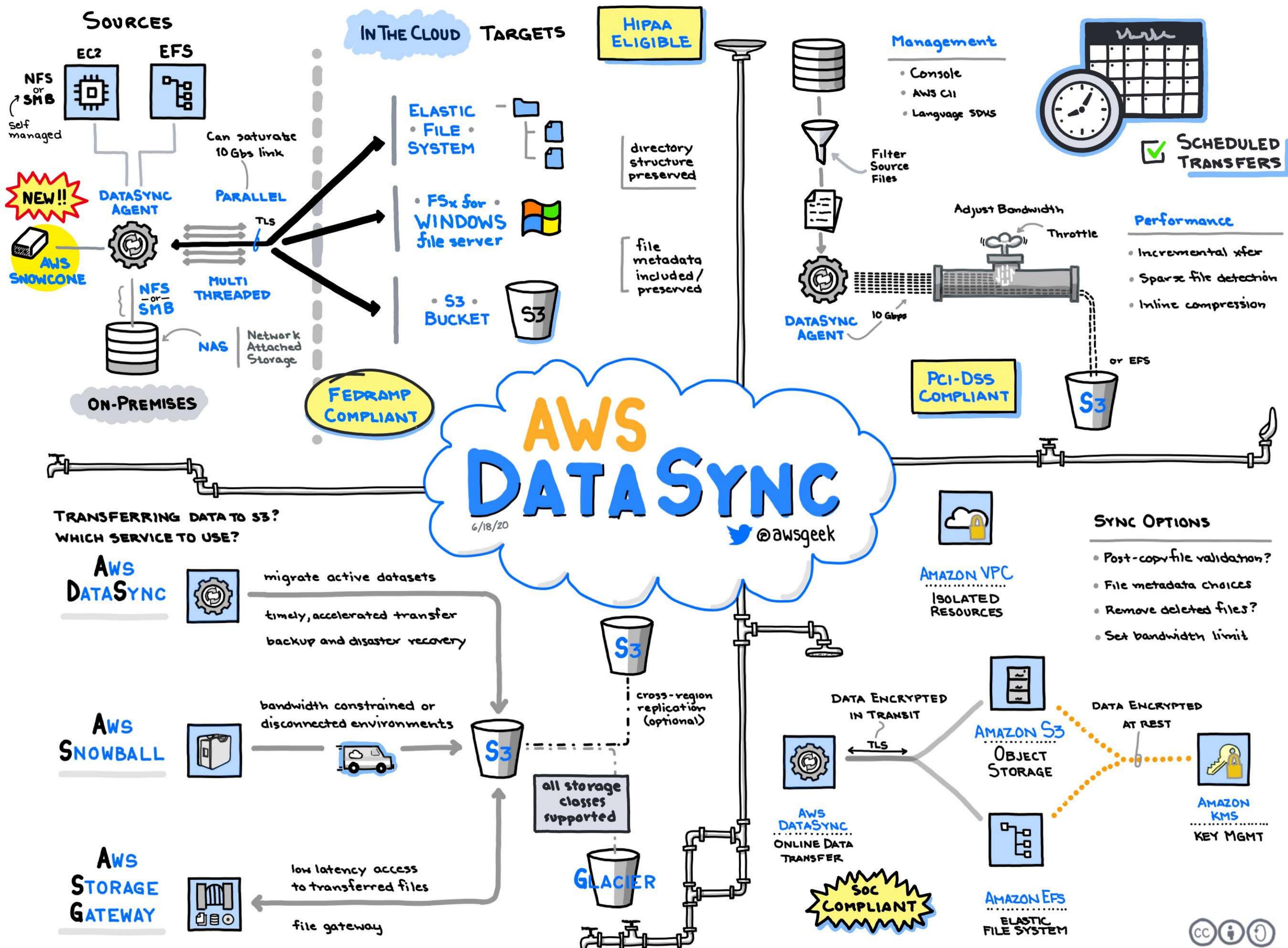


## OFFLINE DATA ACCESS

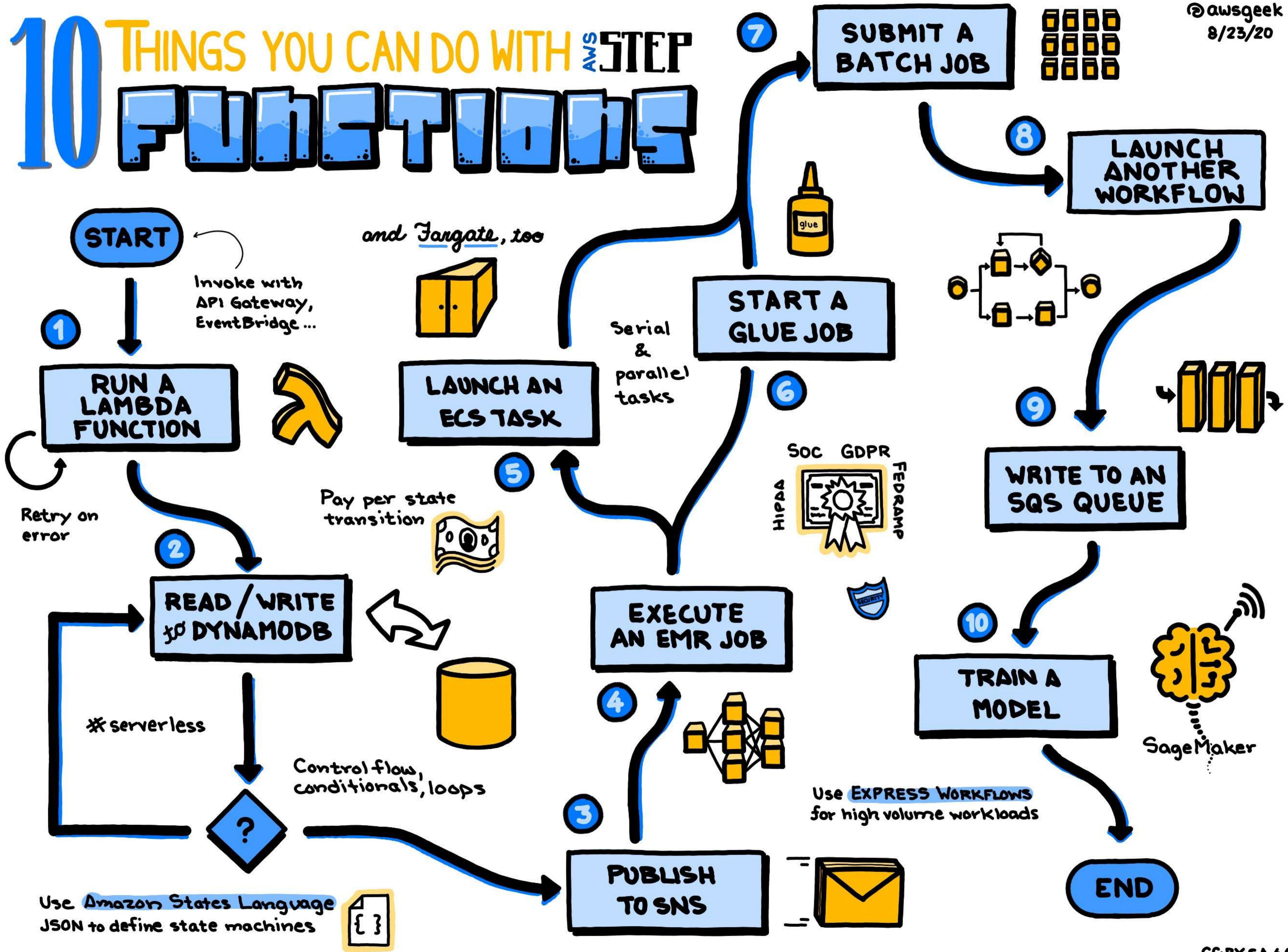
- ① MUTATE OFFLINE
  - ② UPLOAD CHANGES
  - ③ RESOLVE CONFLICTS
- APP SYNC

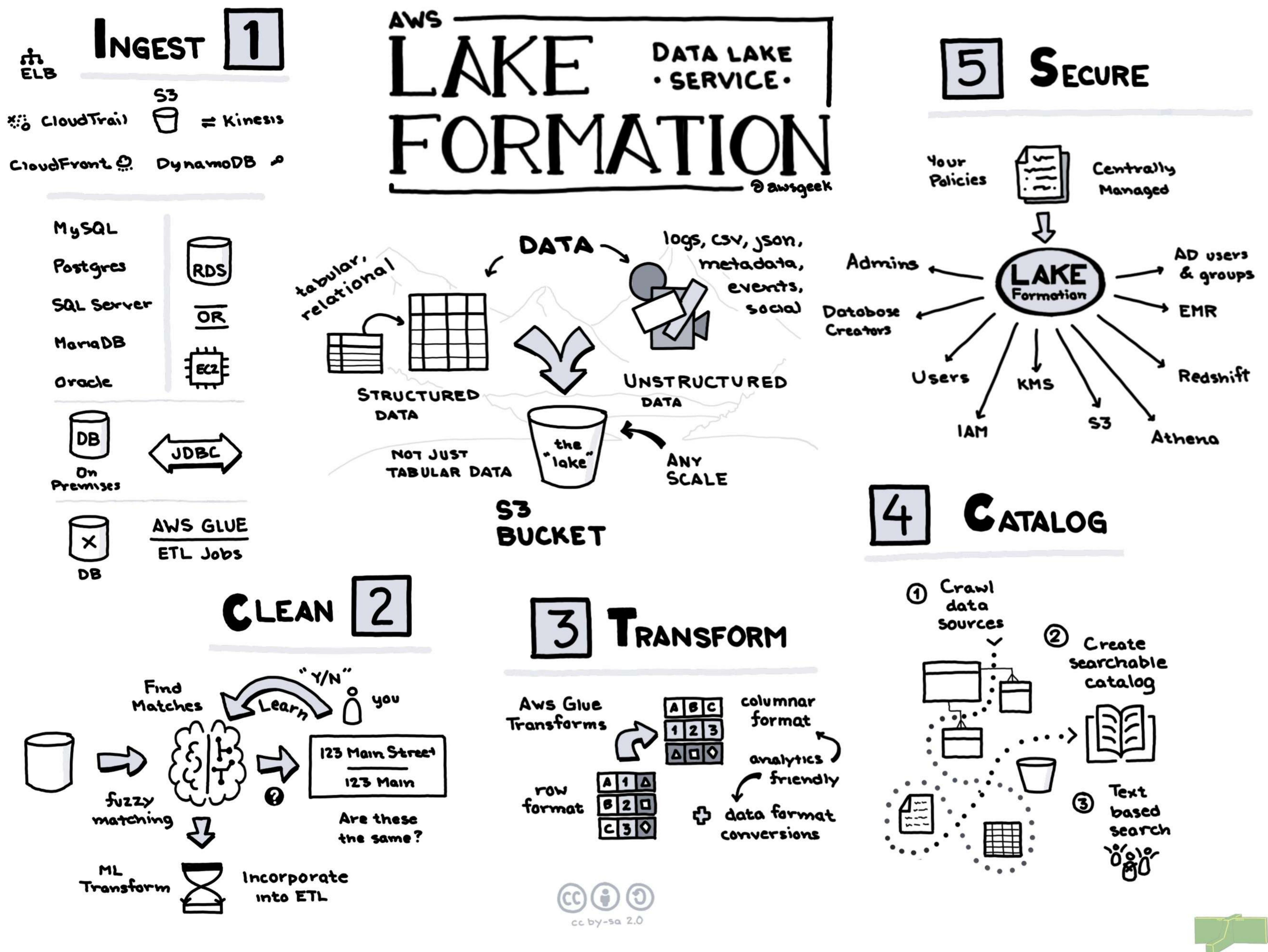






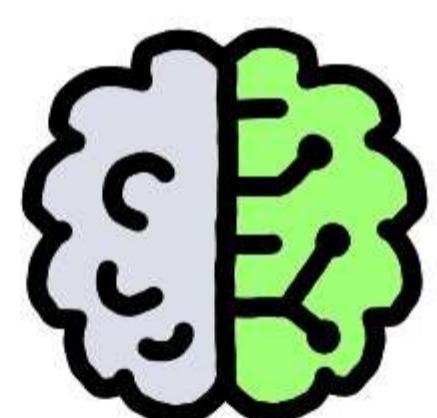
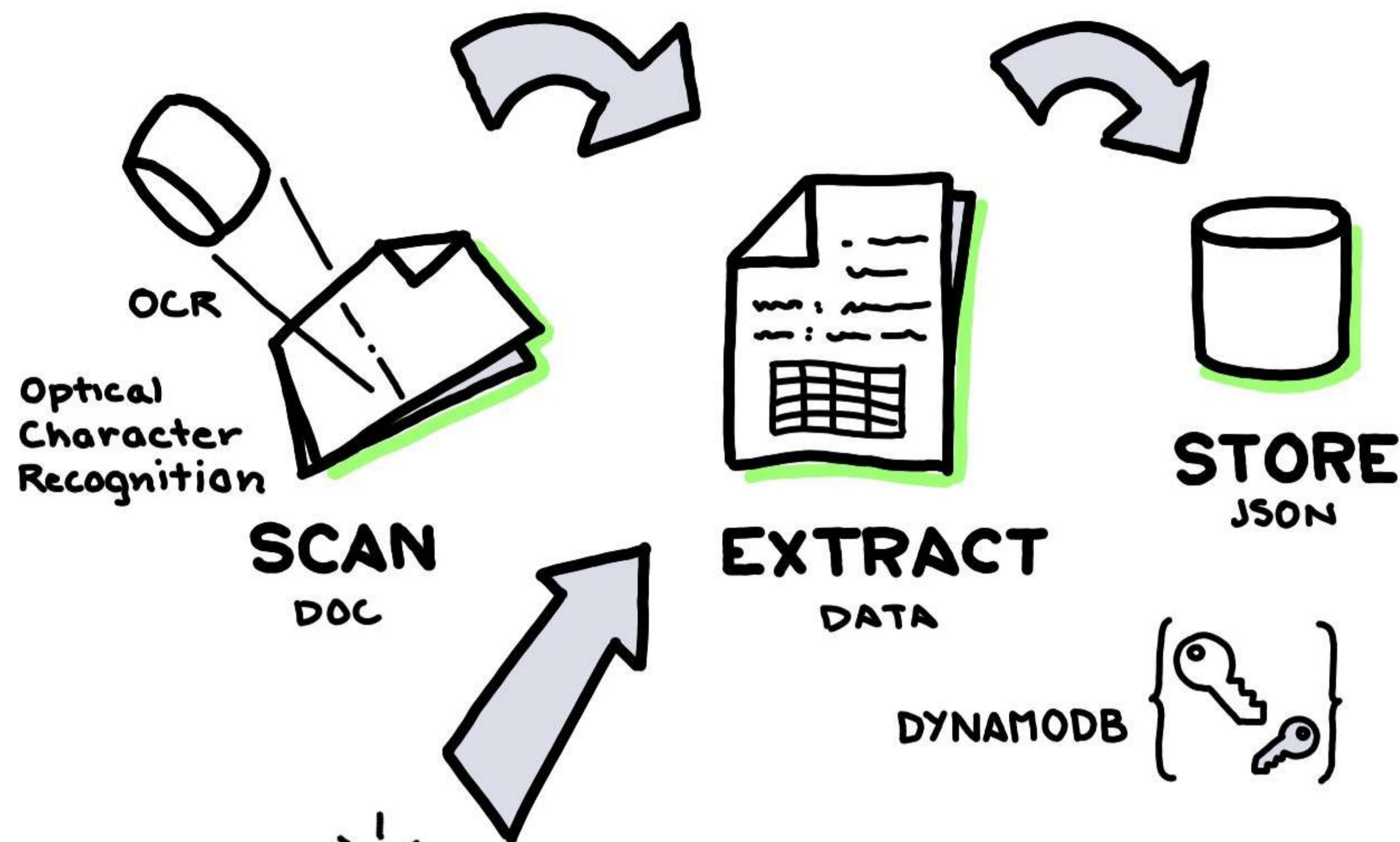
# 10 THINGS YOU CAN DO WITH AWS STEP FUNCTIONS





# NO CODE REQUIRED

# No TEMPLATES REQUIRED



AMAZON

# TEXTTRACT

# MACHINE LEARNING

— EXTRACT TEXT & DATA —



**PAY  
PER  
USE**

**PER  
PAGE**

- TEXT DETECTION
- DOCUMENT ANALYSIS
- FORMS & TABLES

**JPG**  
- or -  
**PNG**

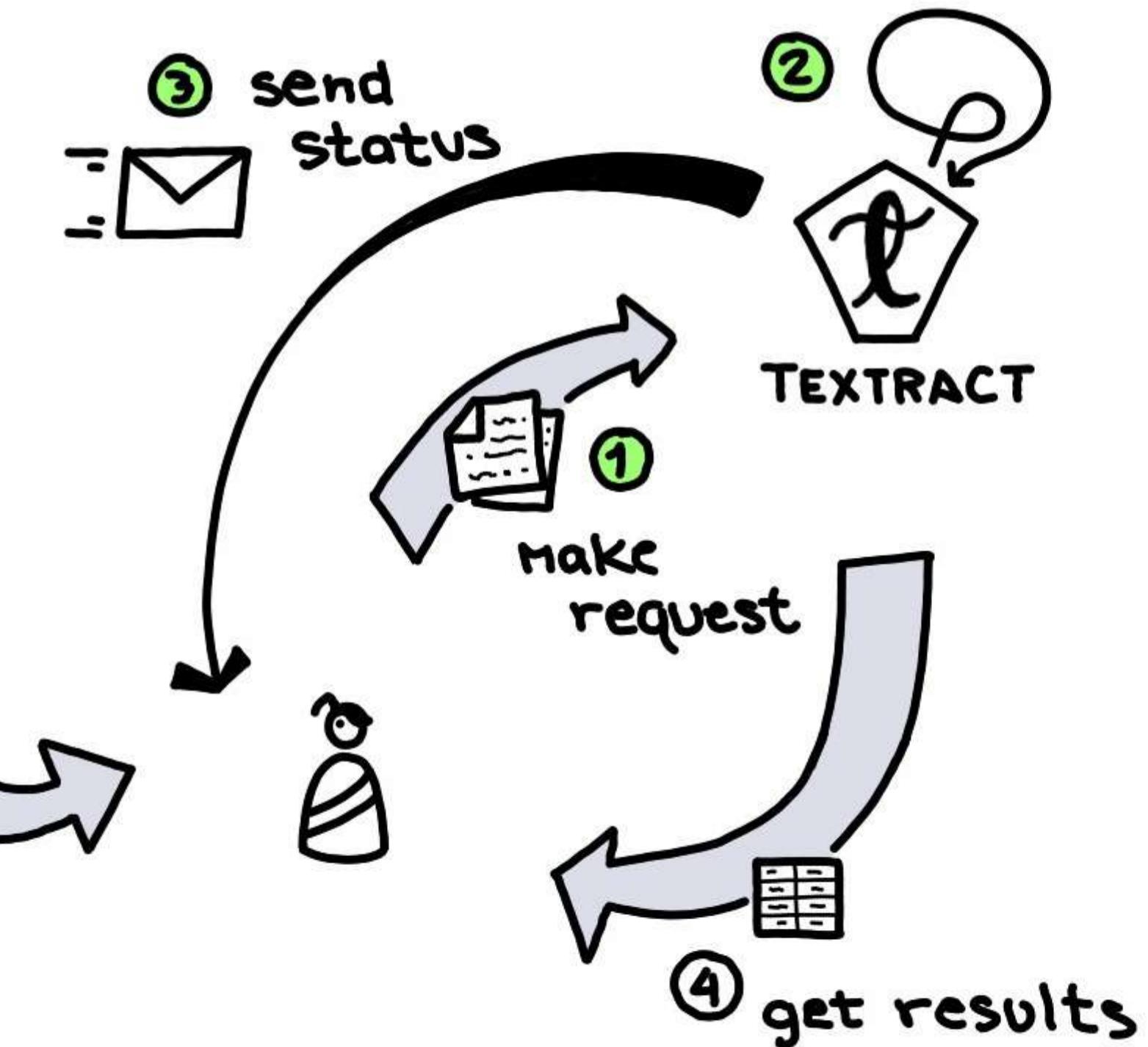
SINGLE PAGE  
SYNCHRONOUS  
DETECT & ANALYZE  
NEAR REAL-TIME



## Web Console



## MULTI-PAGE ASYNC



Checkboxes	<input checked="" type="checkbox"/> wear <input type="checkbox"/> non
Radio Buttons	<input type="radio"/> yes <input checked="" type="radio"/> no



# Language SDKs

# TABLE DATA

# DATA Columns

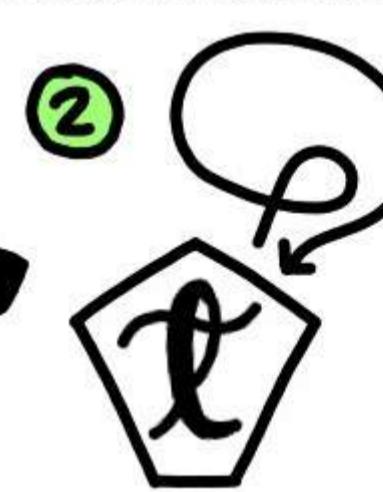
ID	NAME	PHONE
123	John	KL549
A	Jane	867-5
B	Jim	
C	Joe	

## Tabular Data



# Command Line Interface

## ASYNC PROCESSING

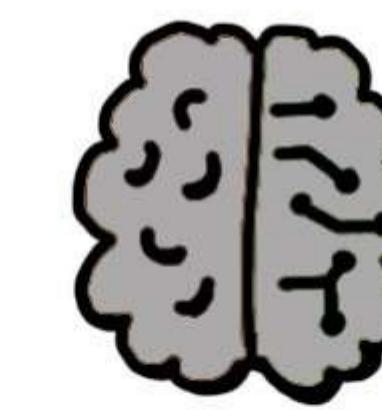
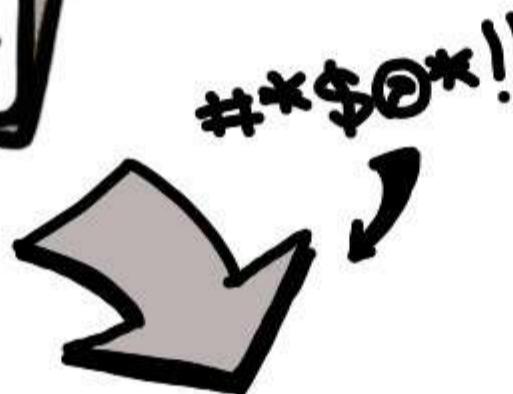


## AUTOMATIC SPEECH RECOGNITION



SPEECH →  
← TO TEXT

VOCABULARY  
FILTERING



## DEEP LEARNING PUNCTUATION AND FORMATTING



CLI



WEB

## BRING YOUR OWN BYOV VOCABULARY



REAL TIME

CLOSE CAPTIONING

AMAZON

5/21/20

# TRANSCRIBE

@awsgeek

CUSTOM  
VOCABULARIES

## STREAMING TRANSCRIPTION



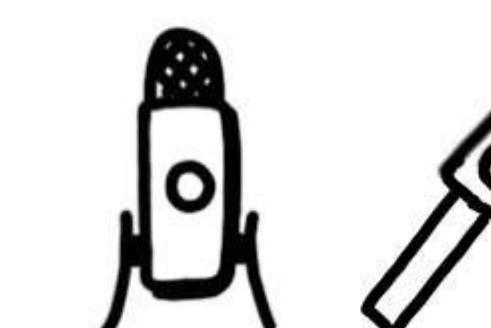
WEB SOCKET

HTTP/2



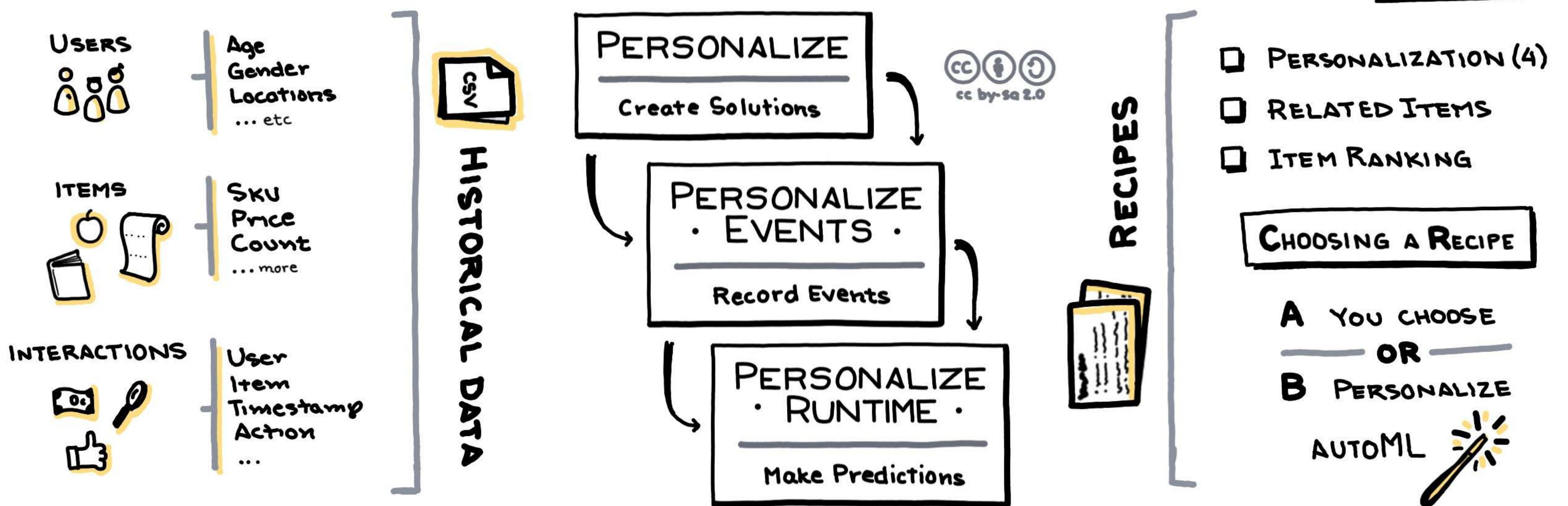
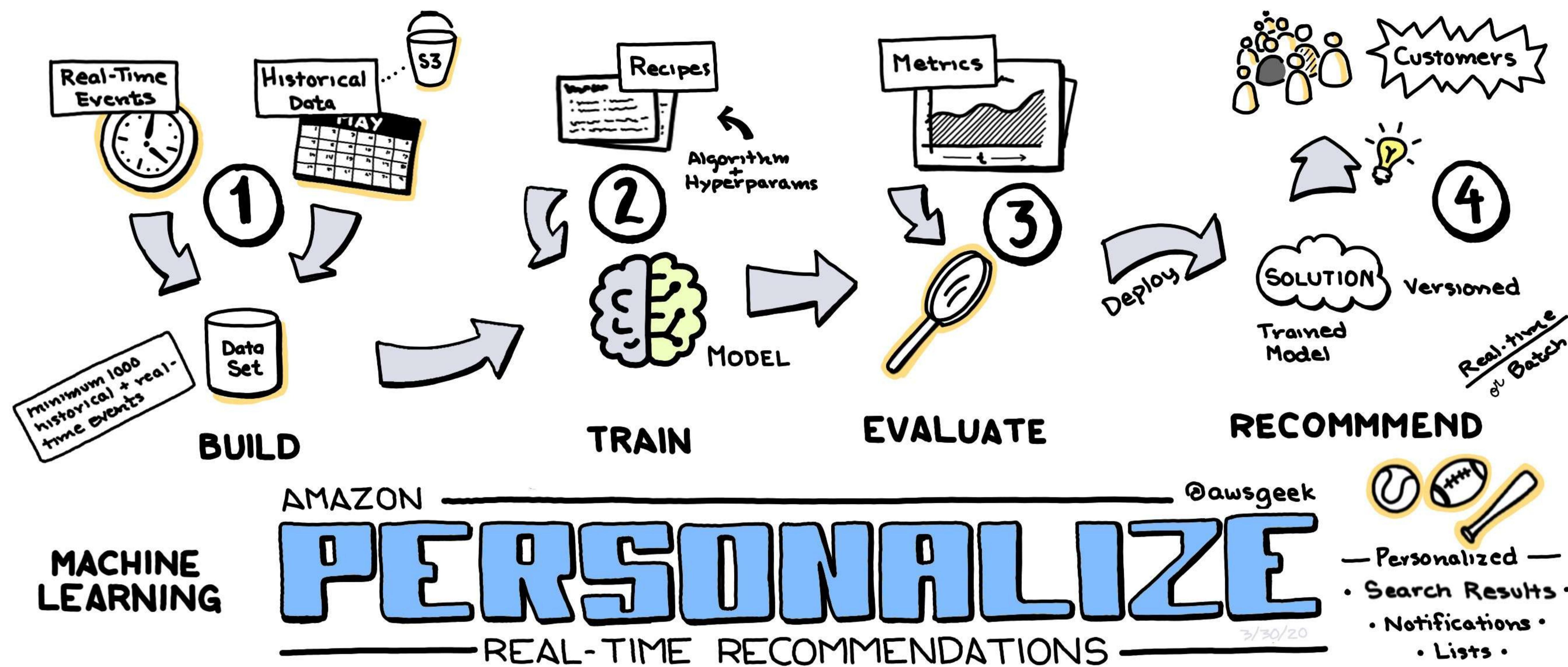
## MULTIPLE SPEAKER • IDENTIFICATION •

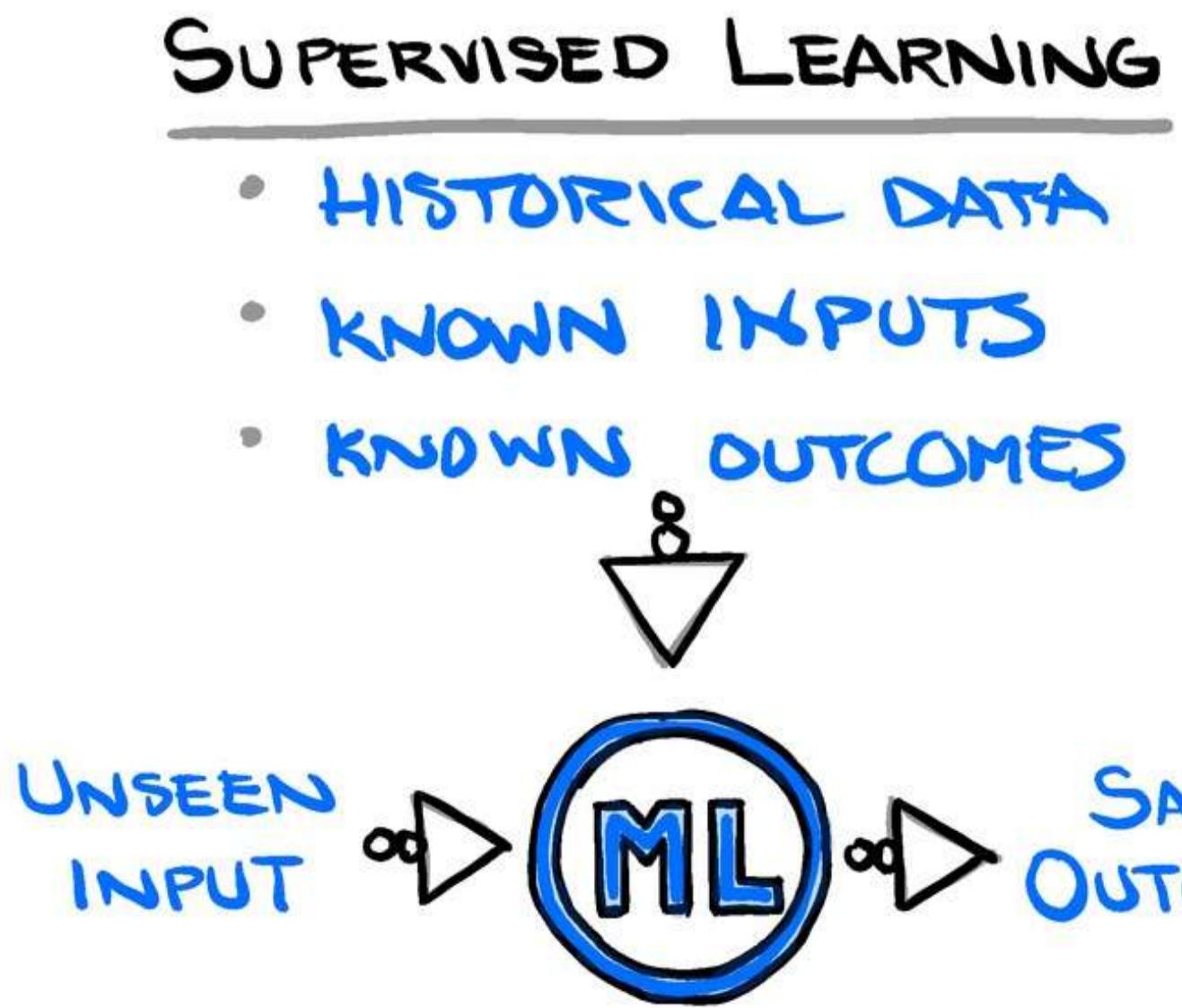
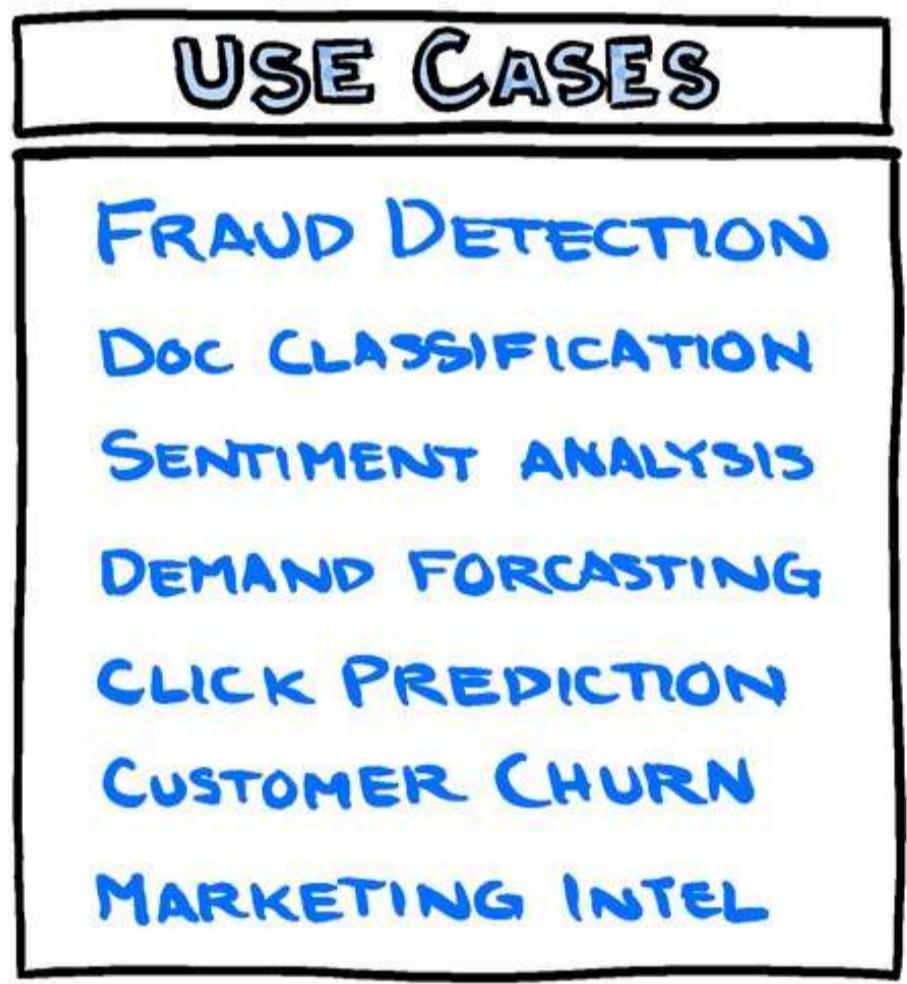
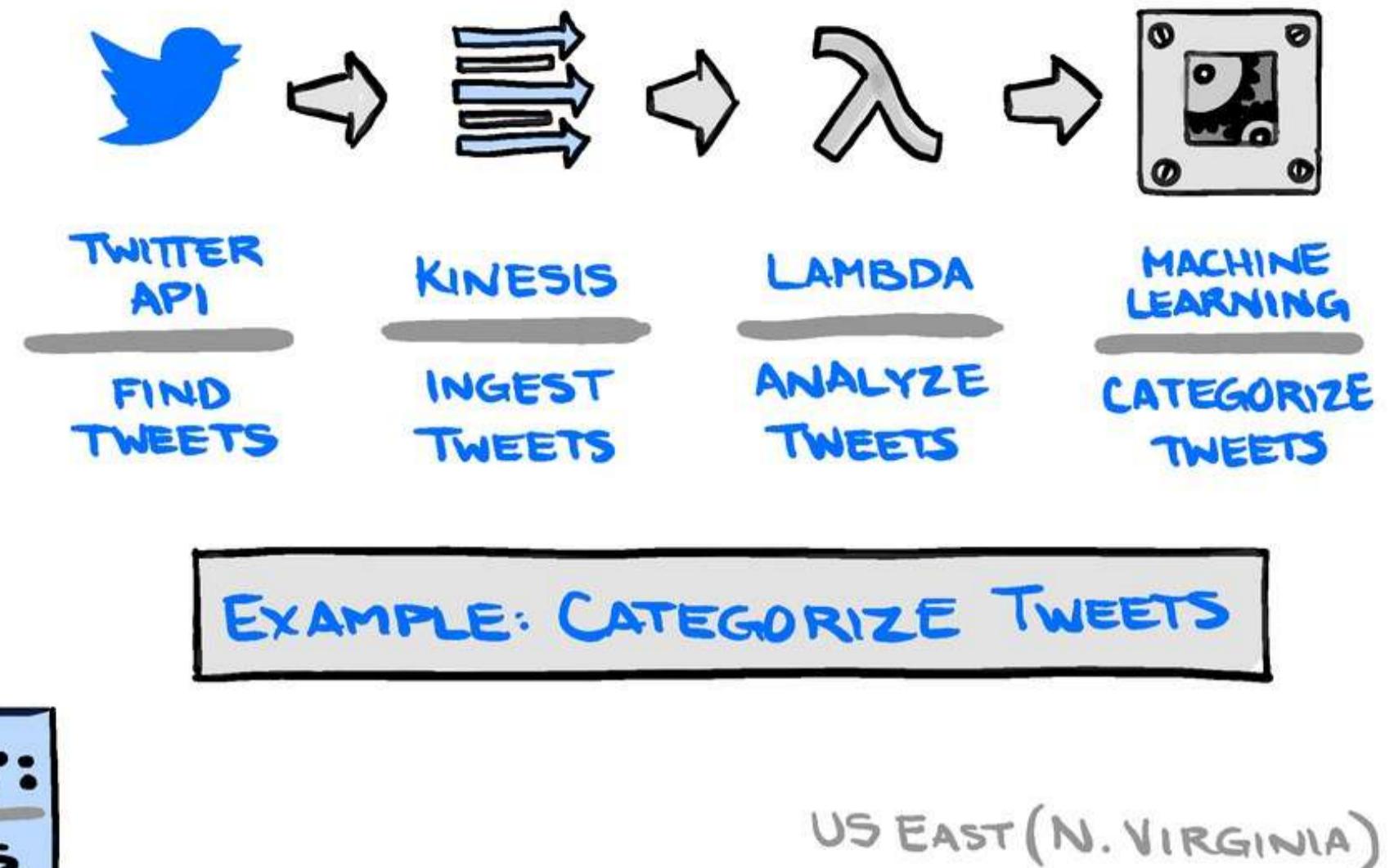
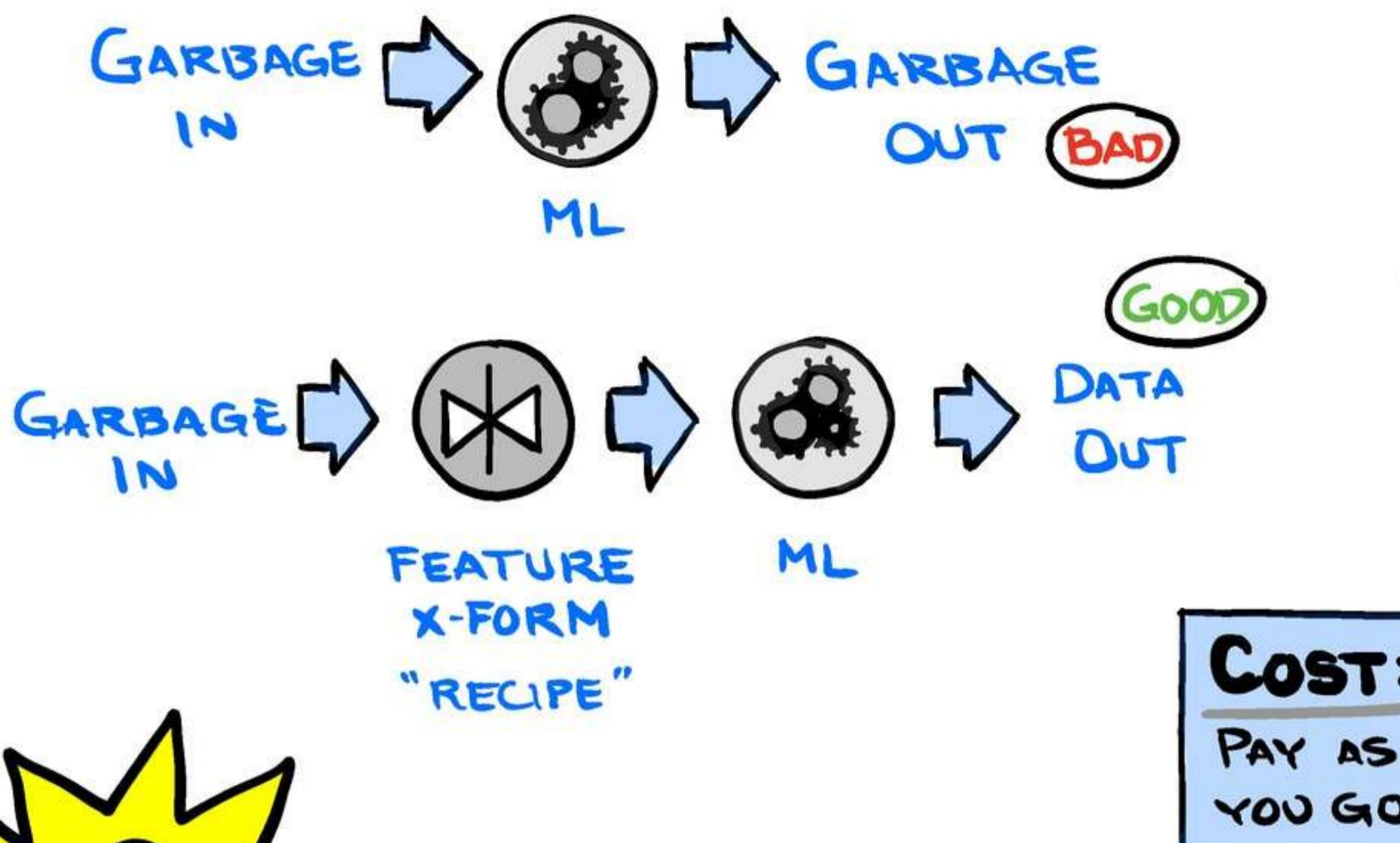
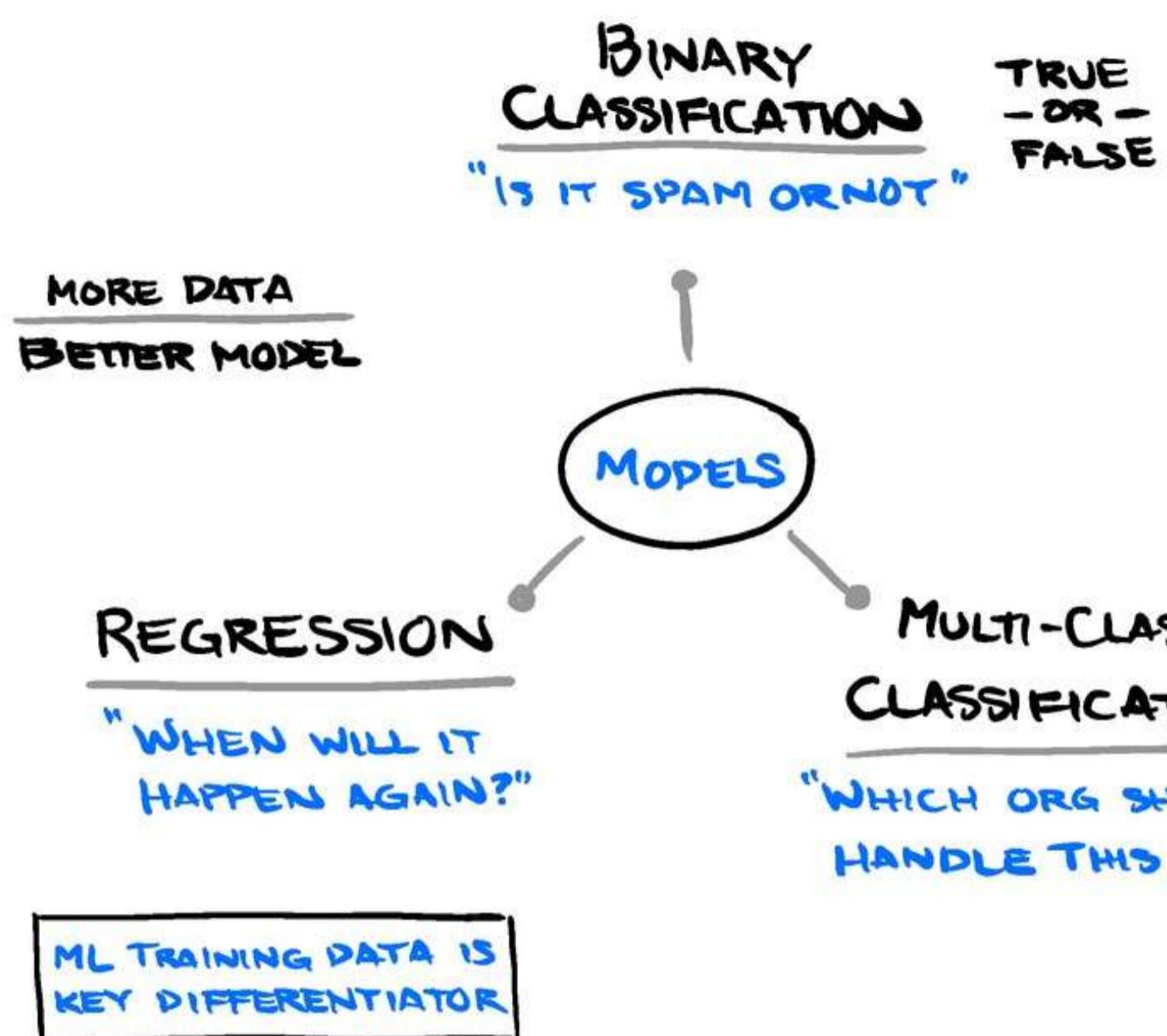
"DIARIZATION"



CHANNEL  
ID

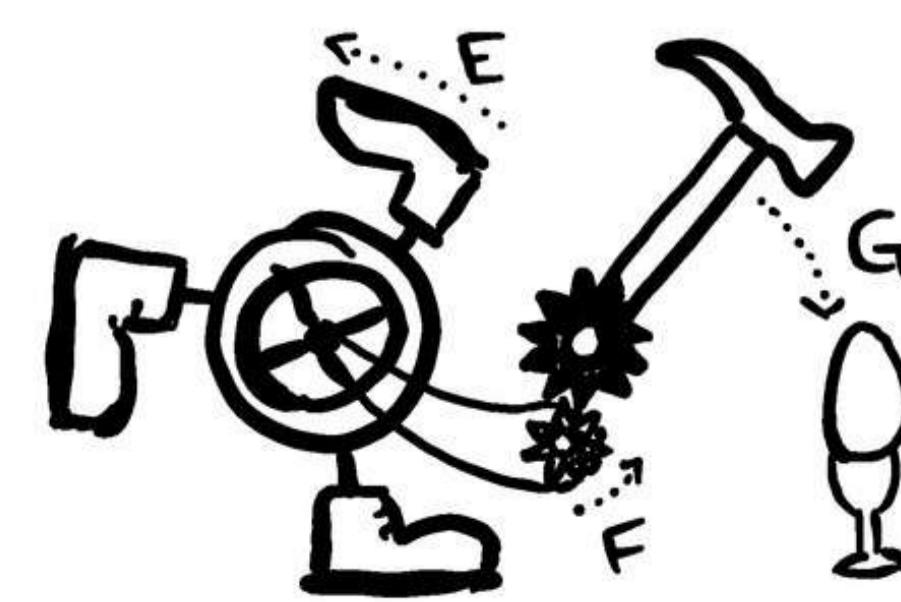
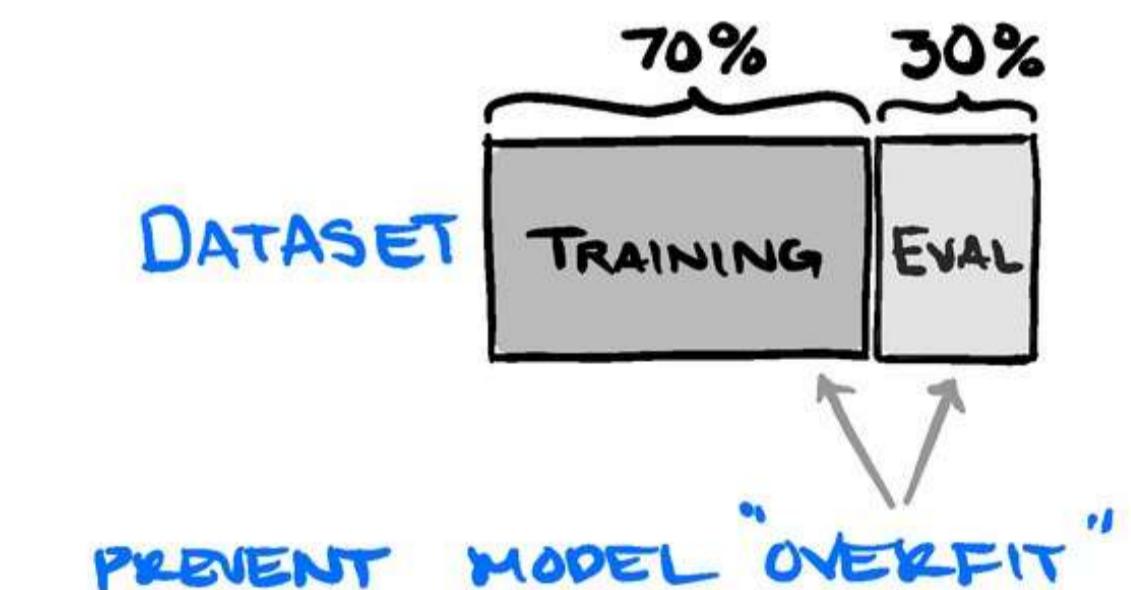
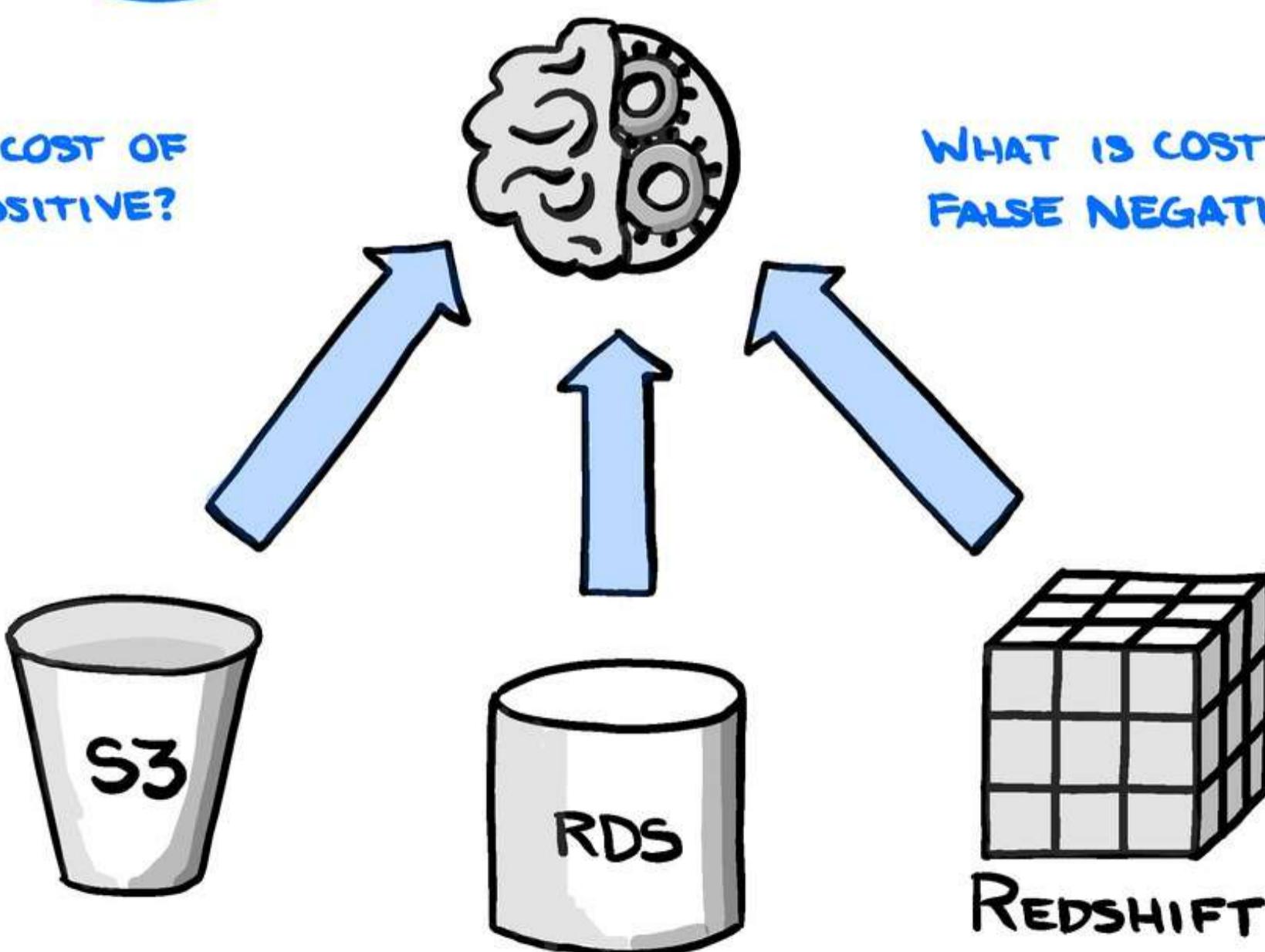
CC BY-SA 4.0



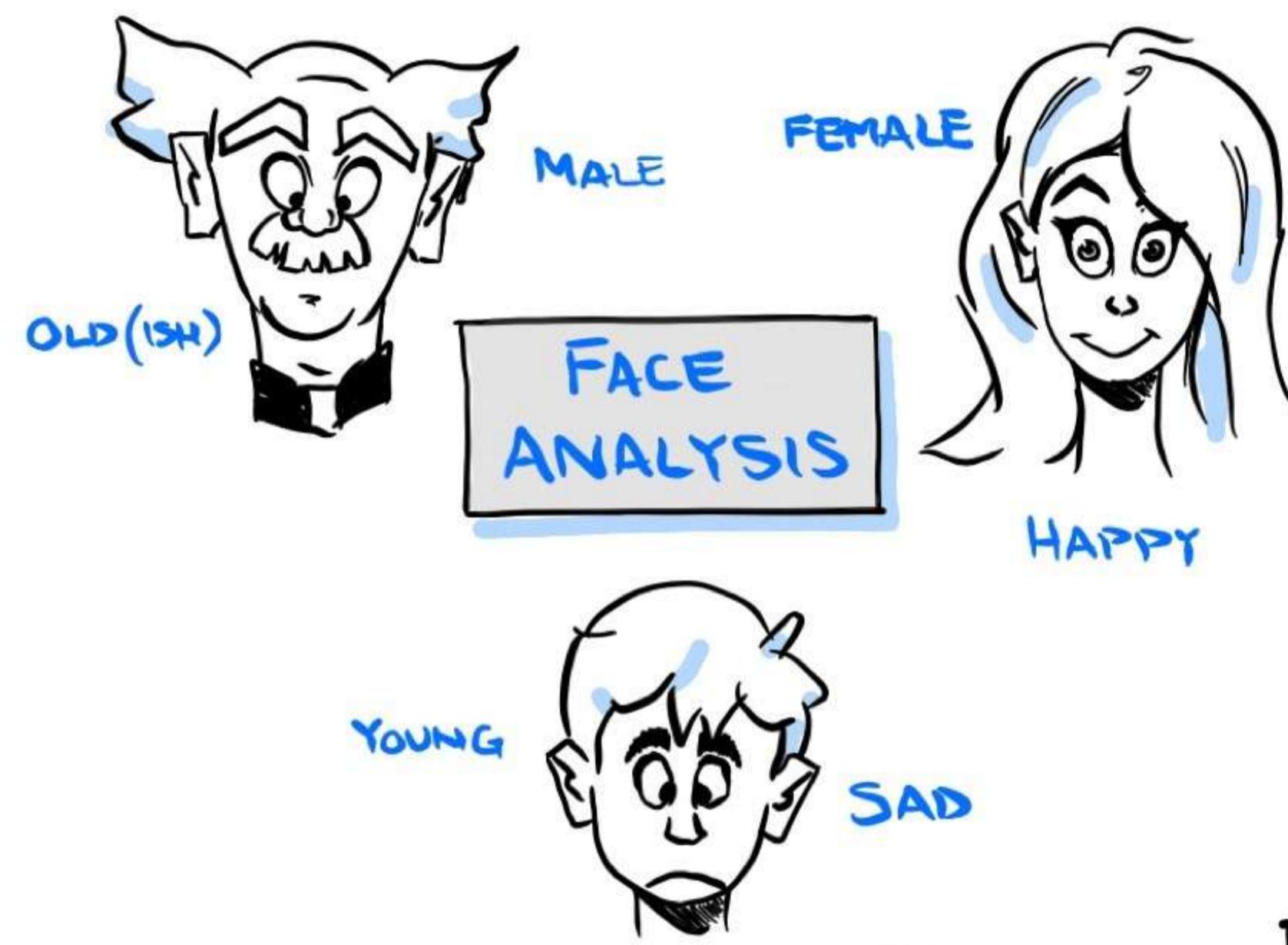
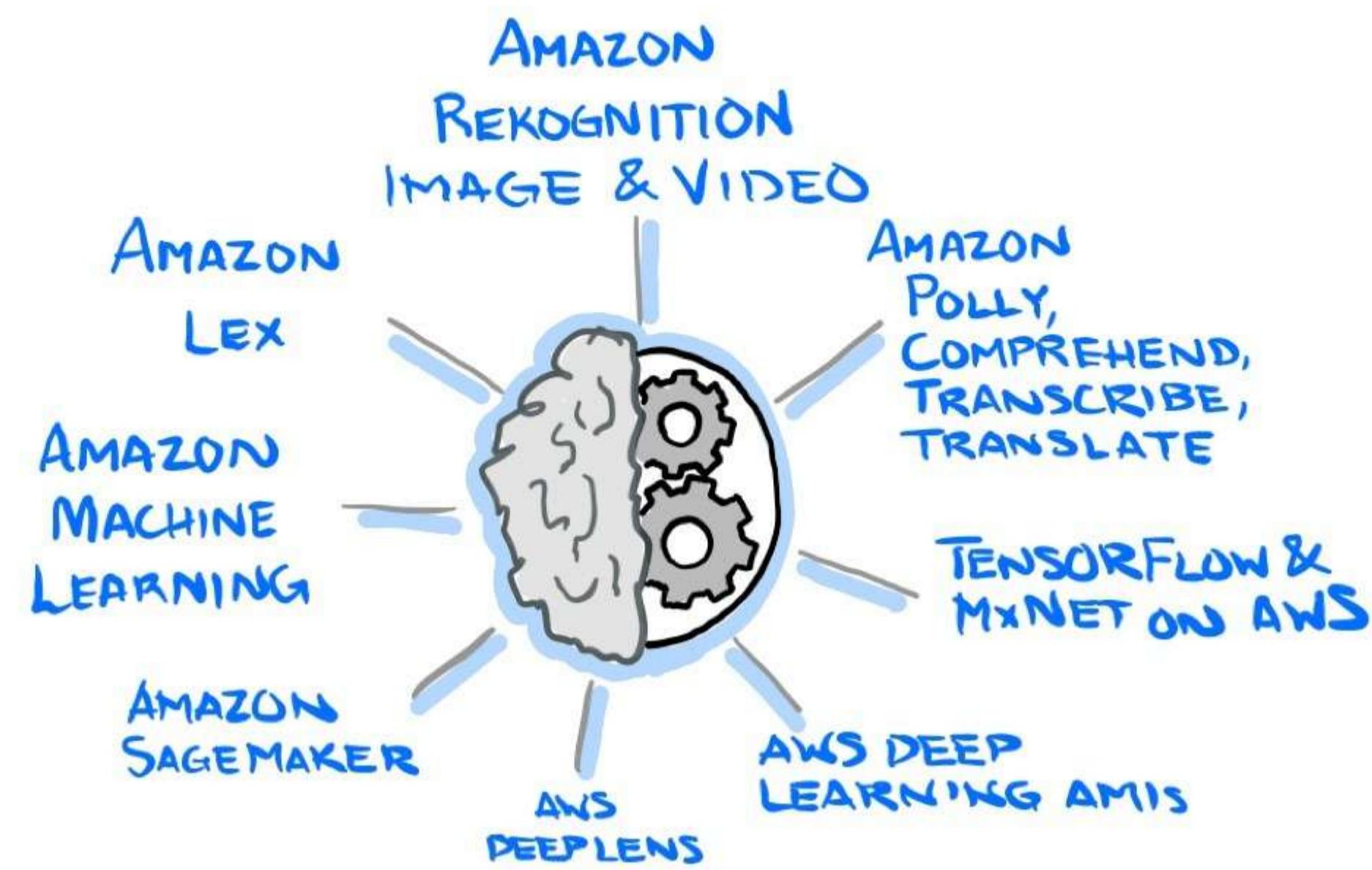
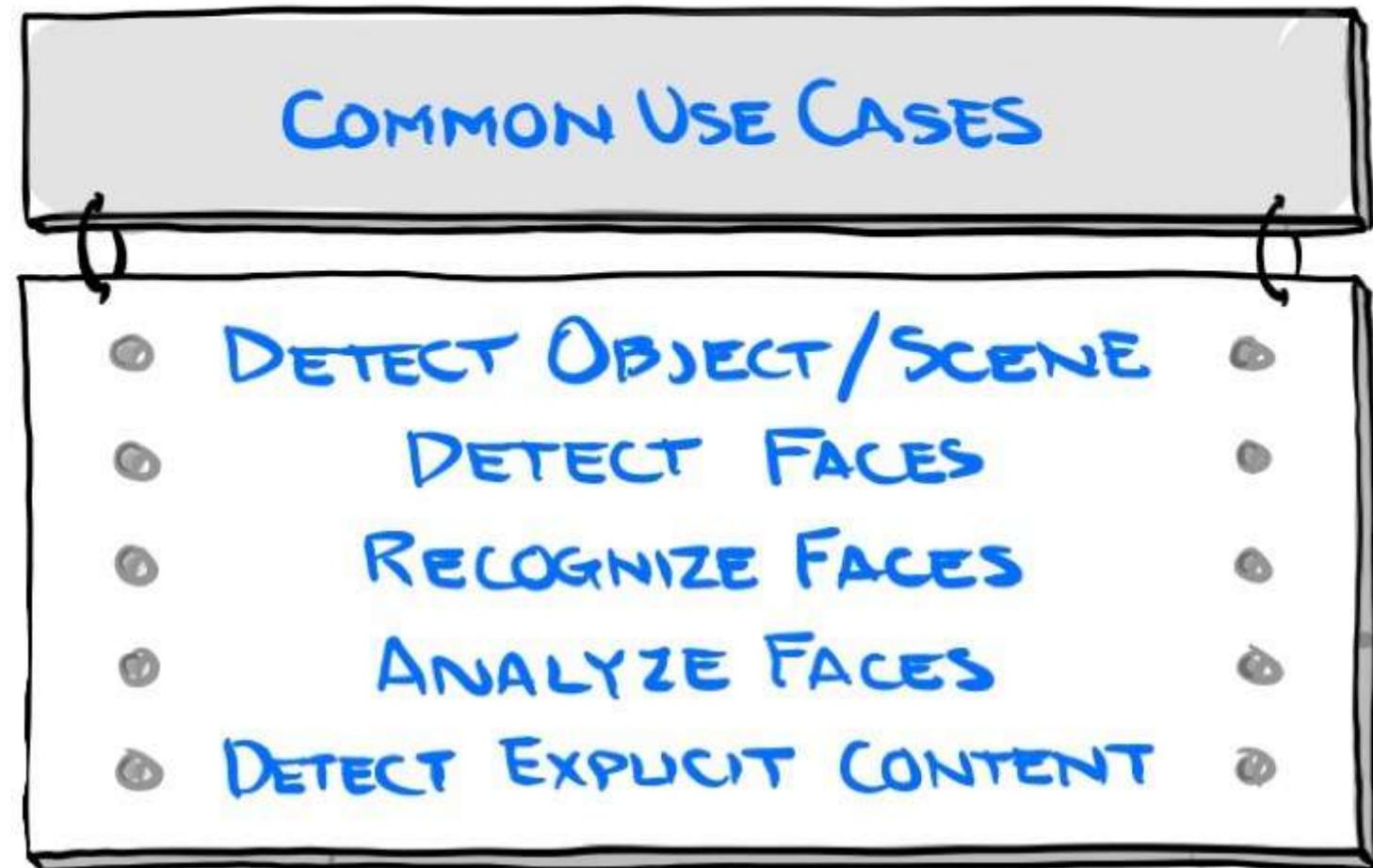


WHAT IS COST OF FALSE POSITIVE?

WHAT IS COST OF FALSE NEGATIVE?



@awsgeek  
9/22/17



## AMAZON AI FAMILY



REKOGNITION FACE ANALYSIS

- NO HATS
- NO SUNGLASSES
- NO ...

## PRICING

① \$ PER IMAGE

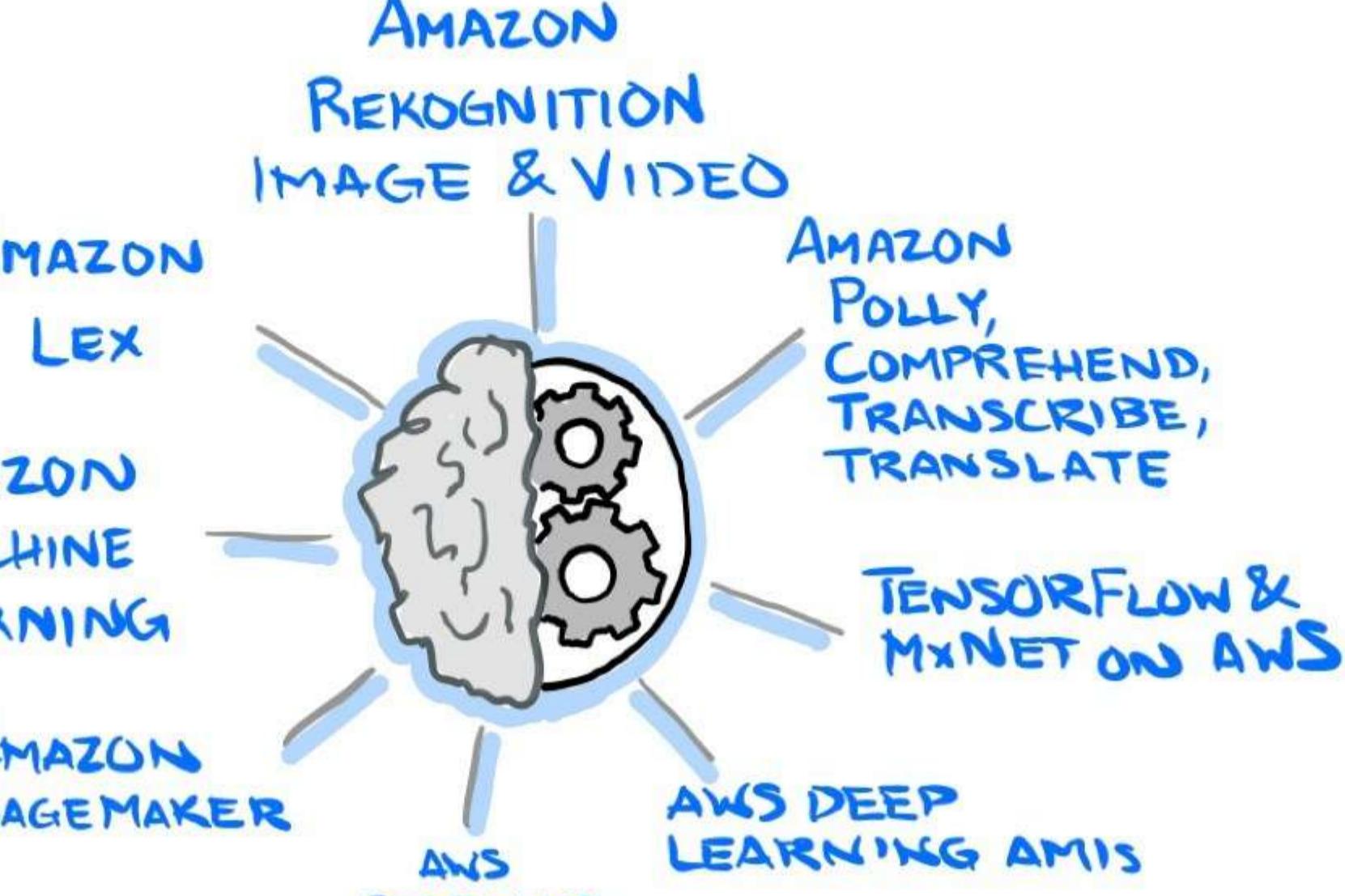


\$ ②



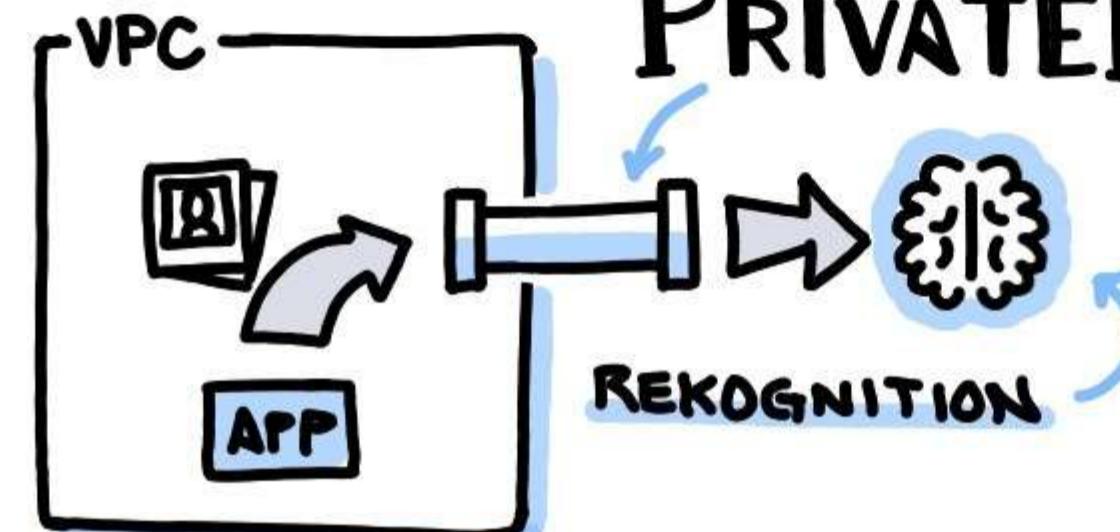
VIDEO

③ \$ PER MINUTE

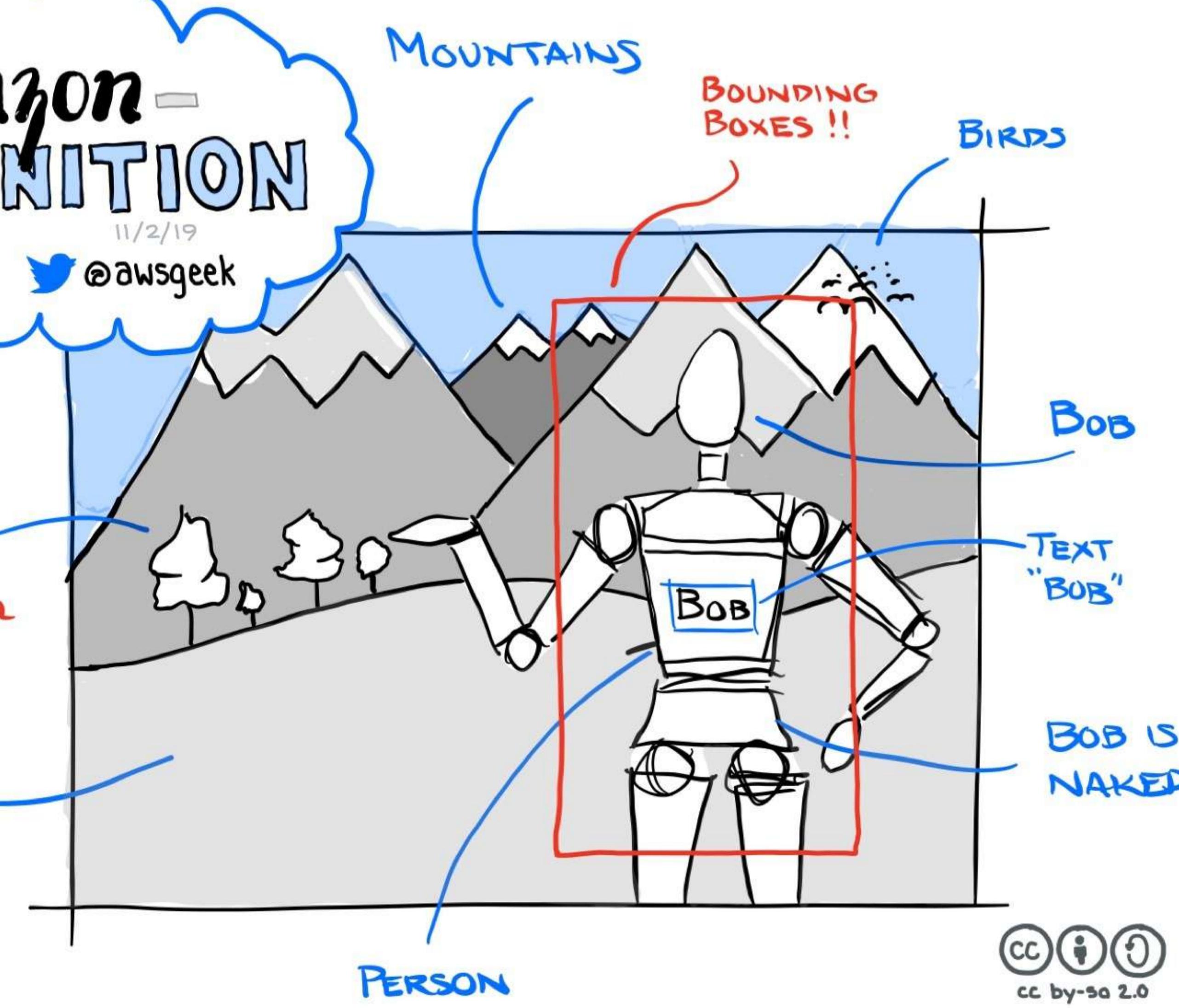


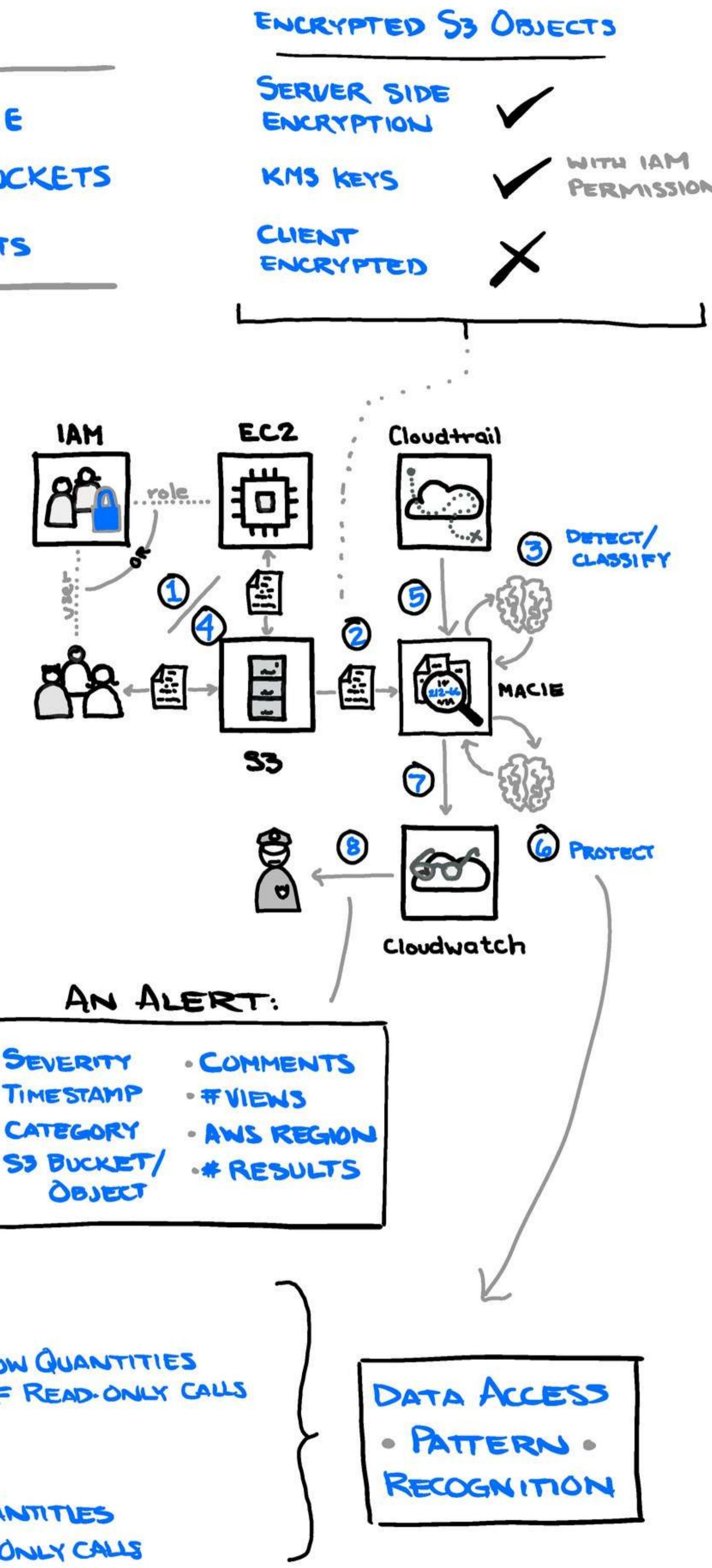
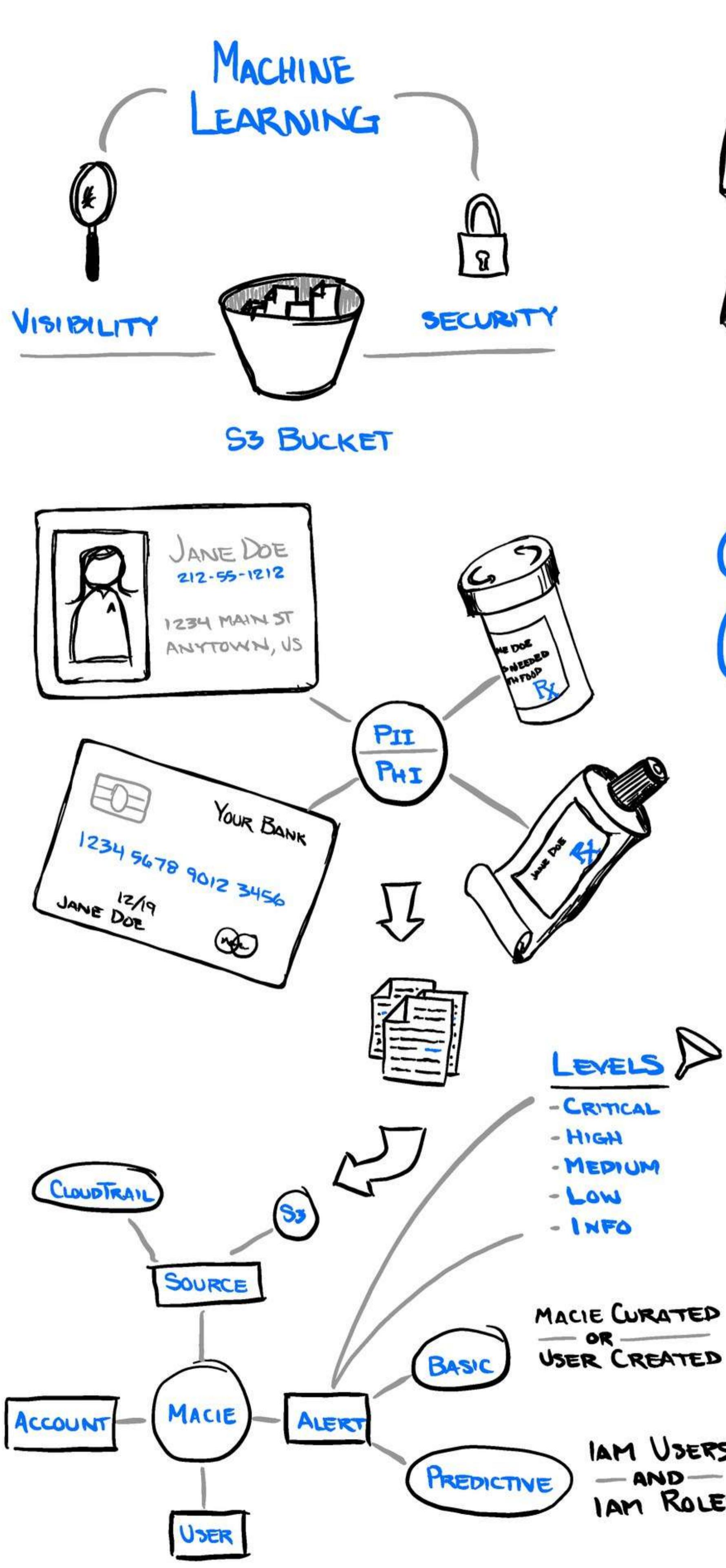
amazon REKOGNITION 11/2/19  
@awsgeek

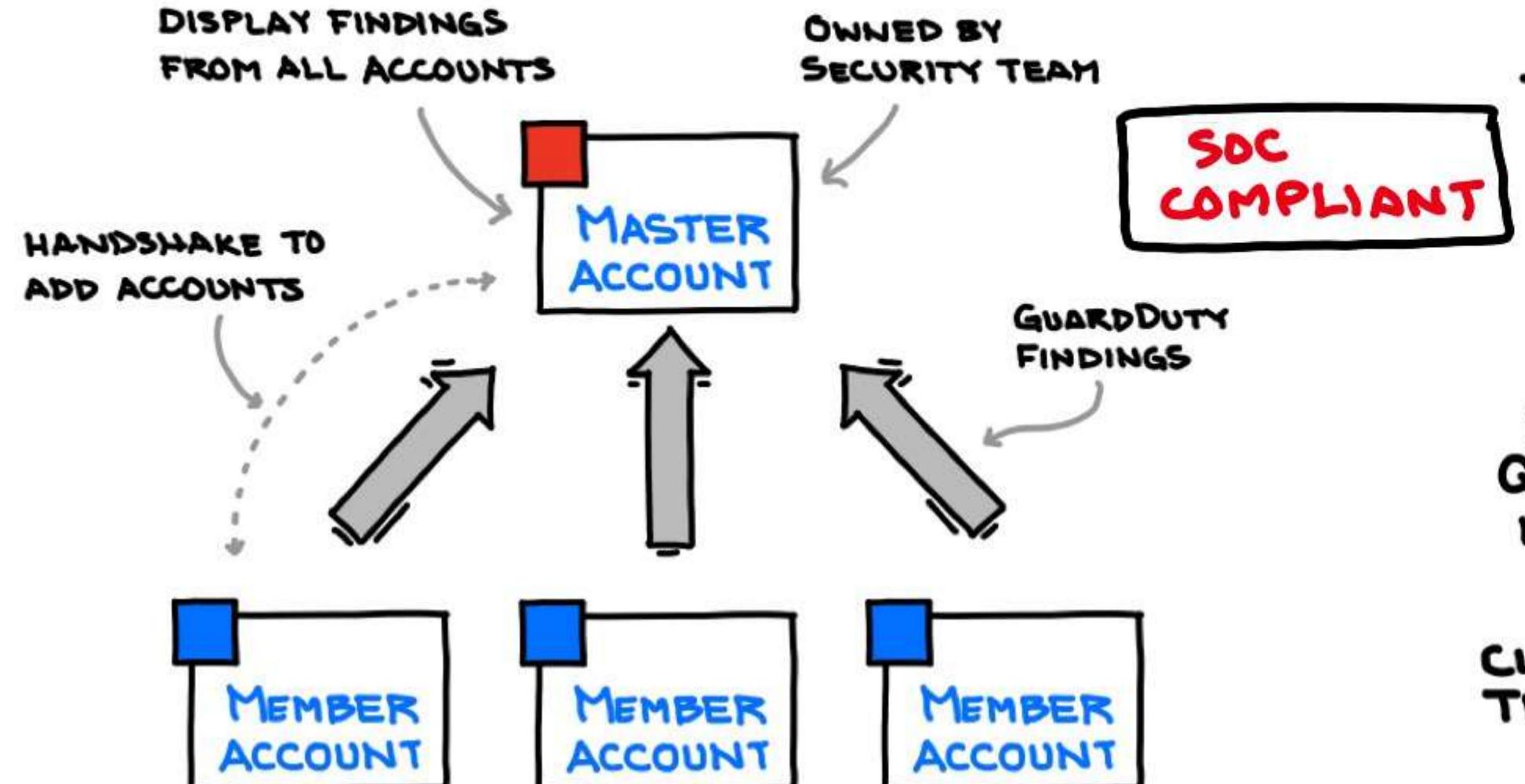
PRIVATELINK



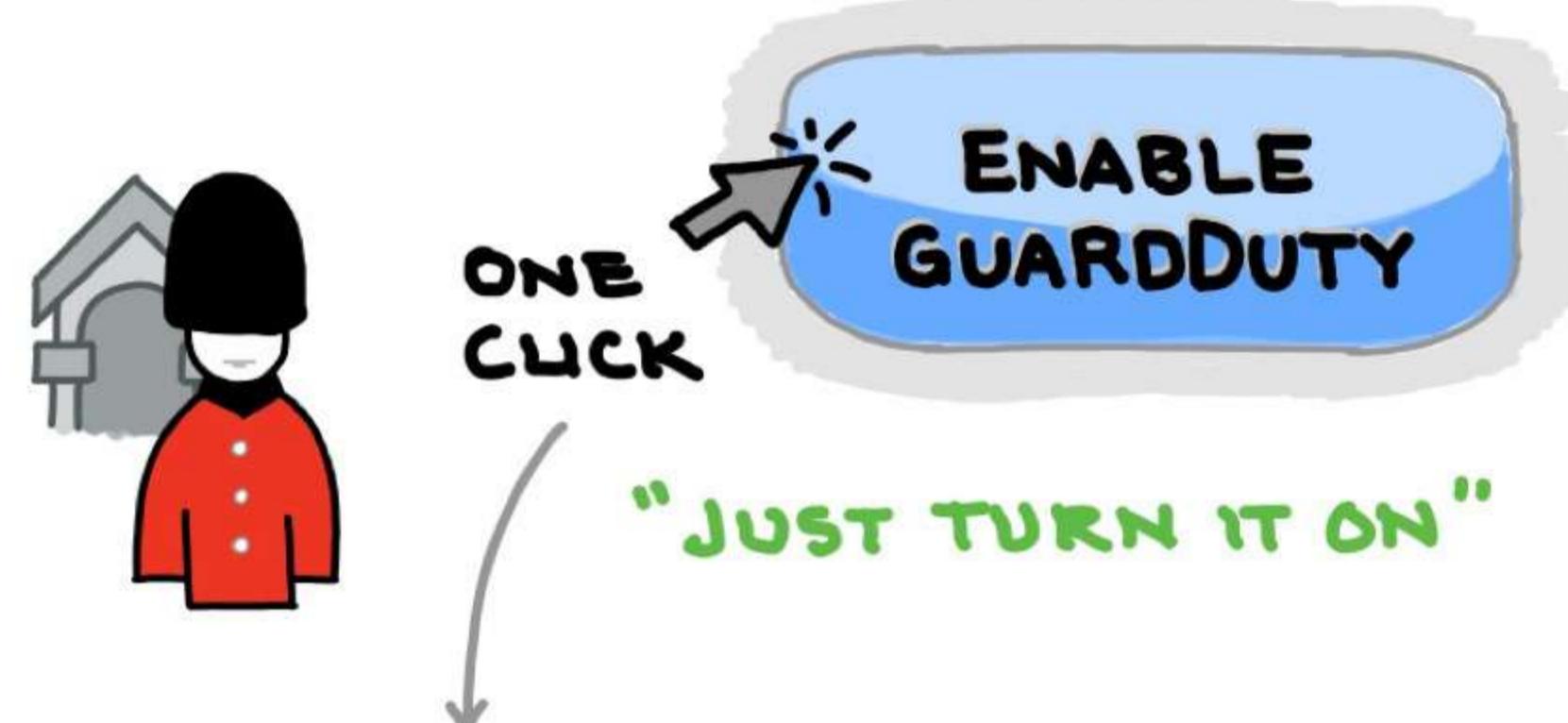
TREES /  
HIERACHICAL  
METADATA /  
OUTDOORS







## CENTRALIZED THREAT DETECTION



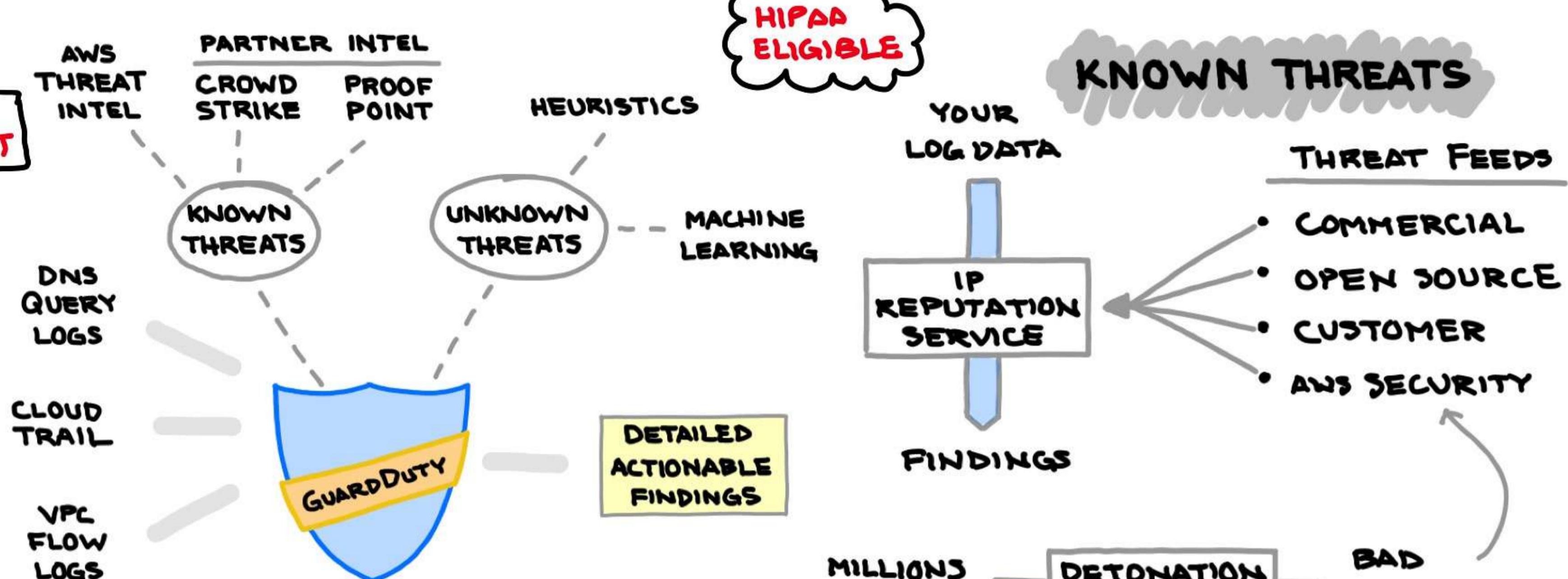
GIVES AWS ACCESS TO  
YOUR CLOUDTRAIL, VPC  
FLOW, & DNS QUERY LOGS

## PRICING (US WEST - OREGON)

CLOUDTRAIL LOGS \$4/MO/MM

### VPC FLOW LOGS & DNS QUERY LOGS

\$1/GB/MO	FIRST 500 GB
50¢/GB/MO	NEXT 2000 GB
25¢/GB/MO	NEXT 7500 GB
15¢/GB/MO	OVER 10K GB



GUARDDUTY IS A REGIONAL SERVICE  
YOU MUST ENABLE IN ALL REGIONS



## AUTOMATION FRAMEWORK

## DETECTION TIMES

EC2 - C5 FAST, 30 SEC - 2 MIN  
T2 SLOW, 5 - 10 MIN

CLOUDTRAIL - 5-15 MIN

DNS - BEHIND CLOUDTRAIL

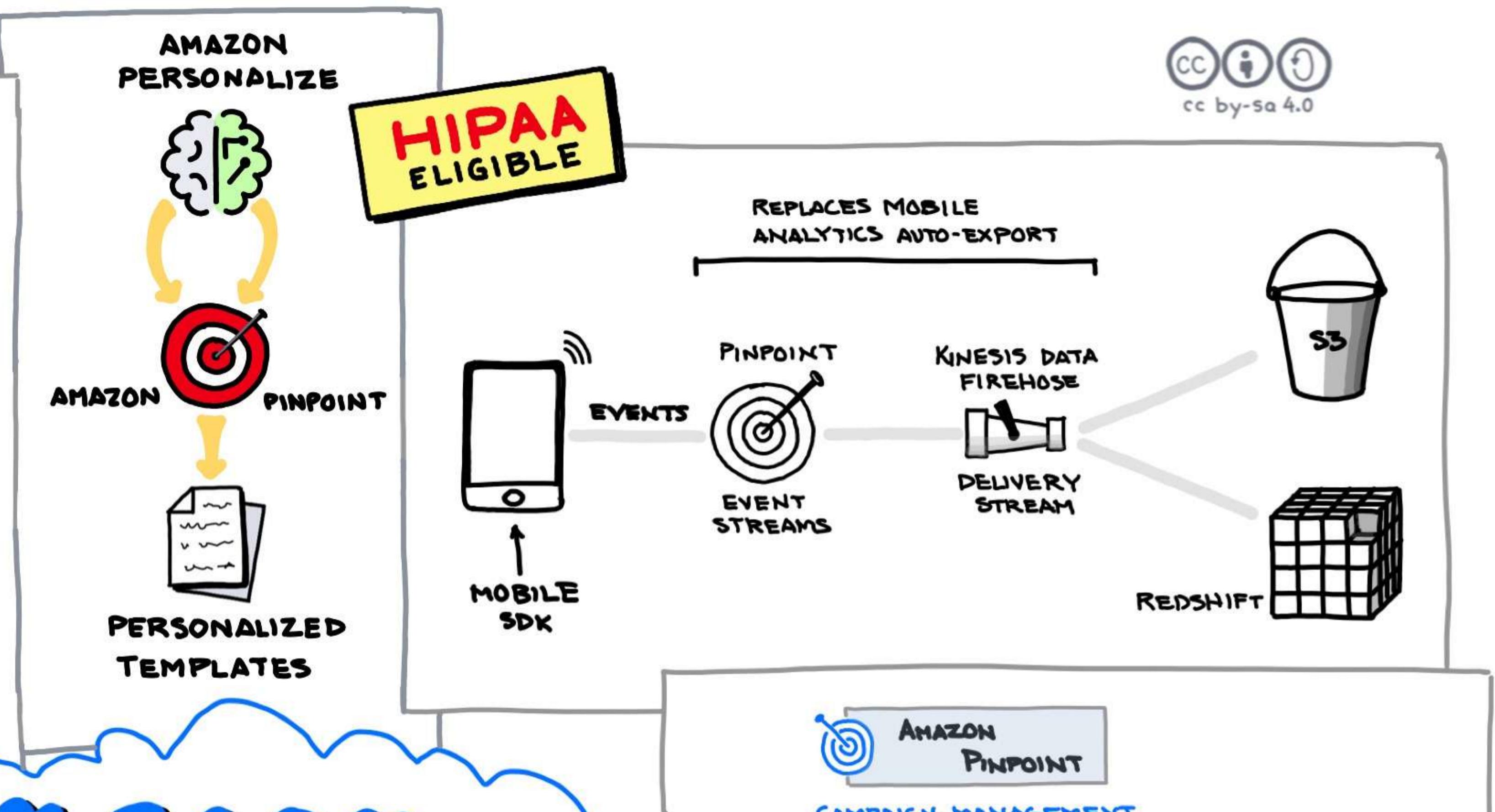
## DETECTION CATEGORIES

- RECON
- BACKDOOR
- TROJAN
- UNAUTH ACCESS
- STEALTH
- CRYPTOCURRENCY
- PEN TESTING \*

PAY • AS • YOU • GO

# PRICING

OPTIONAL:	
• phone # verification	
• dedicated short codes	
EMAIL	\$1 per 10K
MOBILE PUSH	\$1 per 1M over 1M
SMS	per message varies by destination
	+ \$1.20 per 1k endpoints (over 5k)
EVENTS:	\$1 per 1M collected via mobile SDK



CUSTOMER ENGAGEMENT

1. CUSTOMER ANALYTICS
2. CUSTOMER SEGMENTATION
3. MULTI-CHANNEL MESSAGING

# amazon Pinpoint

@awsgeek

AMAZON  
Pinpoint

CAMPAIN MANAGEMENT

CUSTOMER  
ENGAGEMENT  
FAMILY of SERVICES

AMAZON SIMPLE  
EMAIL SERVICE  
SCALABLE EMAIL  
PLATFORM

AMAZON  
CONNECT  
CUSTOMER CONTACT  
CENTER

## 1 CUSTOMER ANALYTICS

- DEMOGRAPHIC DATA
- INTEREST DATA
- ENGAGEMENT DATA

METRICS	ACTIVATION RETENTION CONVERSION	DAILY USERS CHURN RATE RETENTION RATE AVG REVENUE LIFETIME VALUE ...
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## 2 CUSTOMER SEGMENTATION

- DEMOGRAPHICS... age, gender, location...
- INTERESTS..... sports, hobbies, likes...
- ENGAGEMENT.... sessions, purchases...



## 3 MULTI-CHANNEL MESSAGING

- MOBILE PUSH
  - APPLE PUSH NOTIFICATION
  - FIREBASE CLOUD MESSAGING
  - GOOGLE CLOUD MESSAGING
- EMAIL
  - HTML OR PLAIN TEXT
- SMS

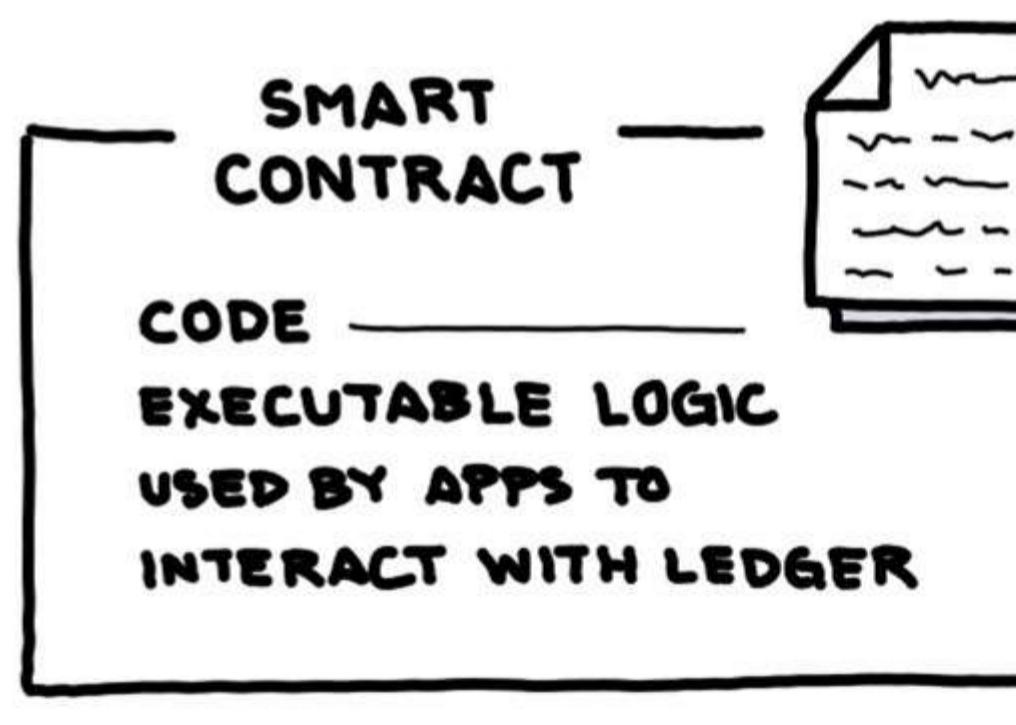
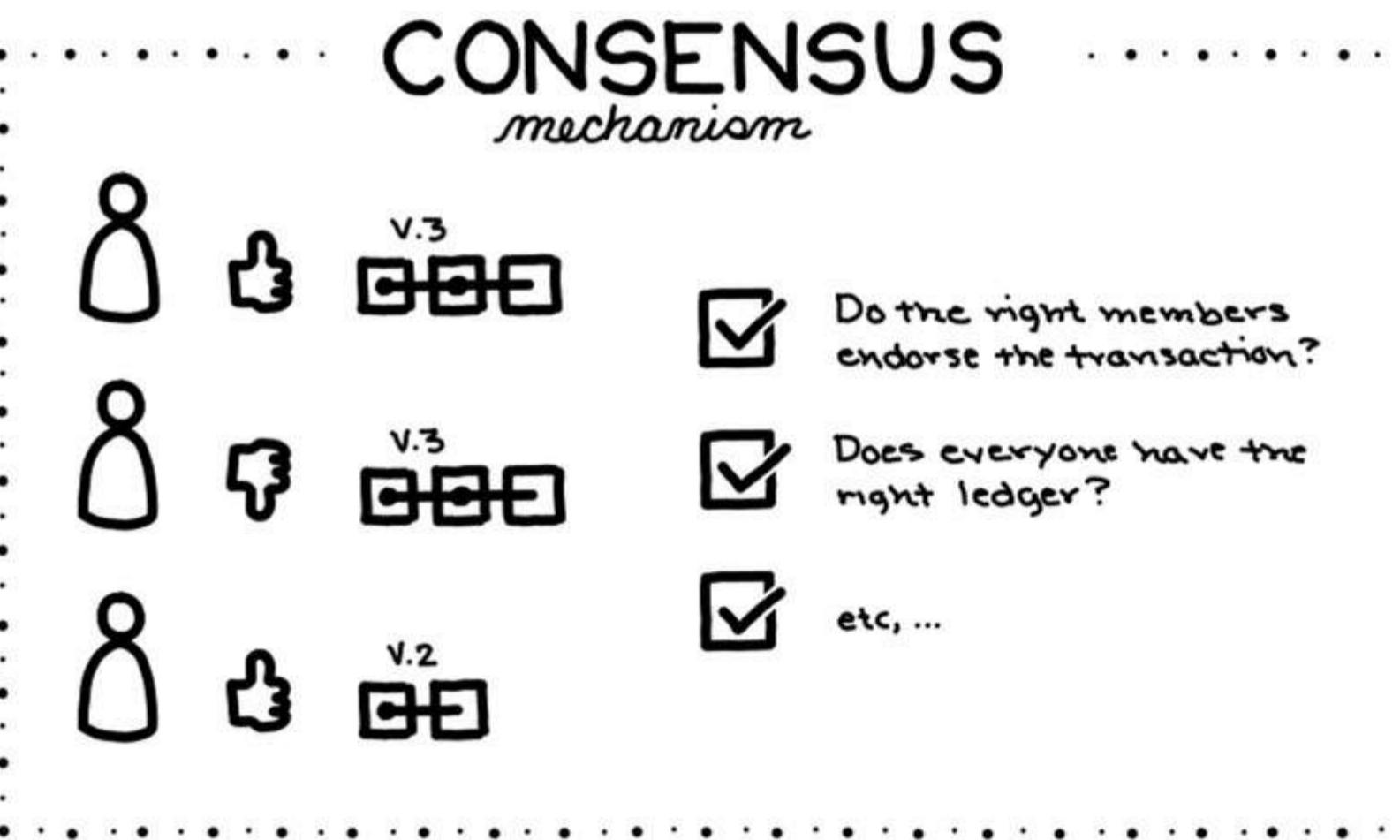
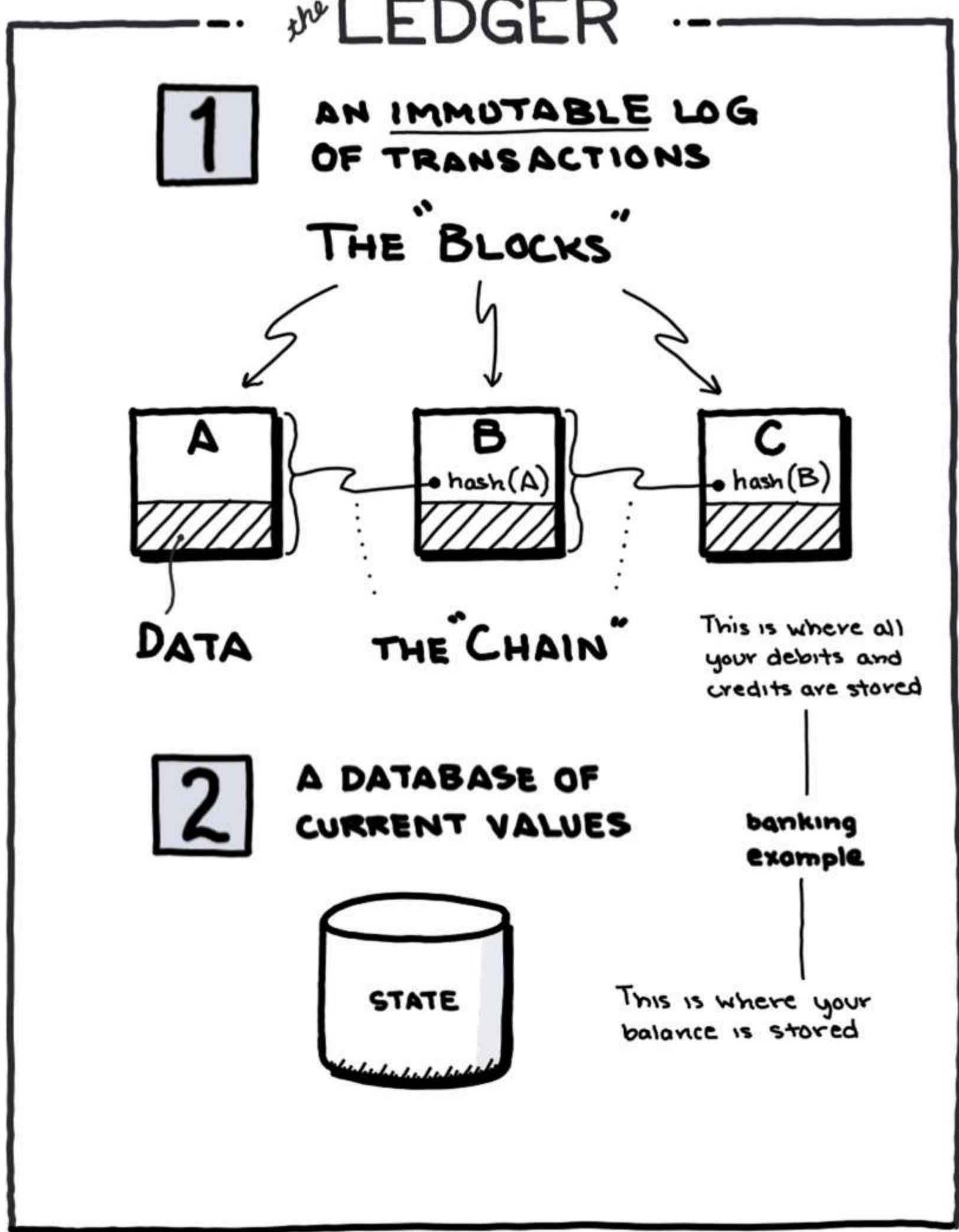
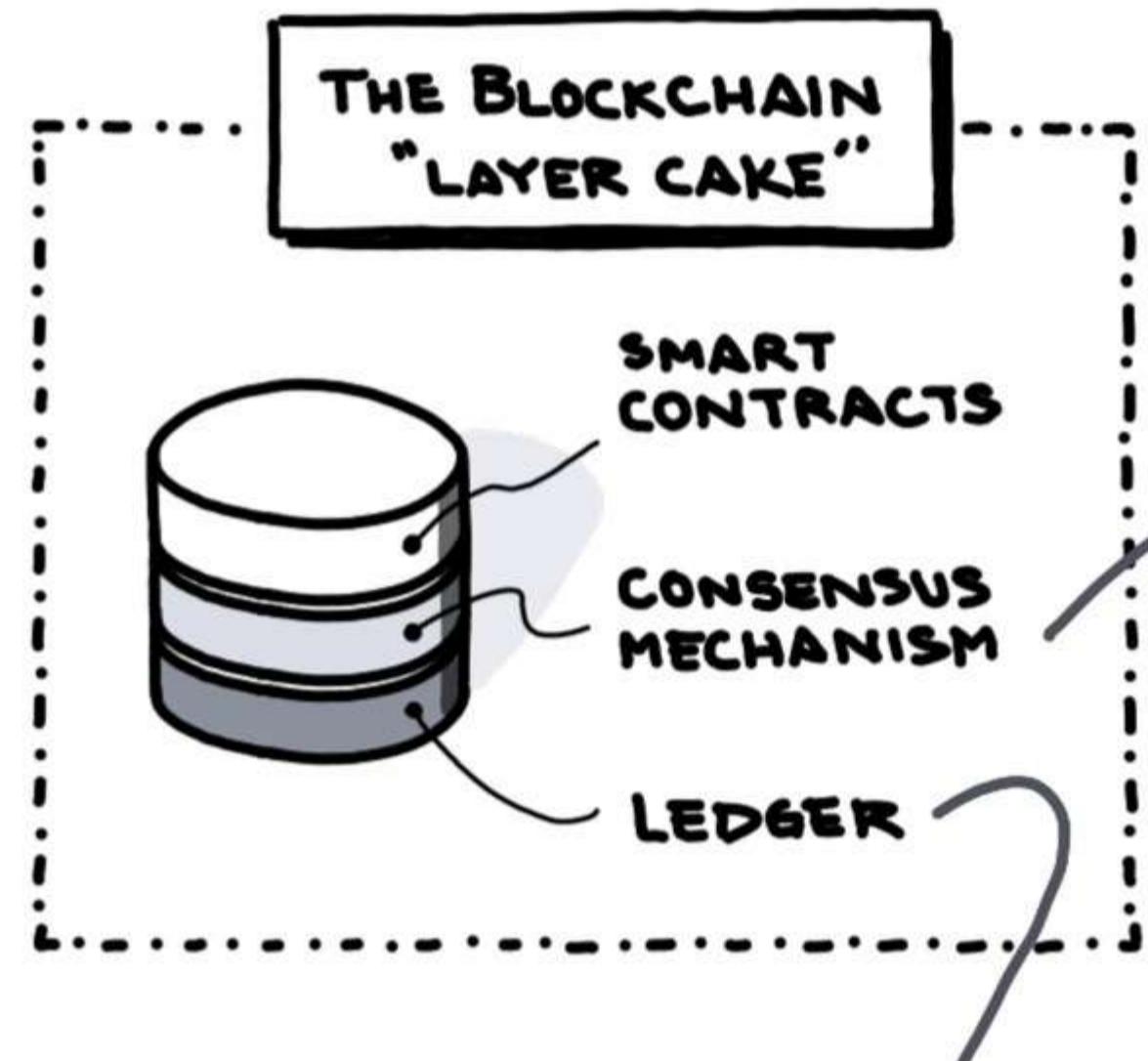
AMAZON MANAGED

# BLOCKCHAIN

@awsgeek

23 AUG 2019

SCALABLE BLOCKCHAIN NETWORKS



AMAZON MANAGED BLOCKCHAIN

