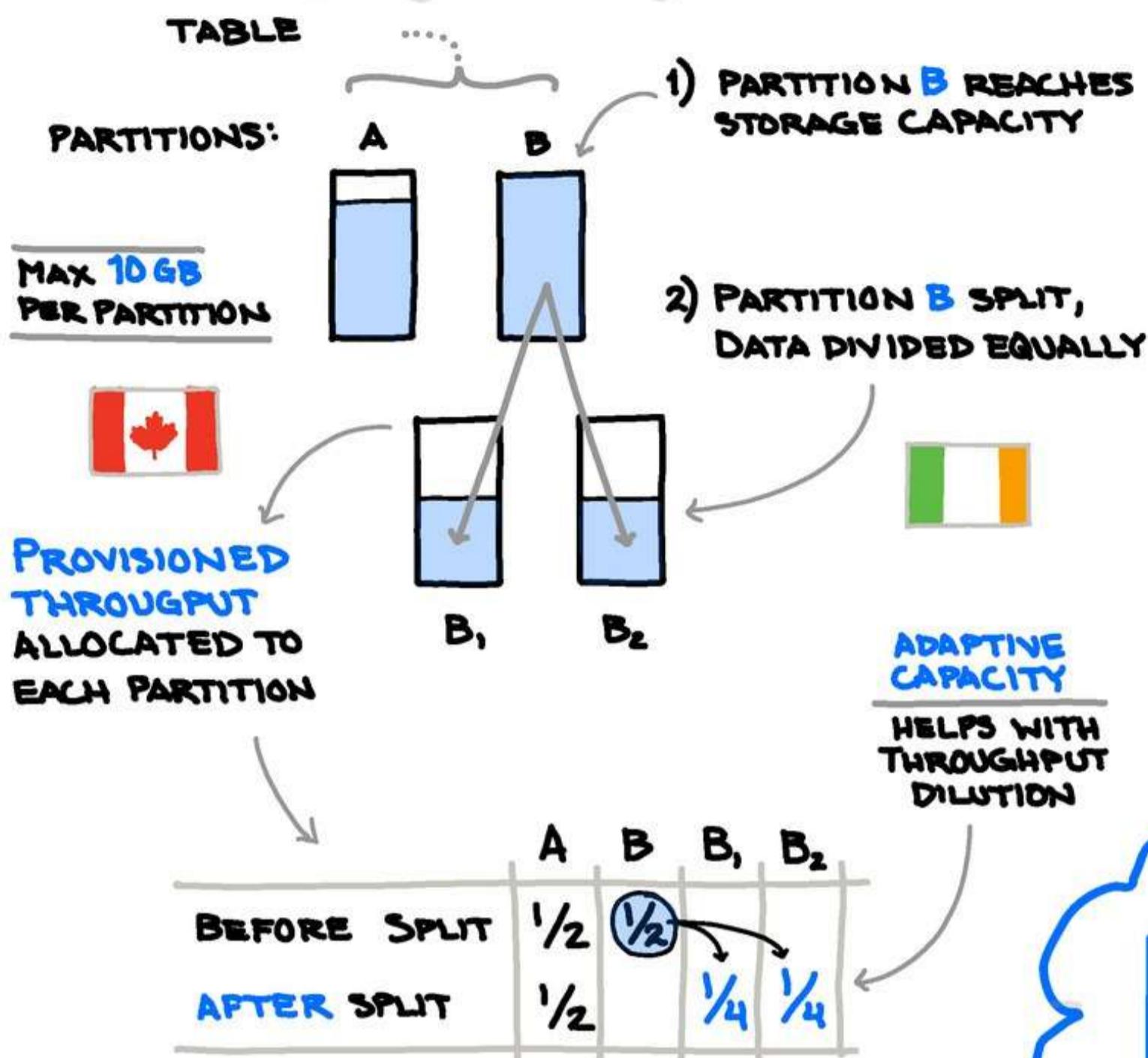
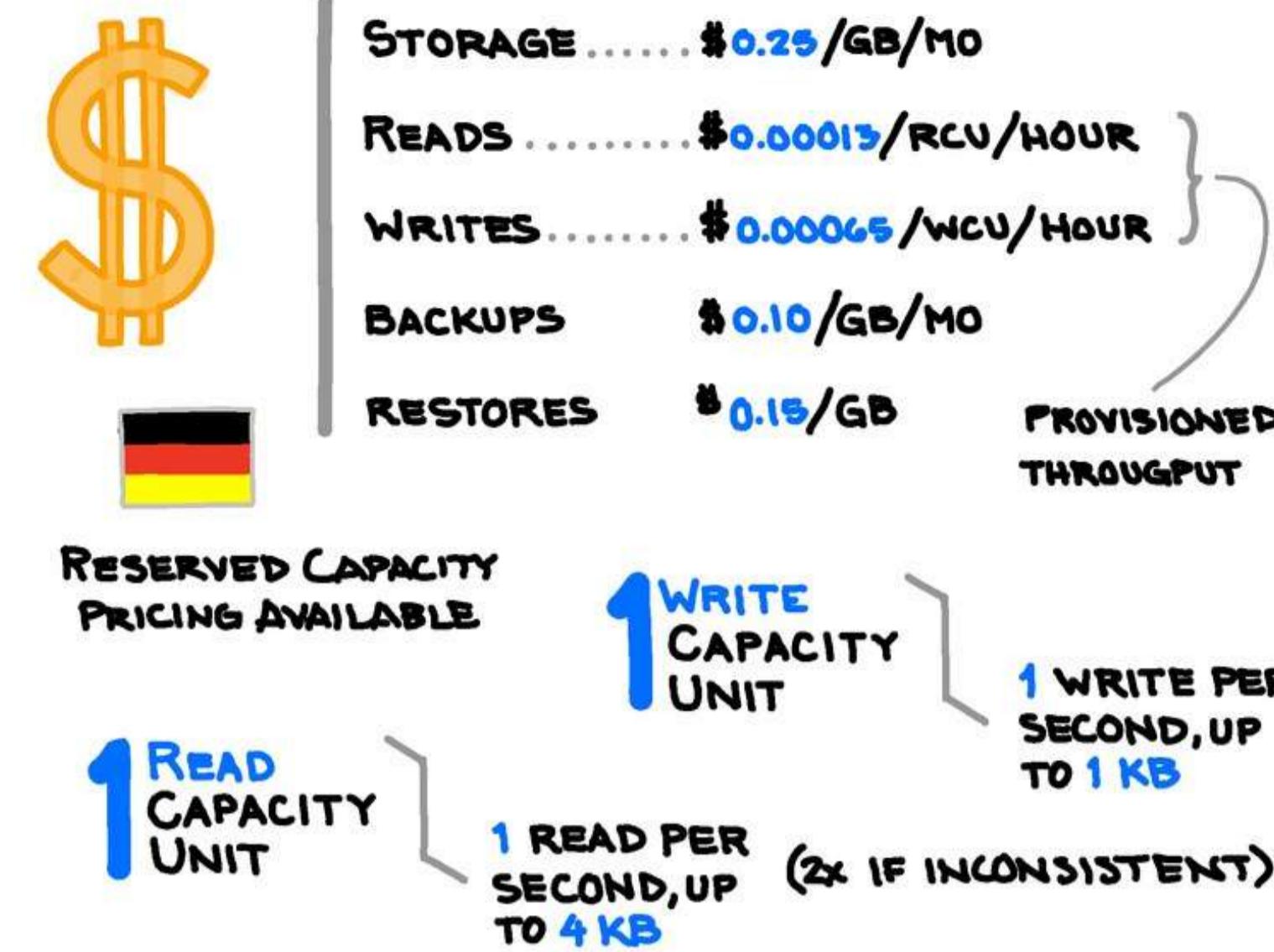


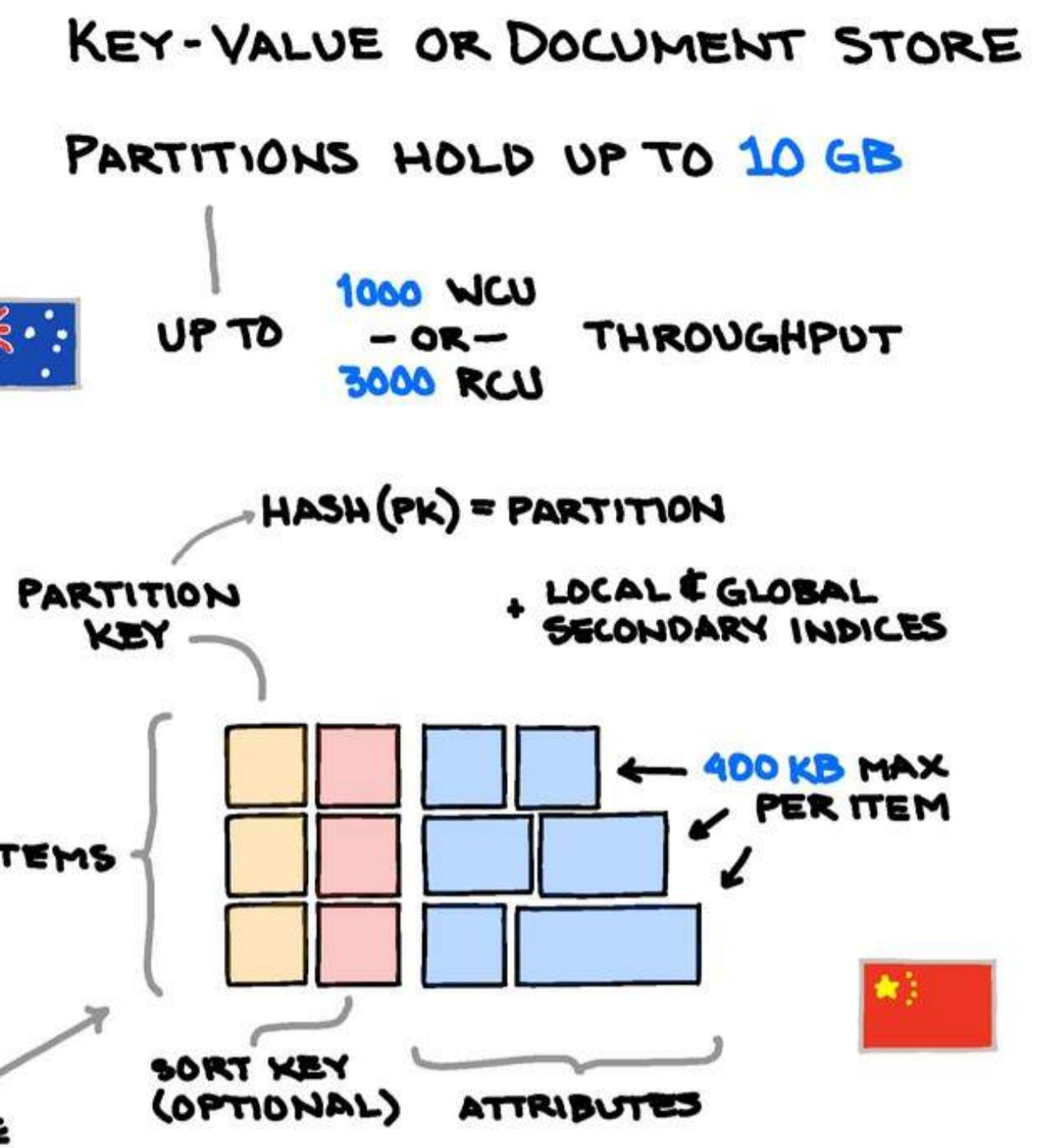
SCALABILITY



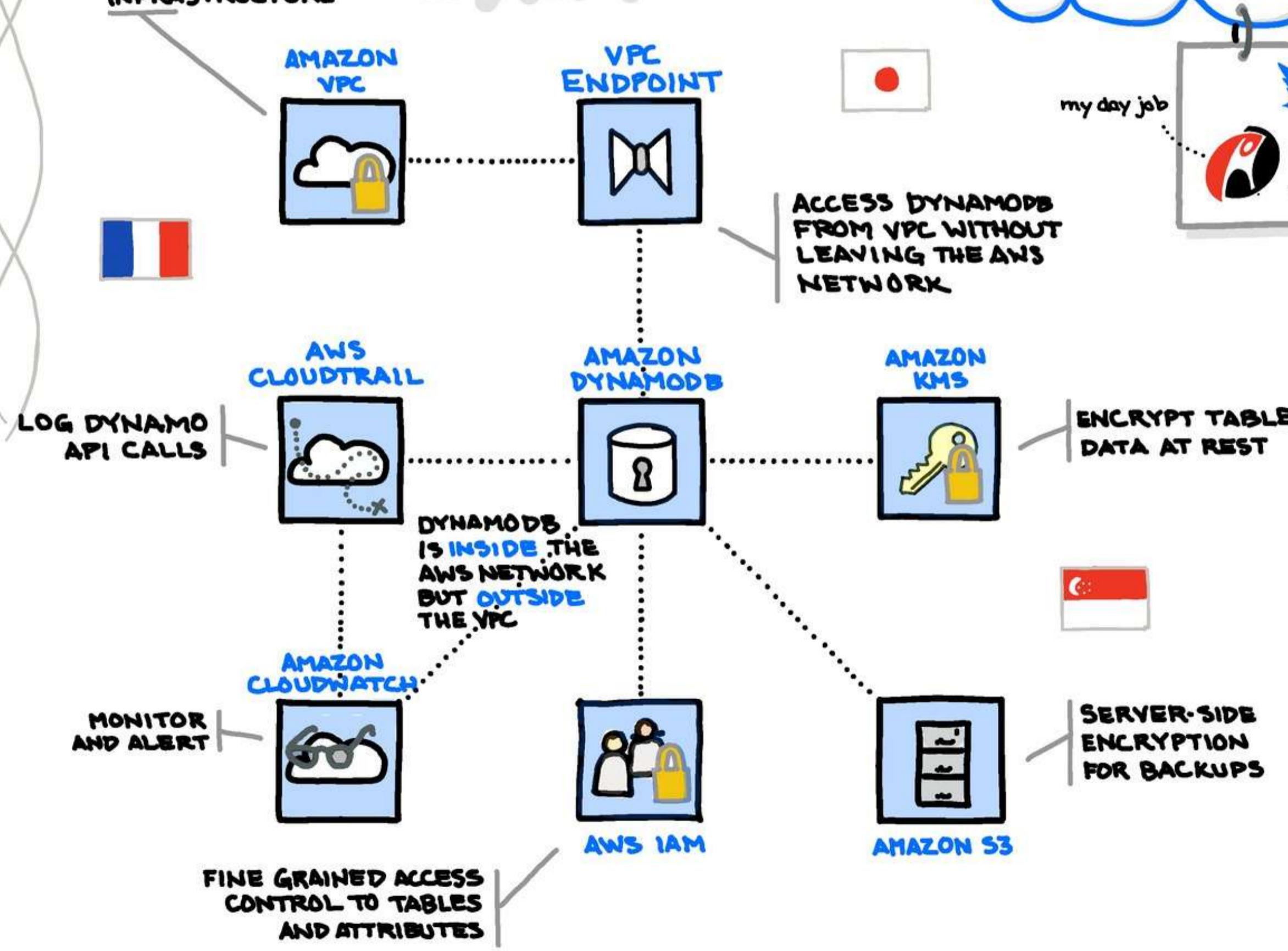
PRICING



ESSENTIALS



SECURITY

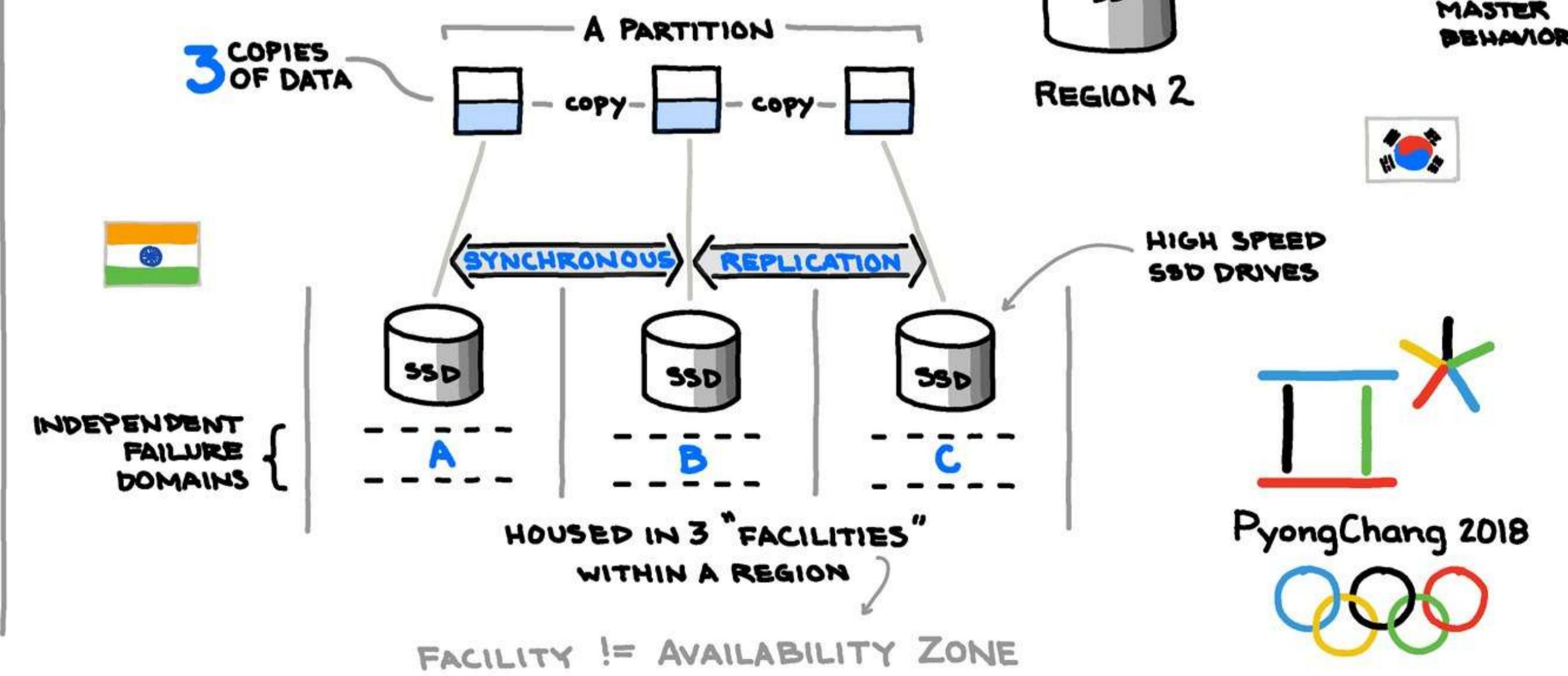


amazon DYNAMO DB

a fast, flexible no-sql database

2/10/18

AVAILABILITY



STORAGE CLASSES

STANDARD
— and —
INFREQUENT ACCESS

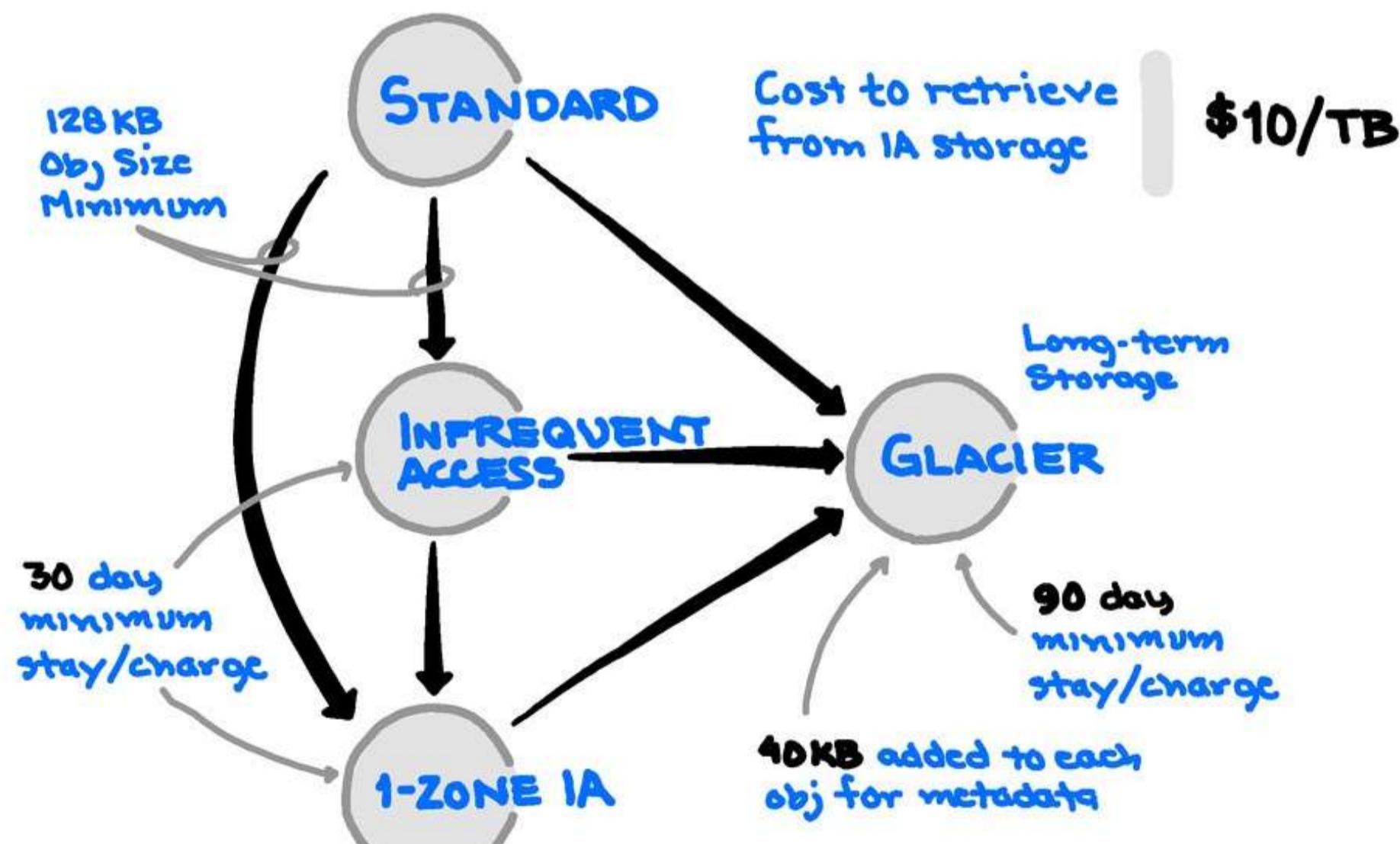
11 NINES DURABILITY

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

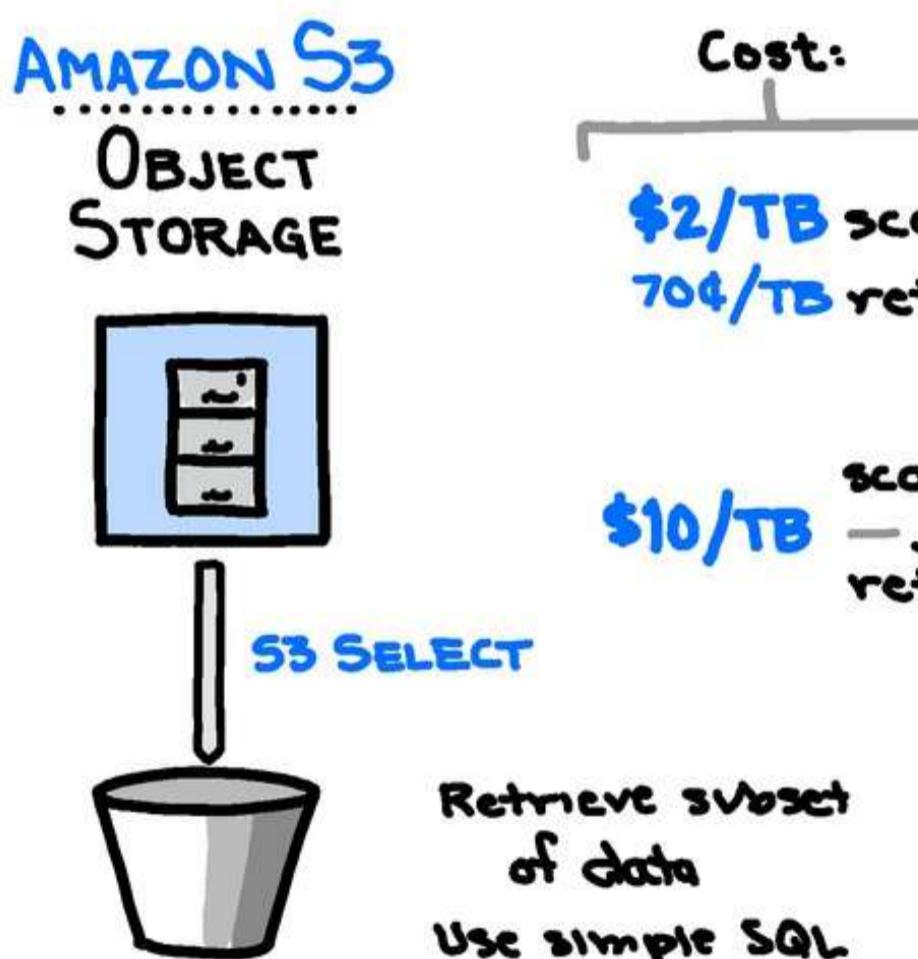
STORAGE

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

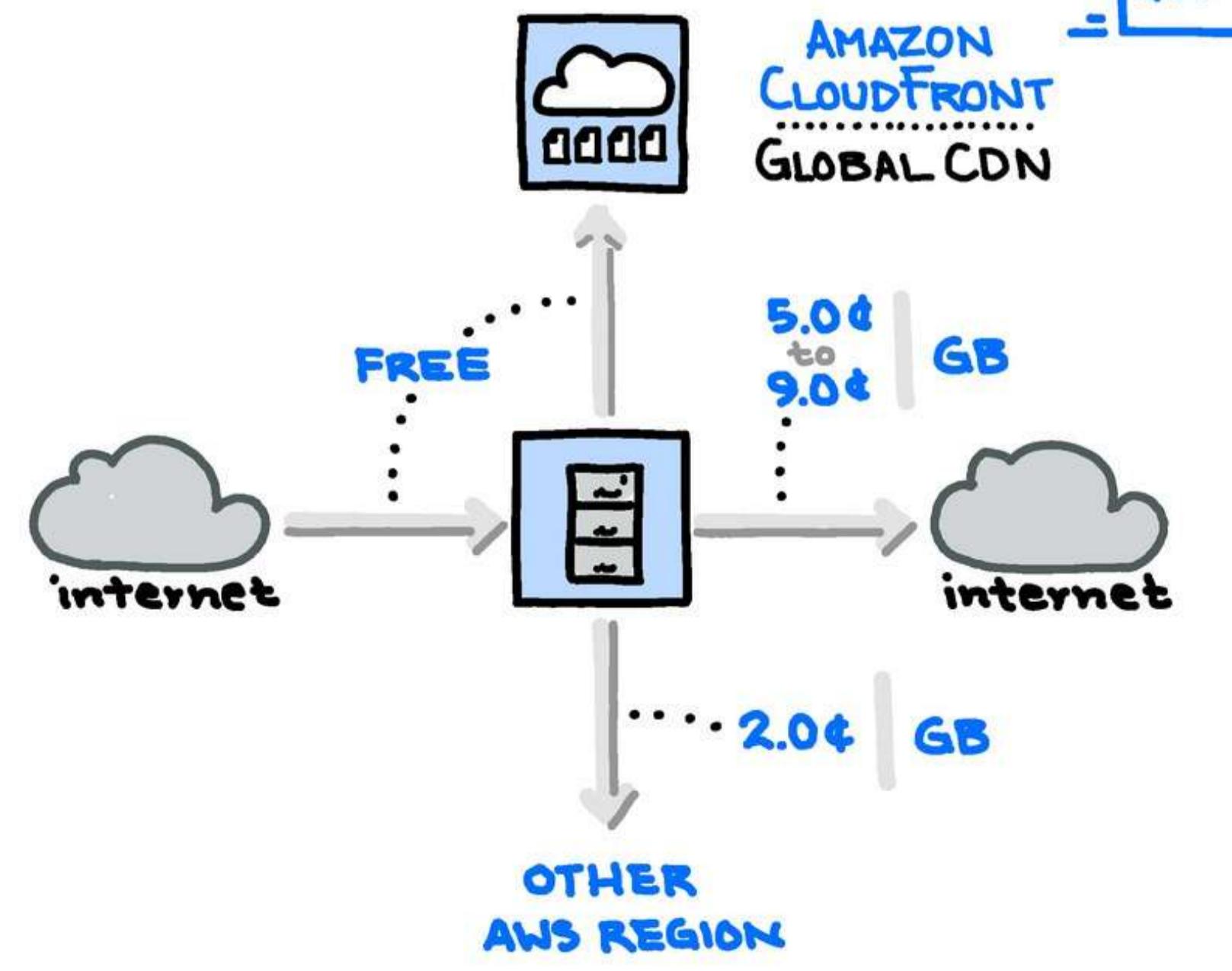
per GB/Mo

INFREQUENT ACCESS
STD 1-ZONE
GLACIER

Cost:
\$2/TB scanned
70¢/TB returned
} Standard Storage
\$10/TB scanned or returned
} IA Storage



DATA TRANSFER



OBJECT LOCKING NEW

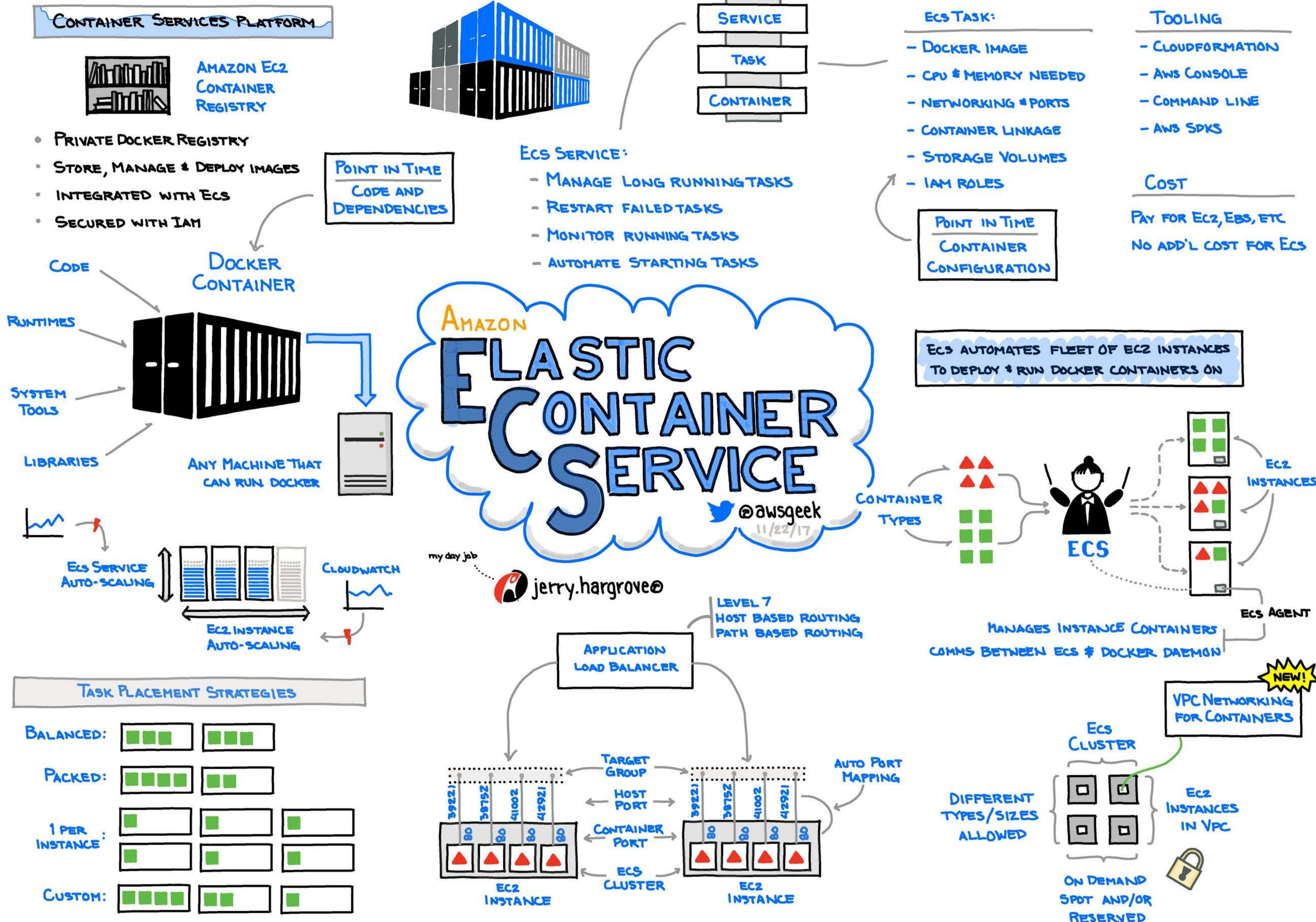
PREVENT OBJECT DELETION

CAN'T DELETE TIL DATE

NEVER DELETE (EVER)

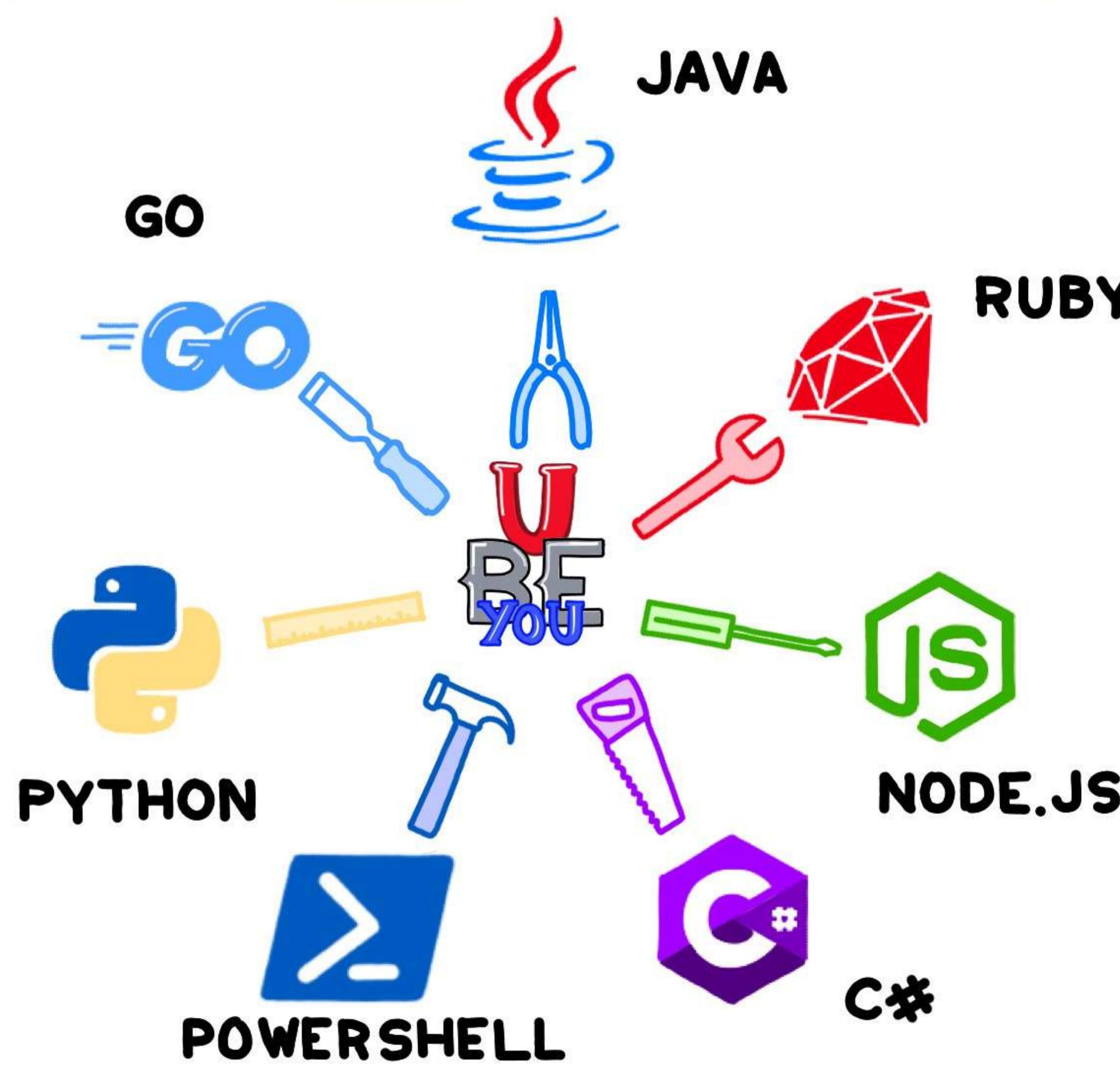
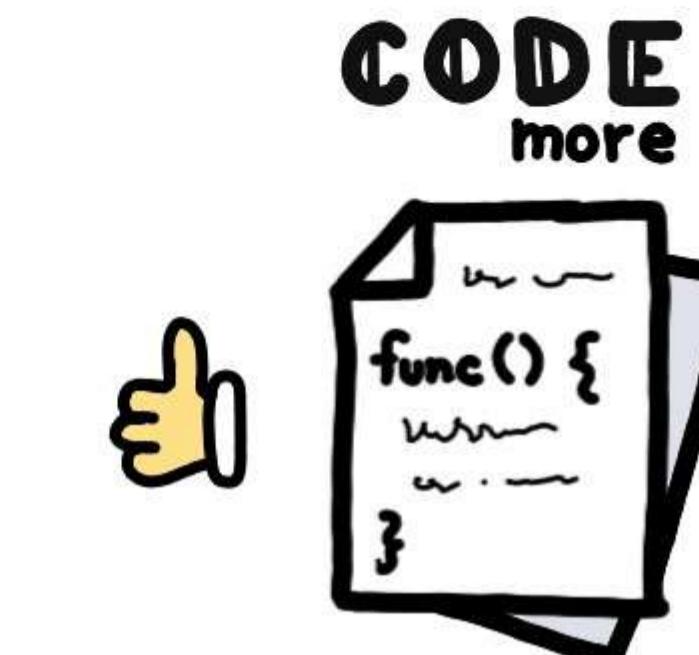
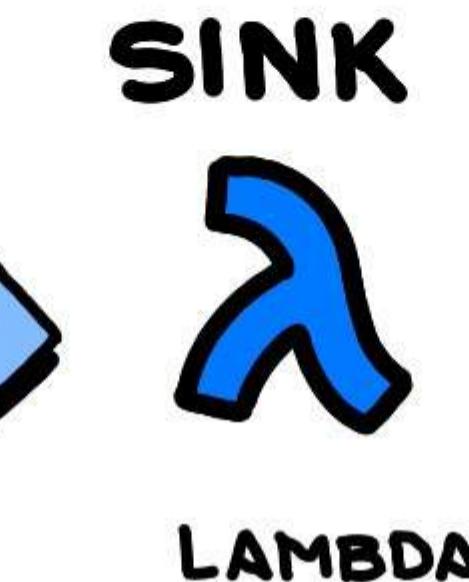
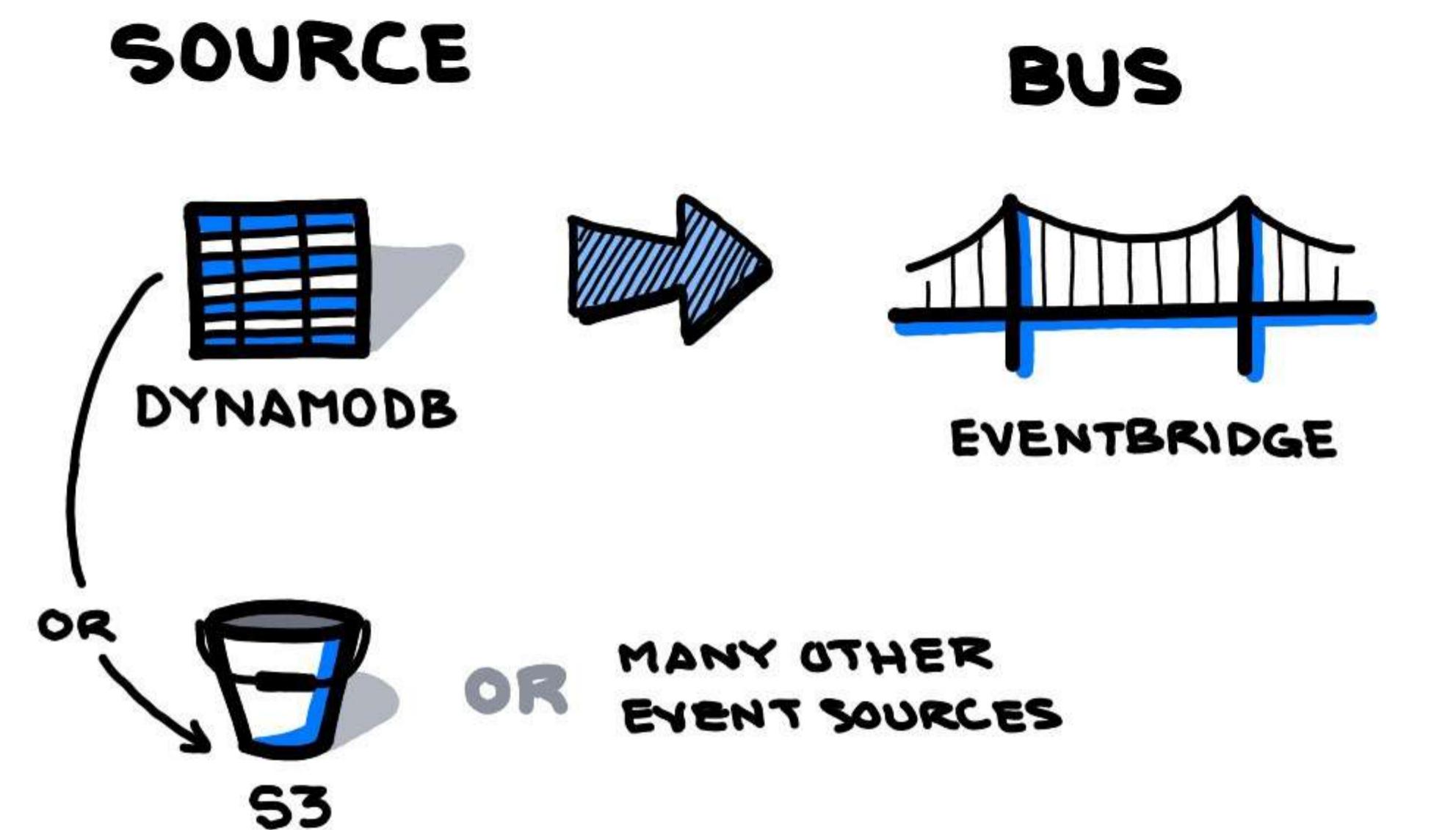
GOVERNANCE

COMPLIANCE



Event Driven Apps

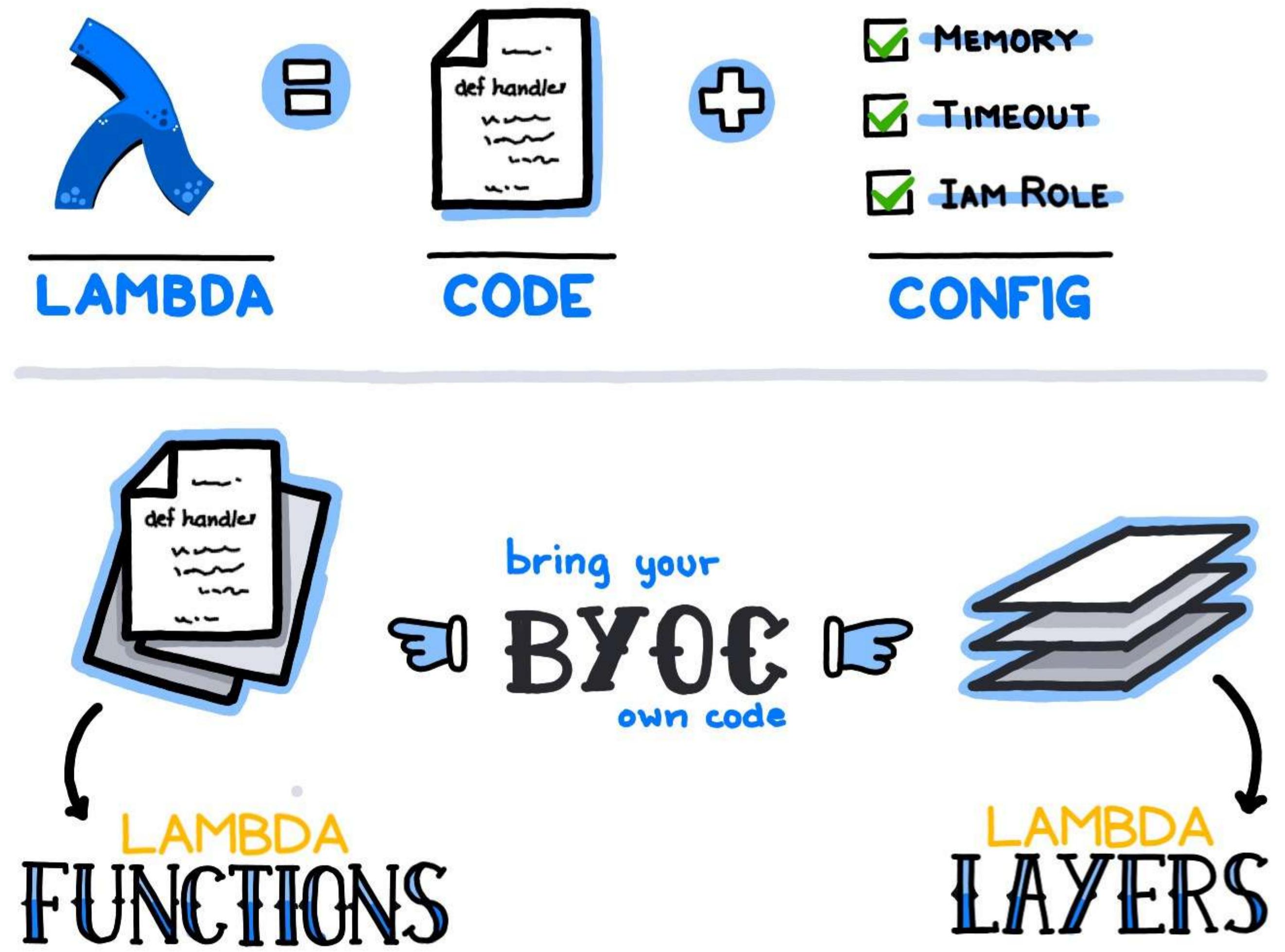
#serverlessforeveryone



AWS LAMBDA

4/6/2020

@awsgeek



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

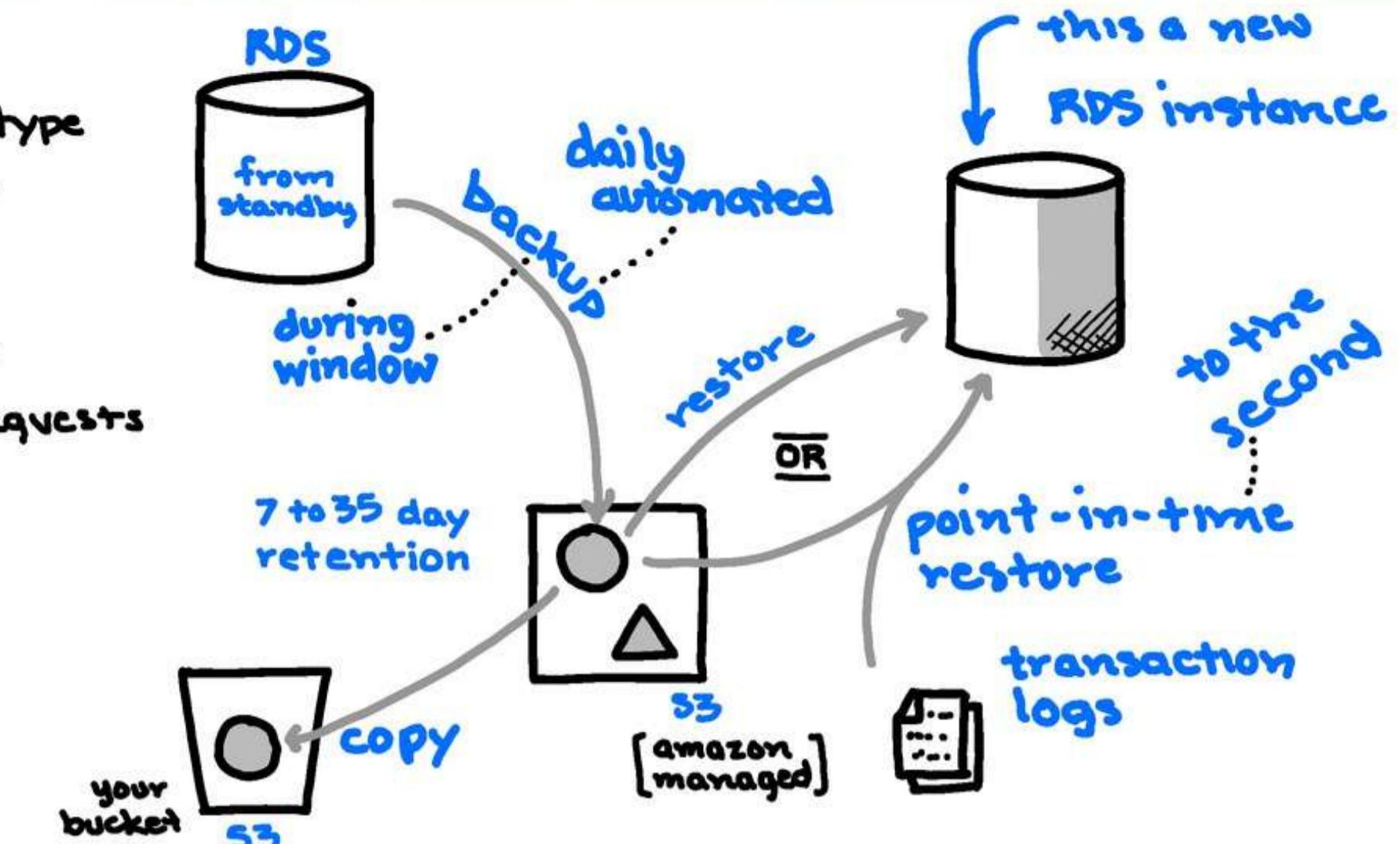
BACKUP STORAGE

DATA TRANSFER

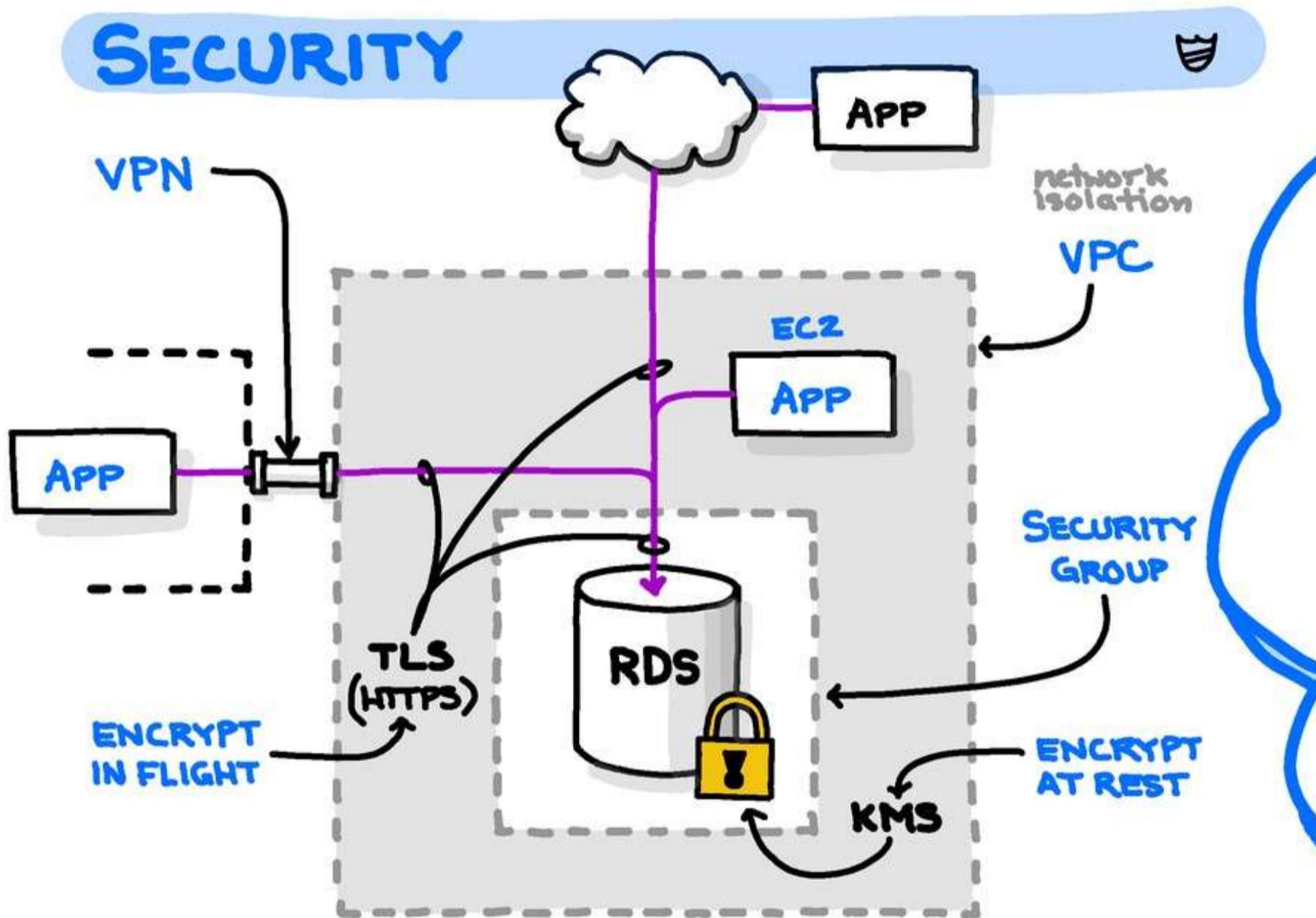
100% of DB size free
9.5¢/GB/Mo after

varies by destination

BACKUPS

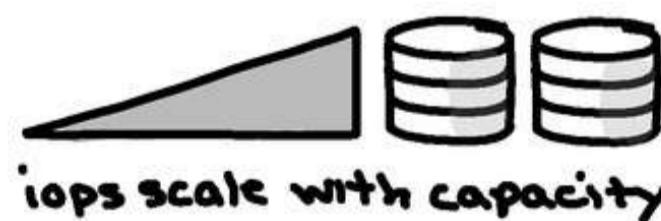


SECURITY

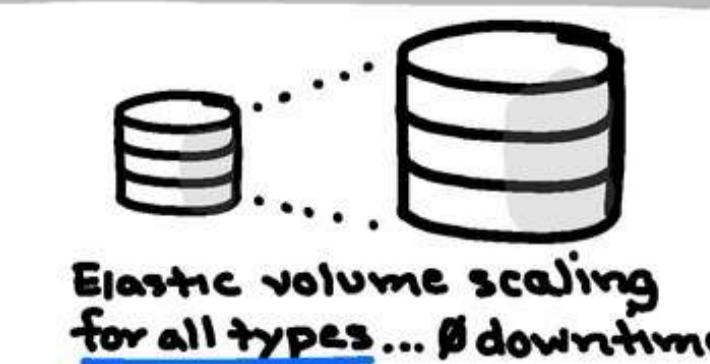


STORAGE

GP2 General Purpose
SSD 16TB Max

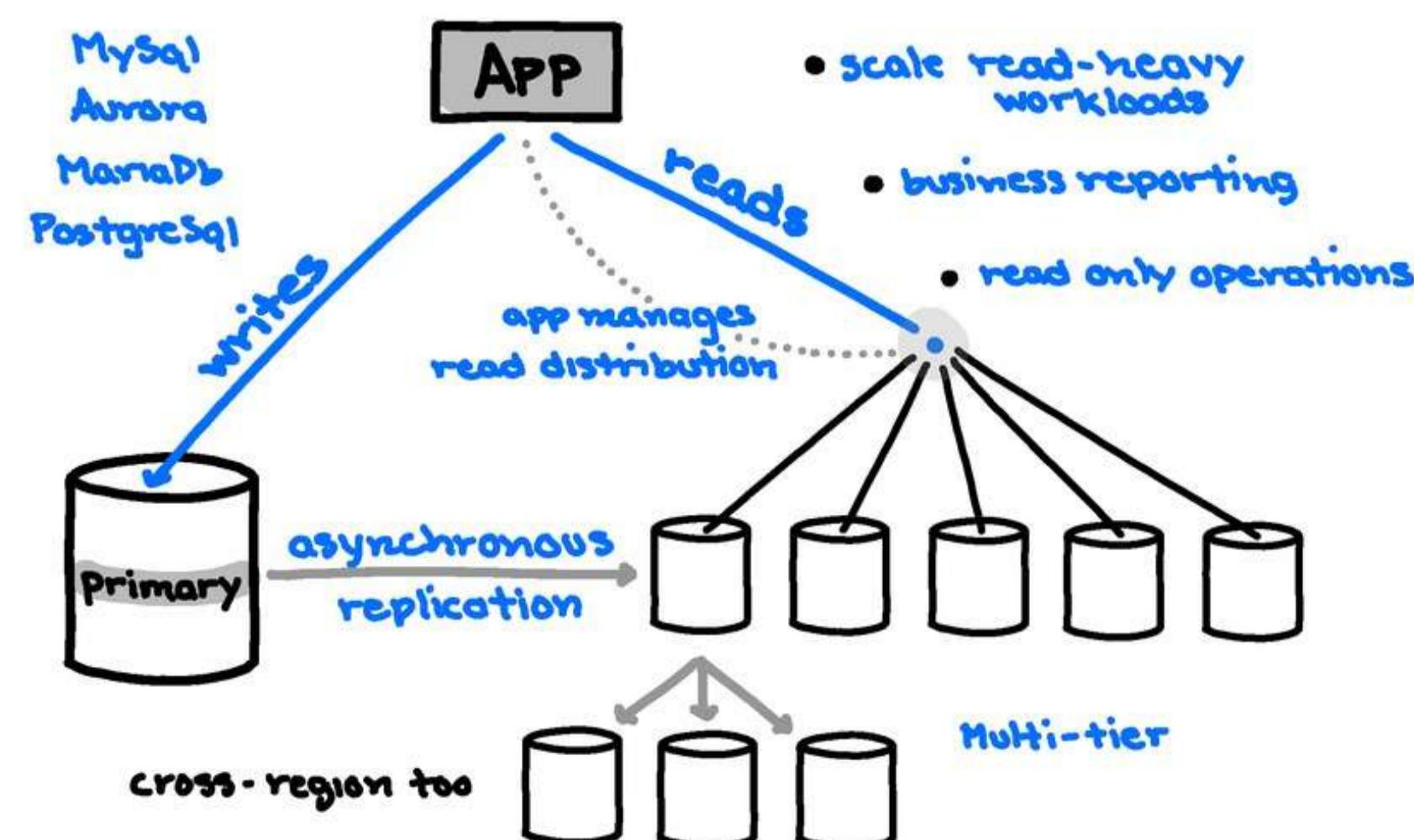


IOP Provisioned IOPS
SSD 16TB Max
30K IOPS



Magnetic Legacy 1TB Max

READ REPLICAS



INSTANCES

SMALL WORKLOADS

T2
burst

1 vCPU
1 GB RAM
8 vCPU
32 GB RAM

CPU INTENSIVE WORKLOADS

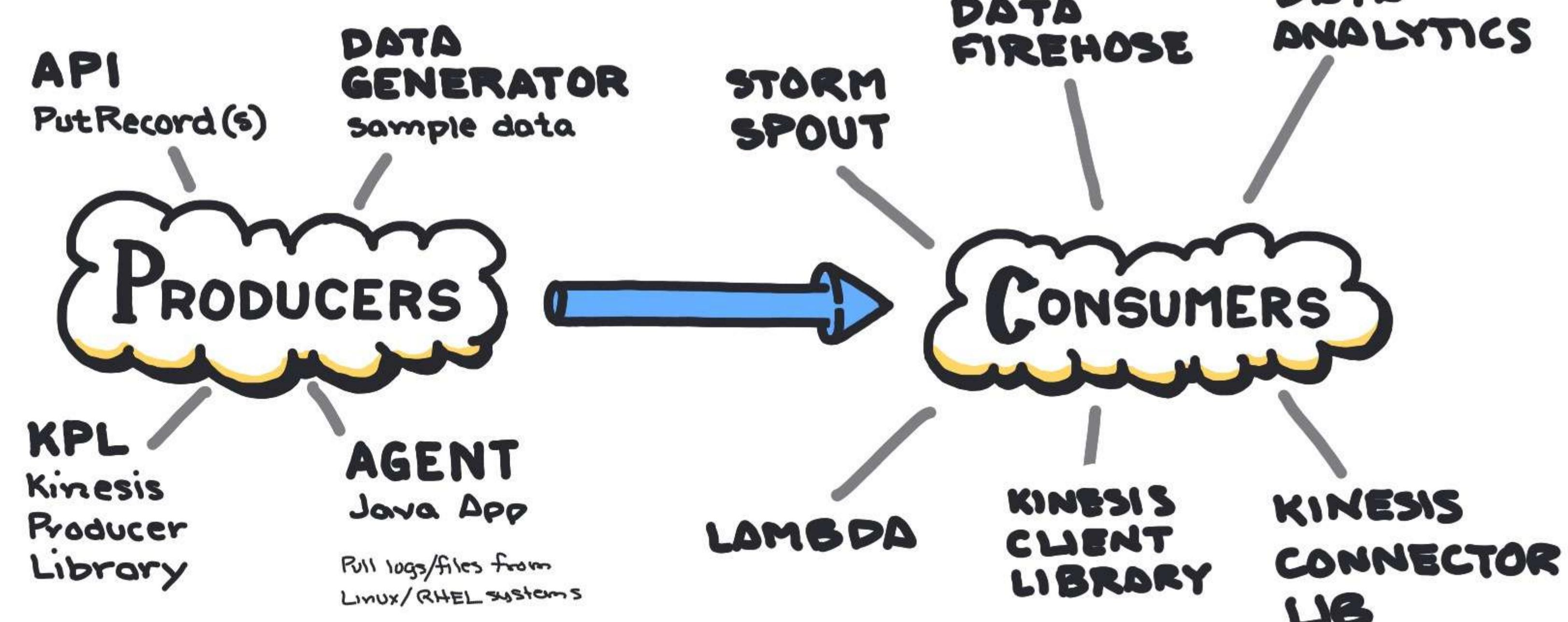
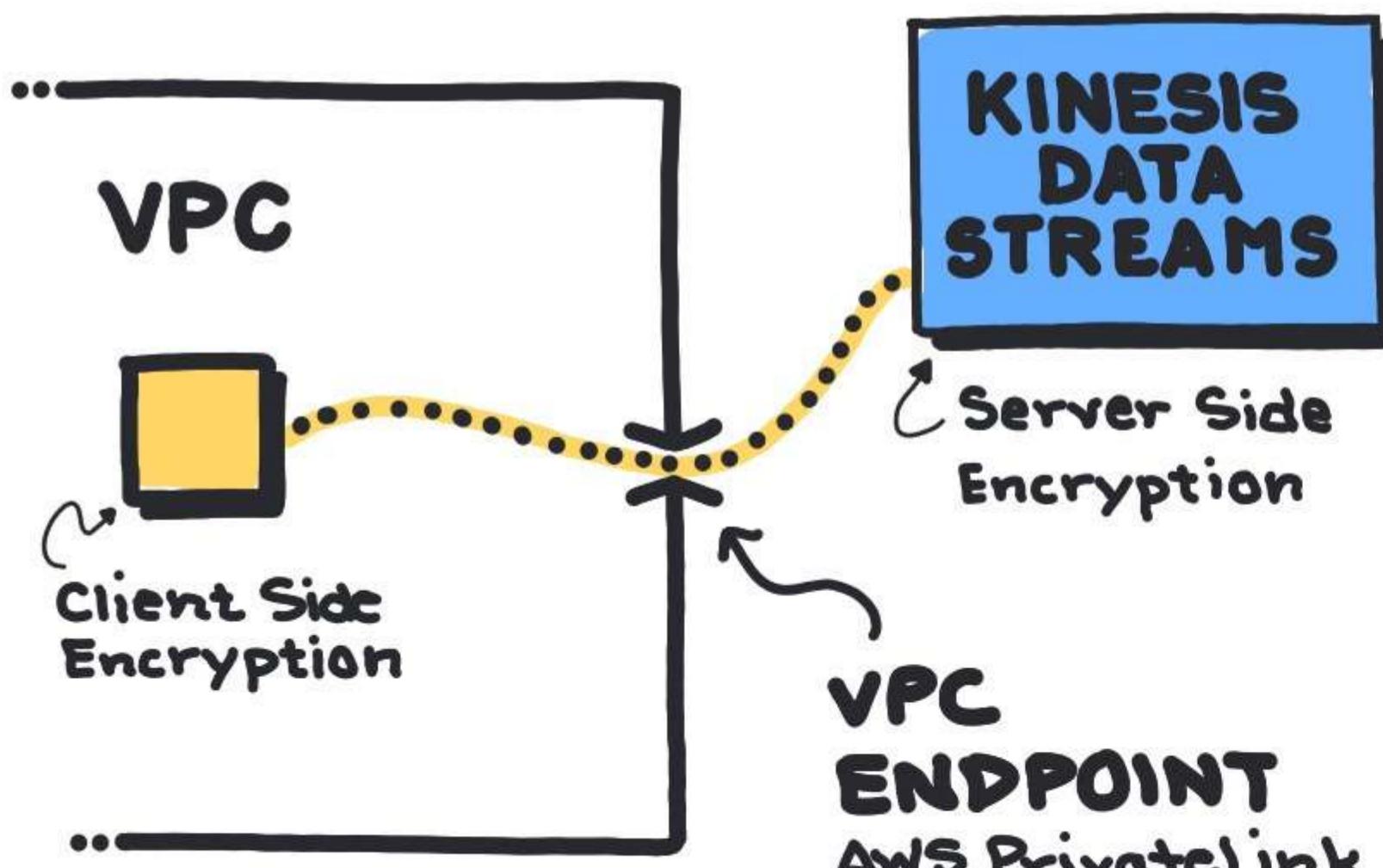
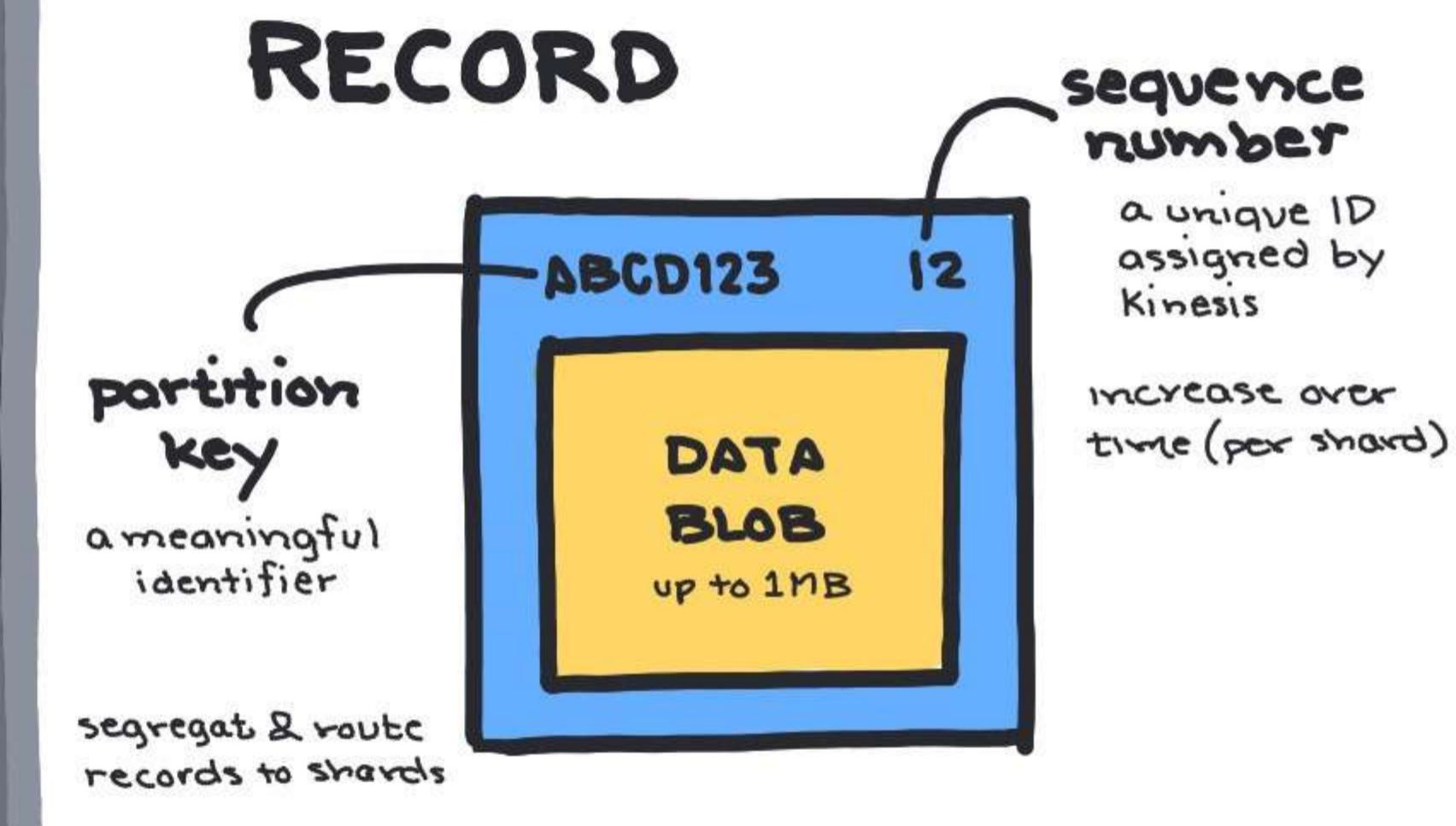
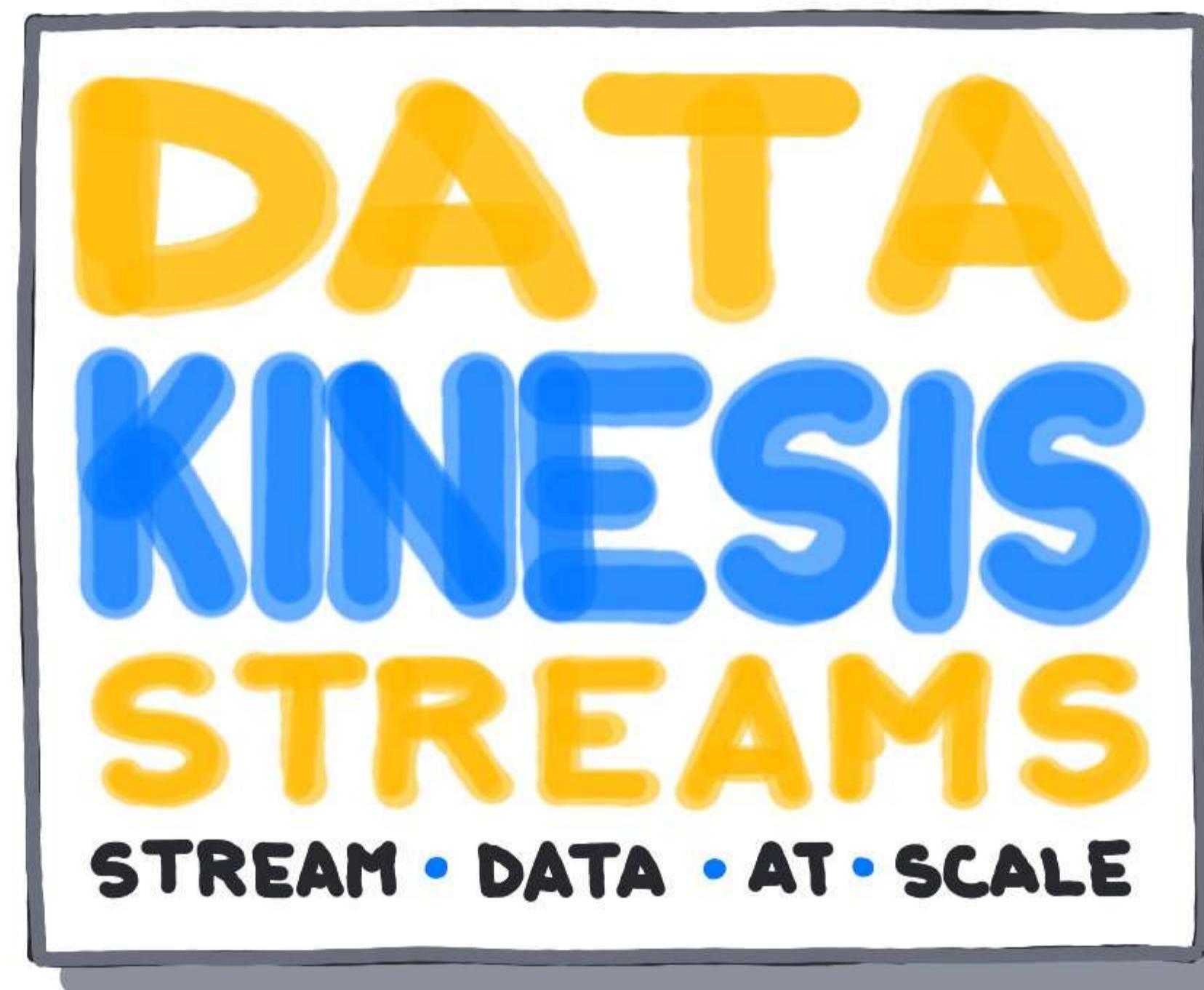
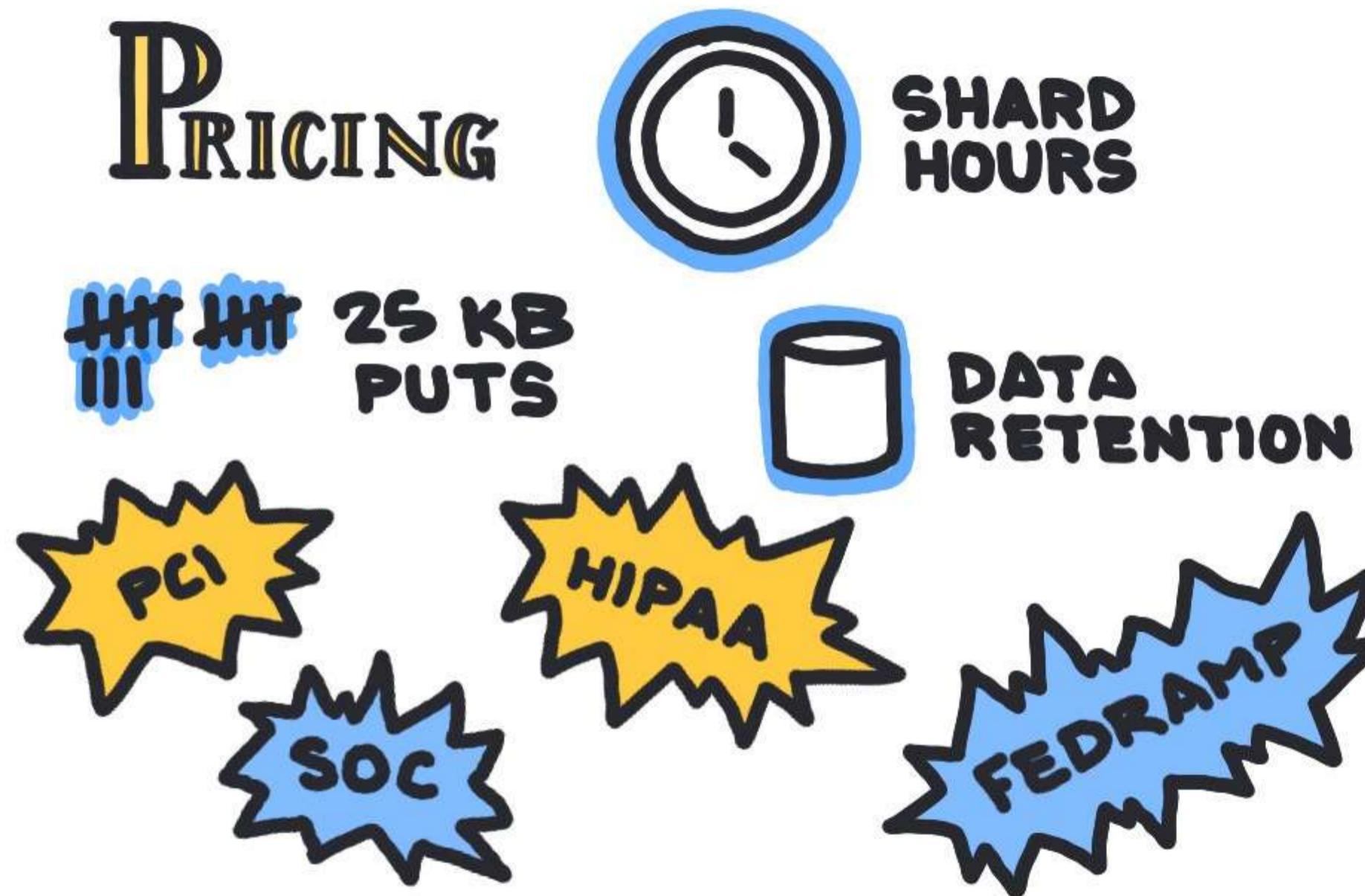
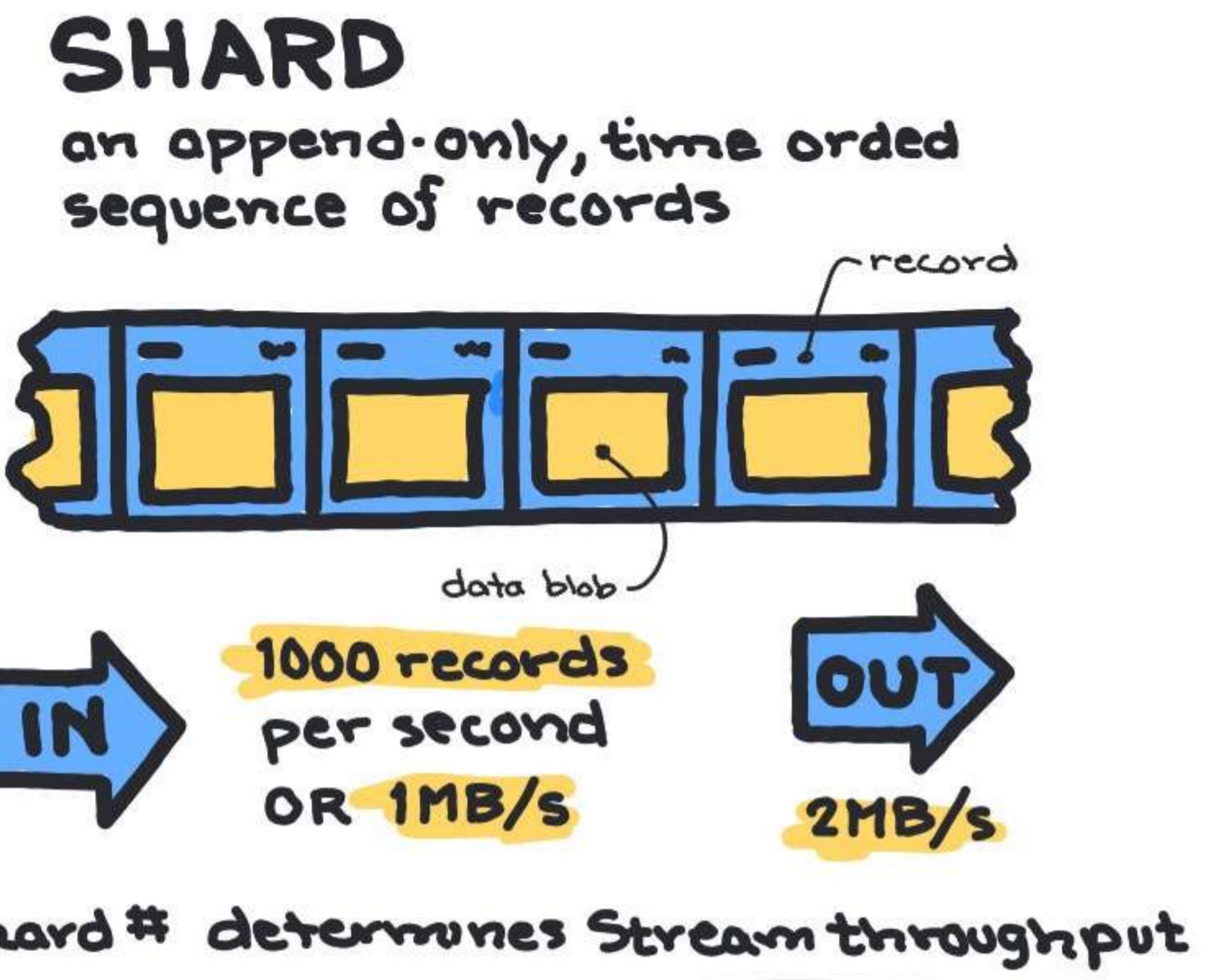
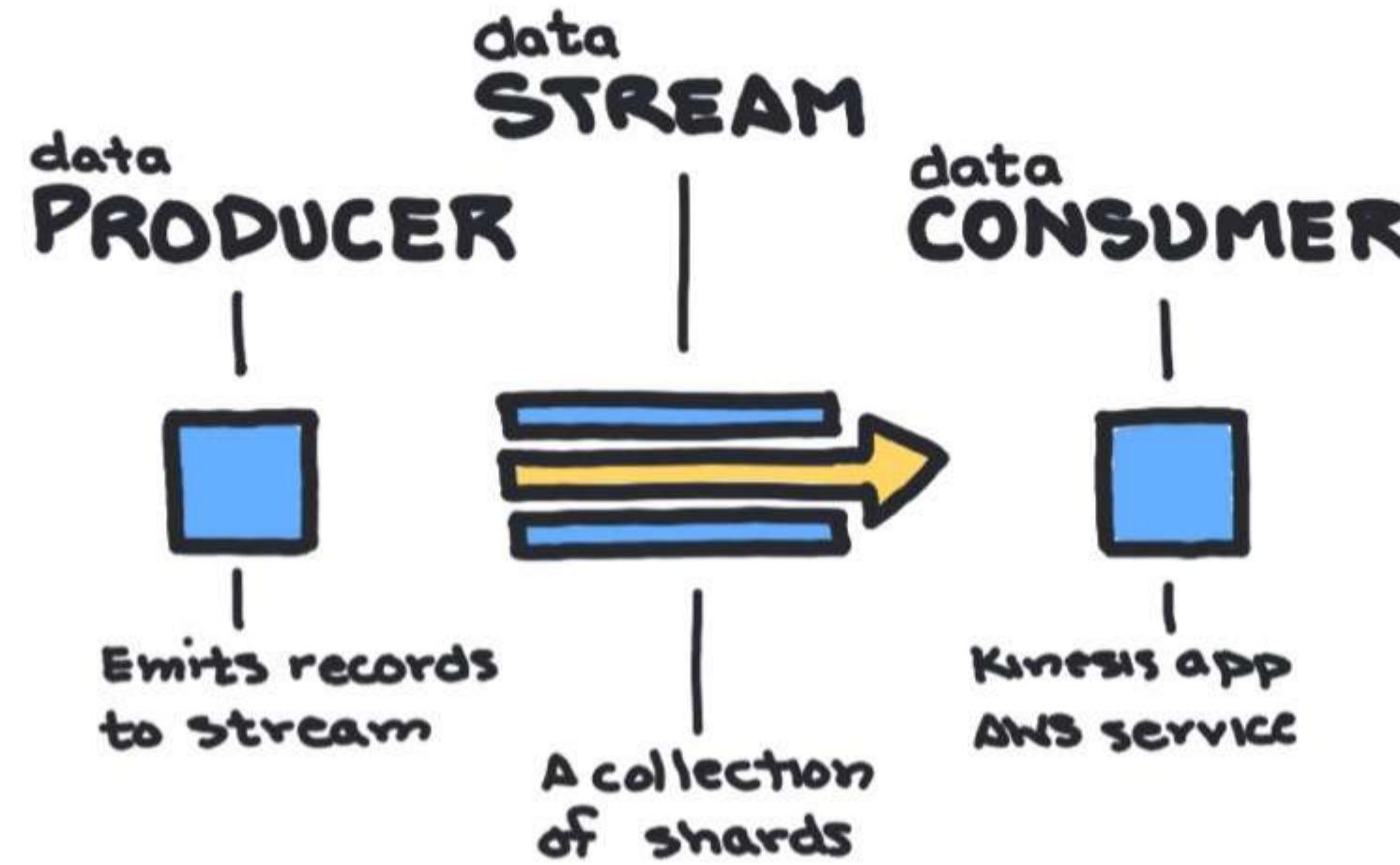
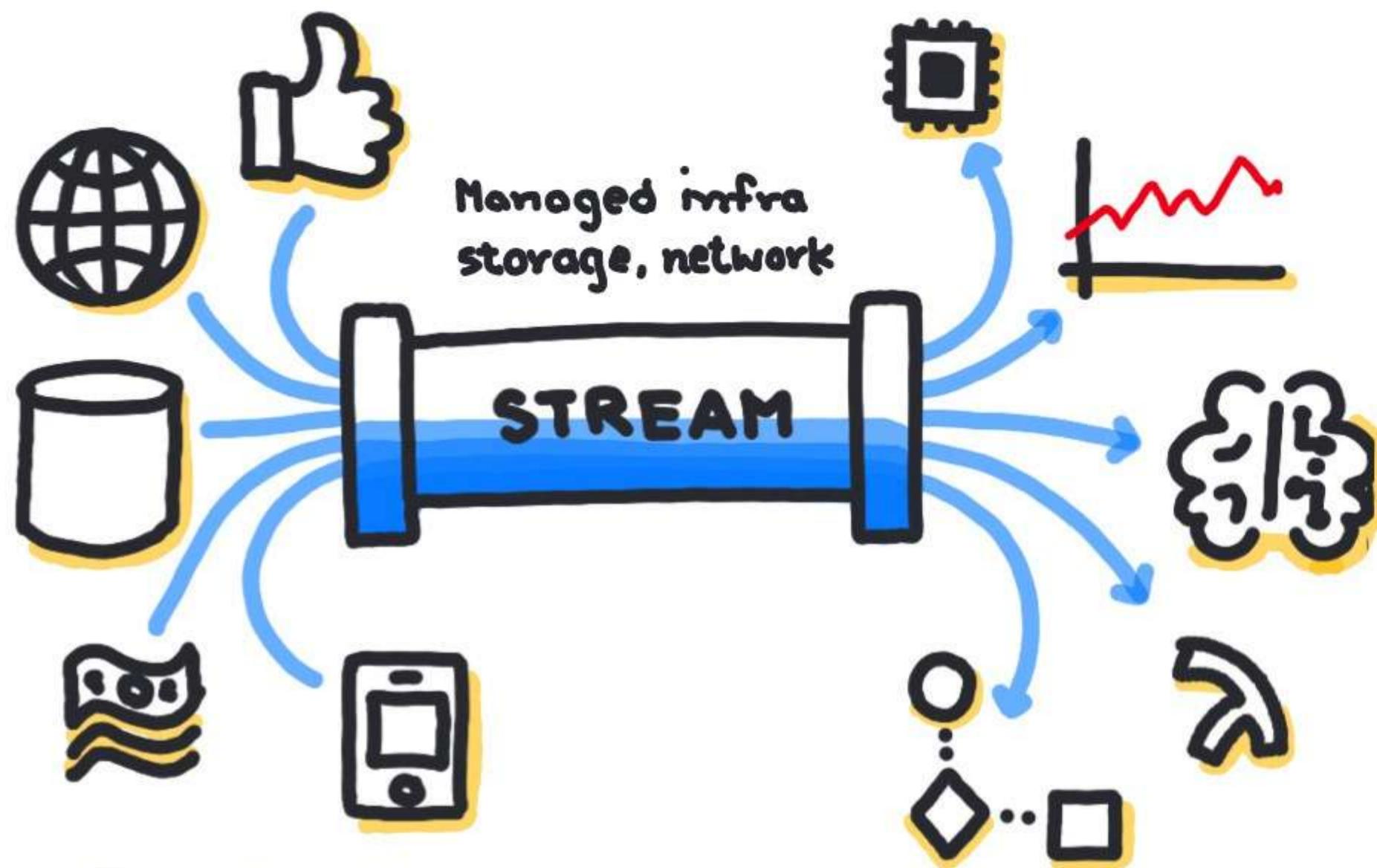
M3/M4
general purpose

2 vCPU
8 GB RAM
64 vCPU
256 GB RAM

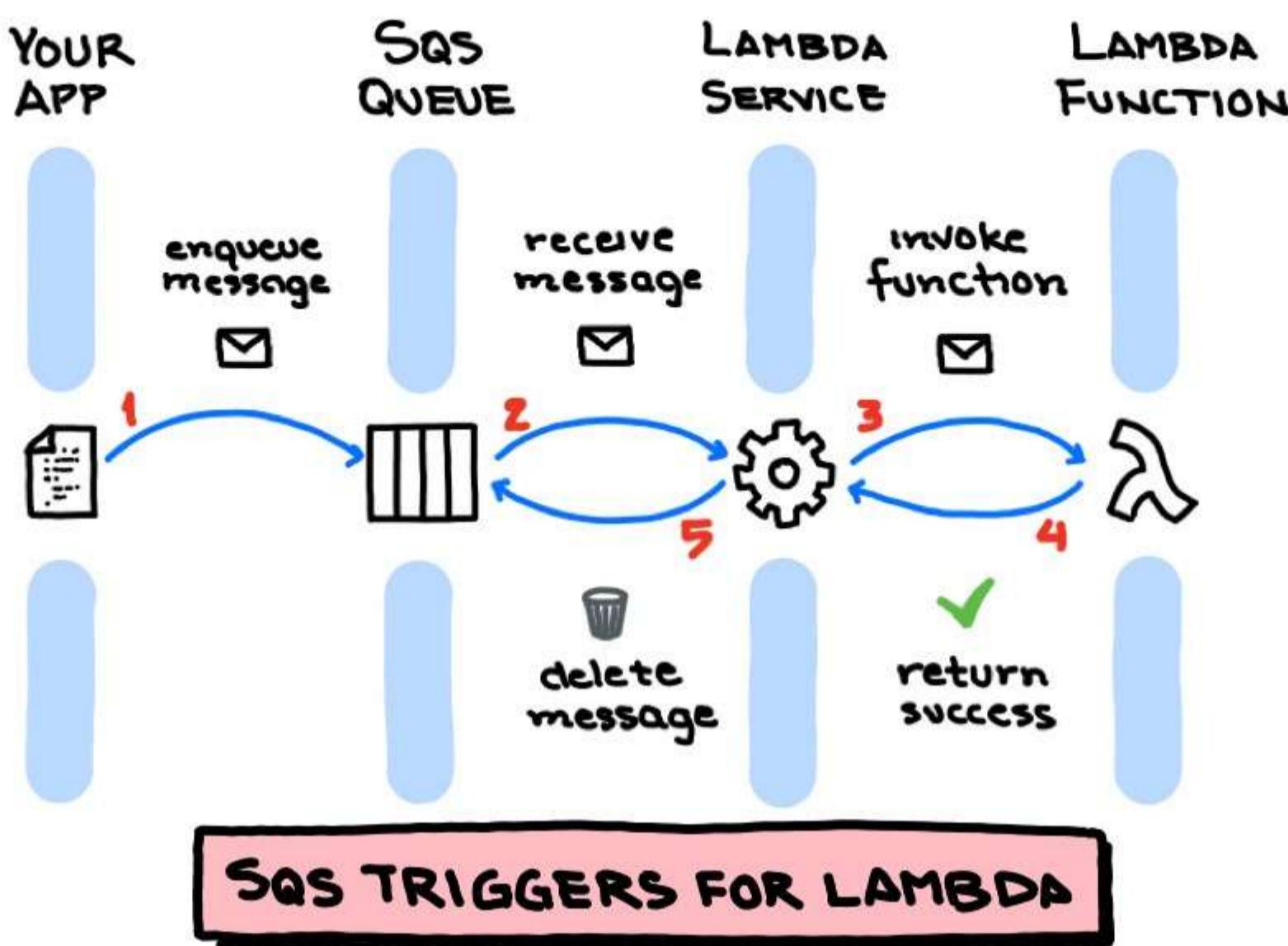
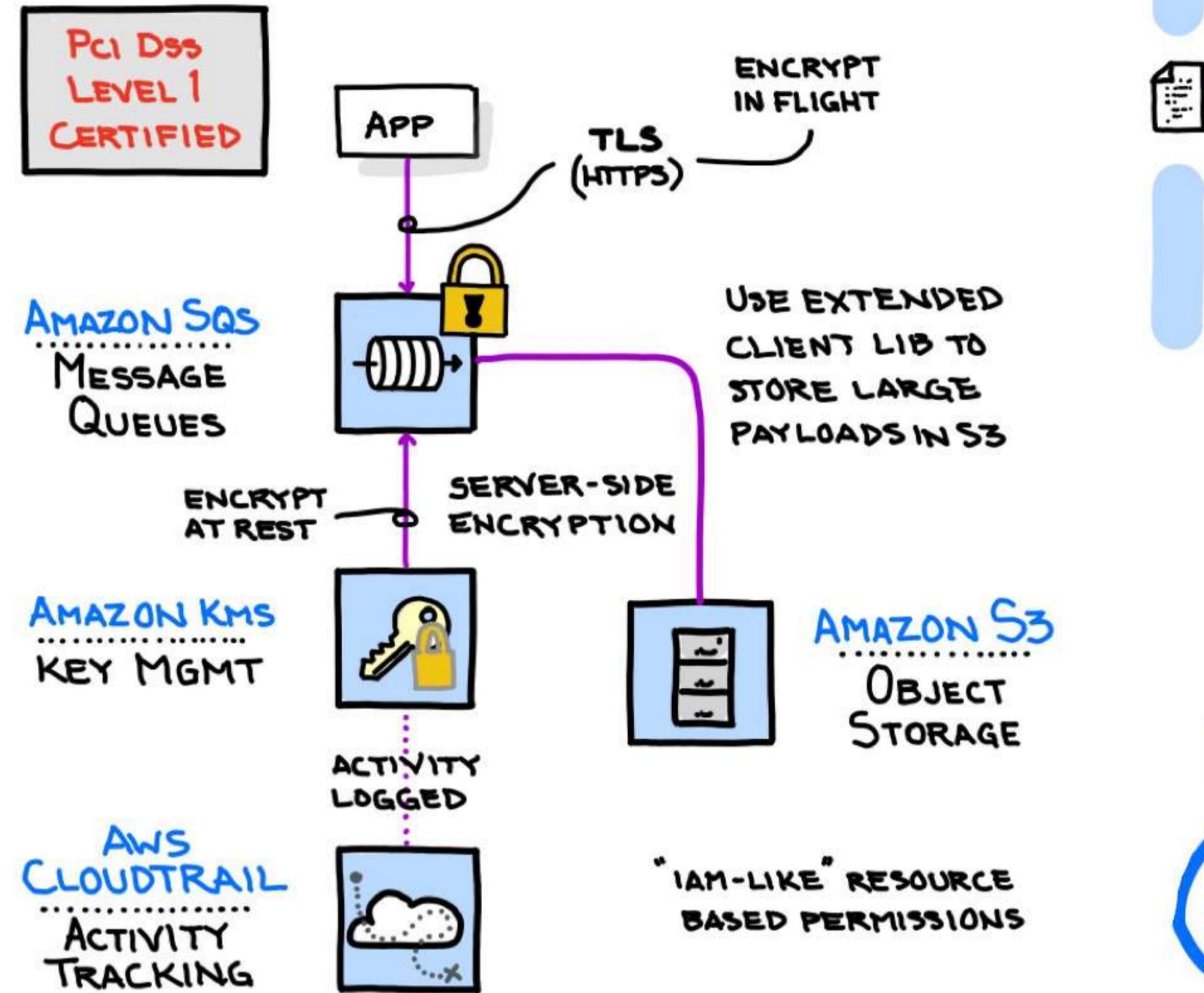
QUERY INTENSIVE WORKLOADS

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

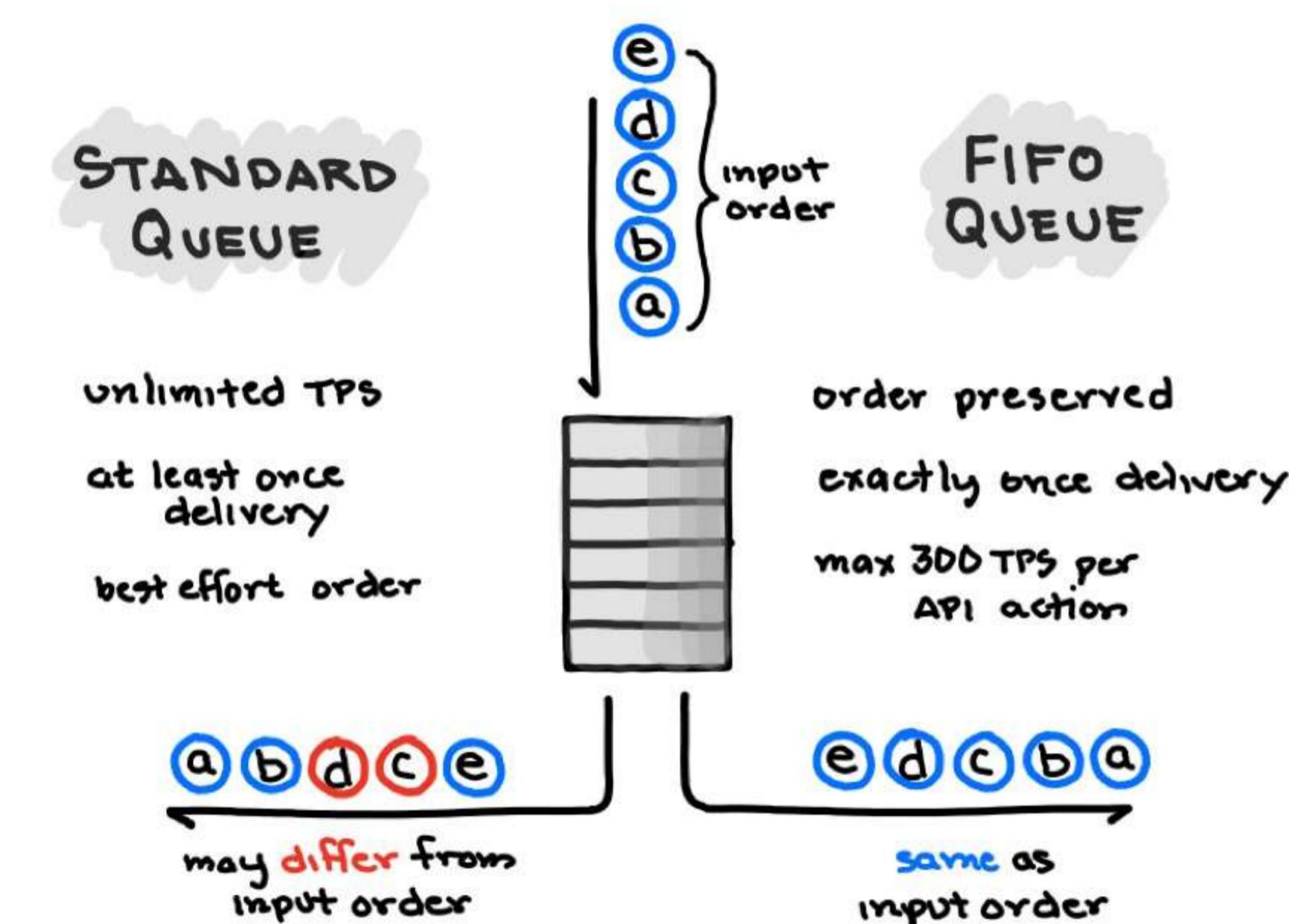
additional costs for S3 + KMS

Standard ... 40¢ per MM requests

FIFO 50¢

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

data transfer starts at 90¢/GB



Limits

MESSAGE RETENTION PERIOD

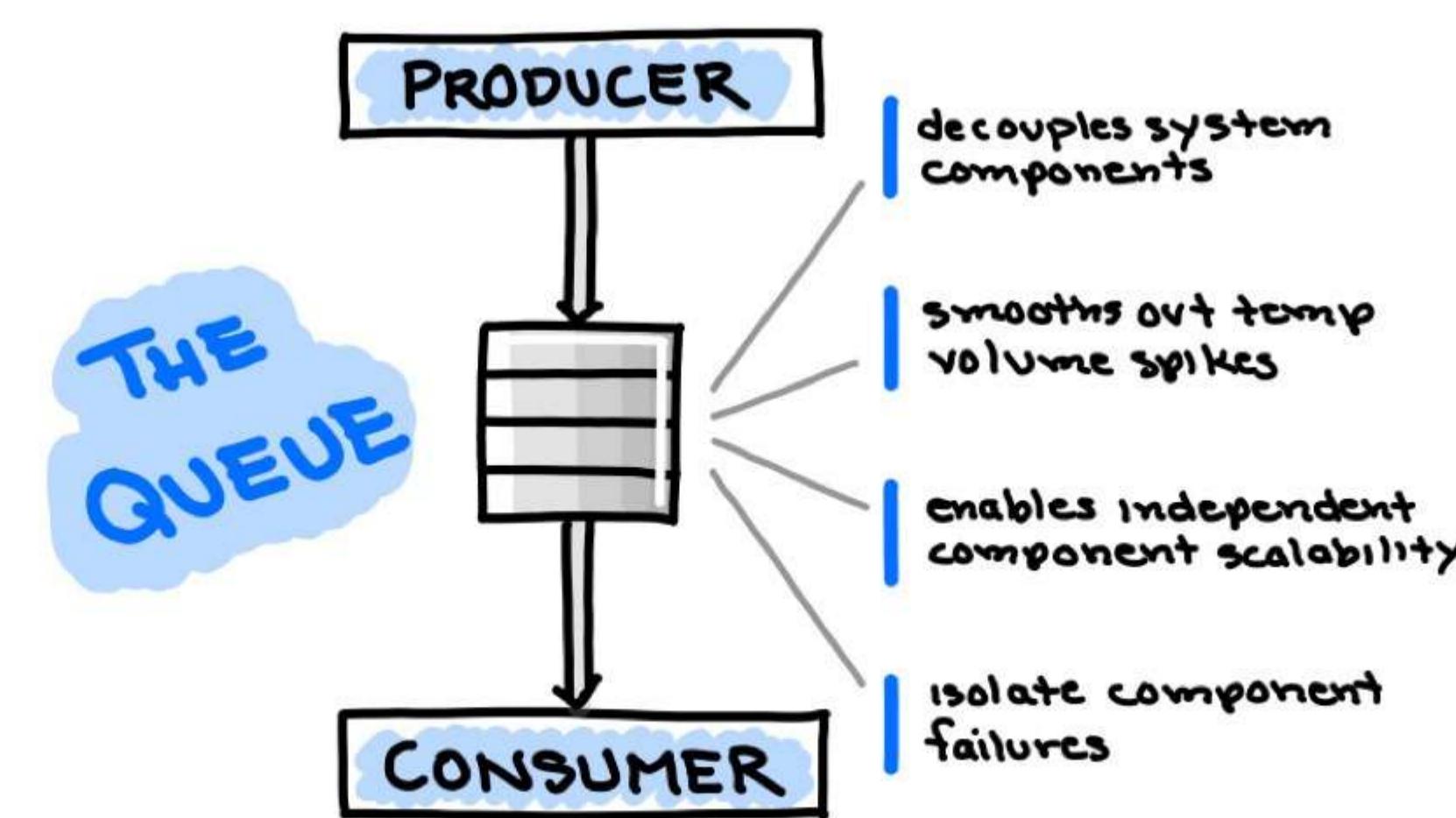
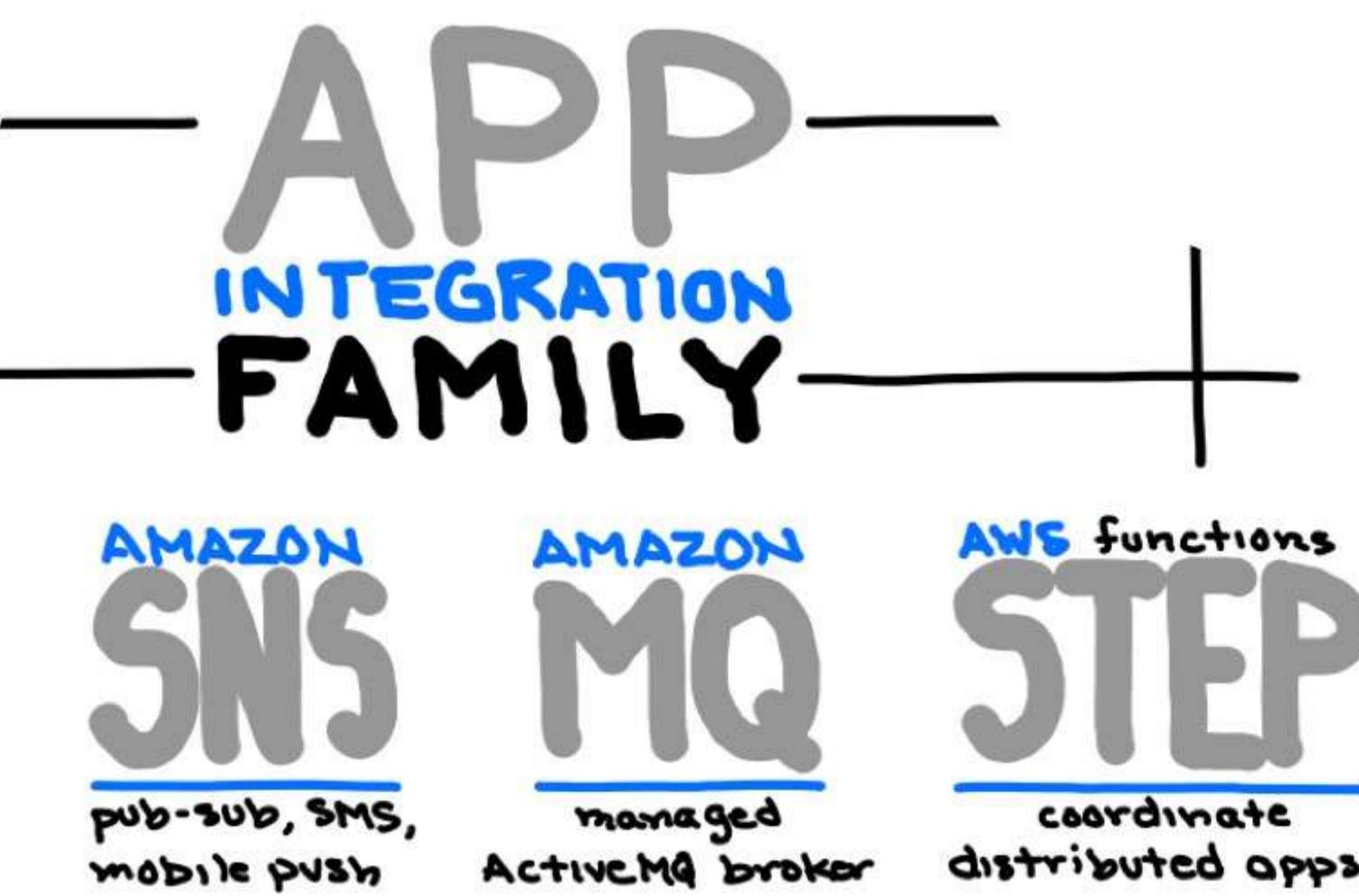
MIN: 1 MIN MAX: 14 DAYS

MAXIMUM MESSAGE SIZE

MIN: 1 KB MAX: 256 KB

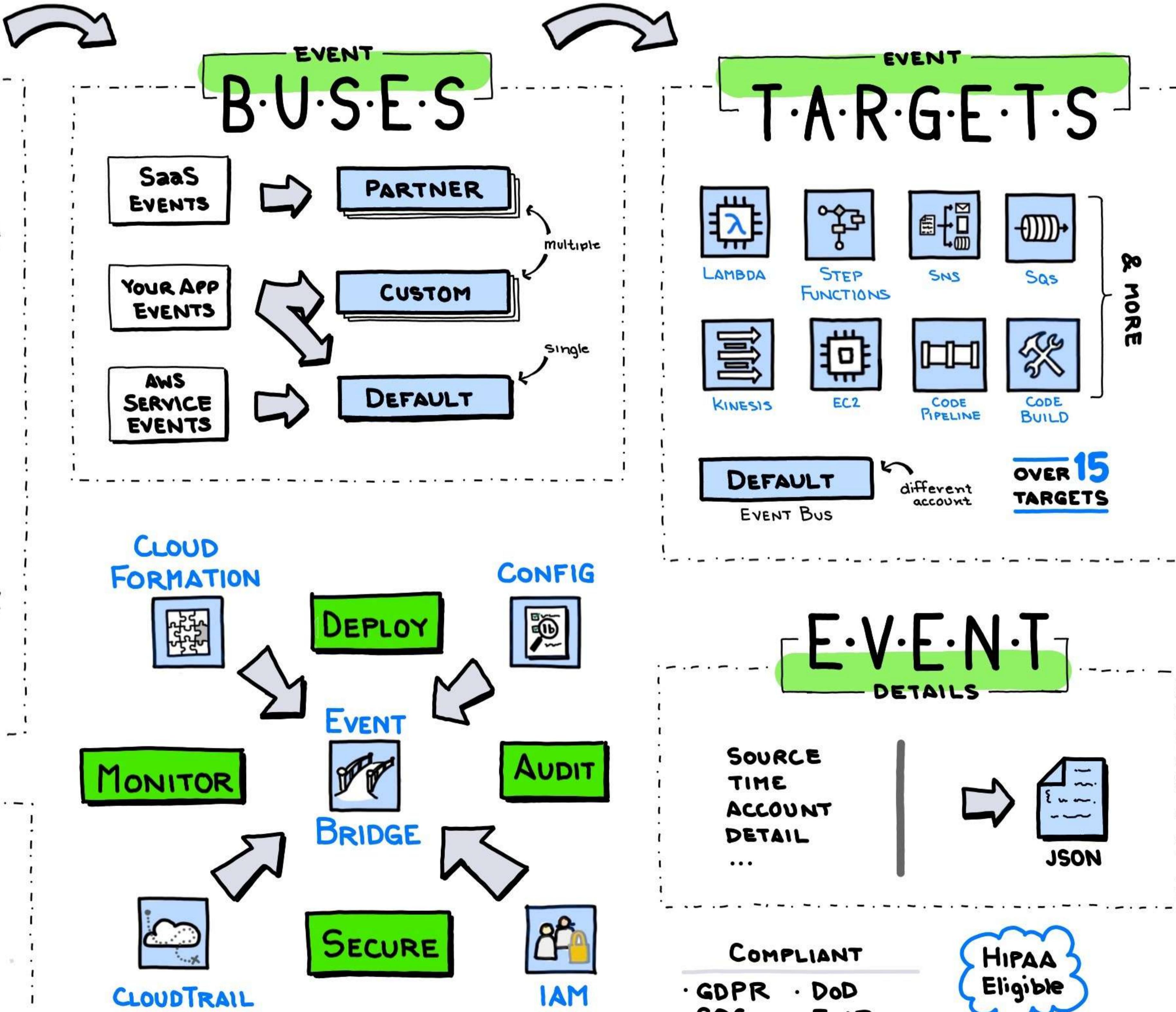
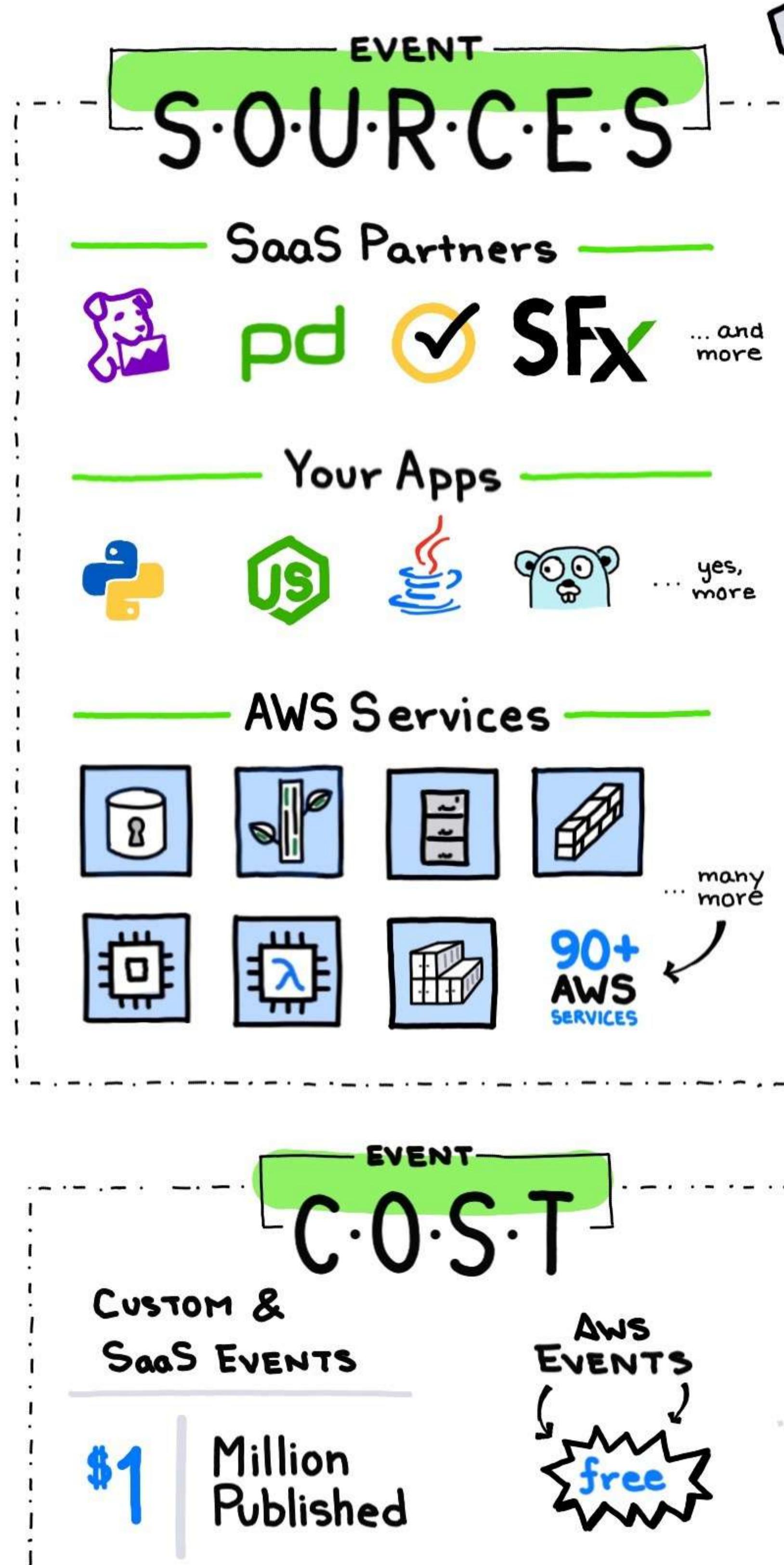
MAXIMUM INFLIGHT MESSAGES

STD: 120K FIFO: 20K



EVENTBRIDGE

SERVERLESS EVENT BUS



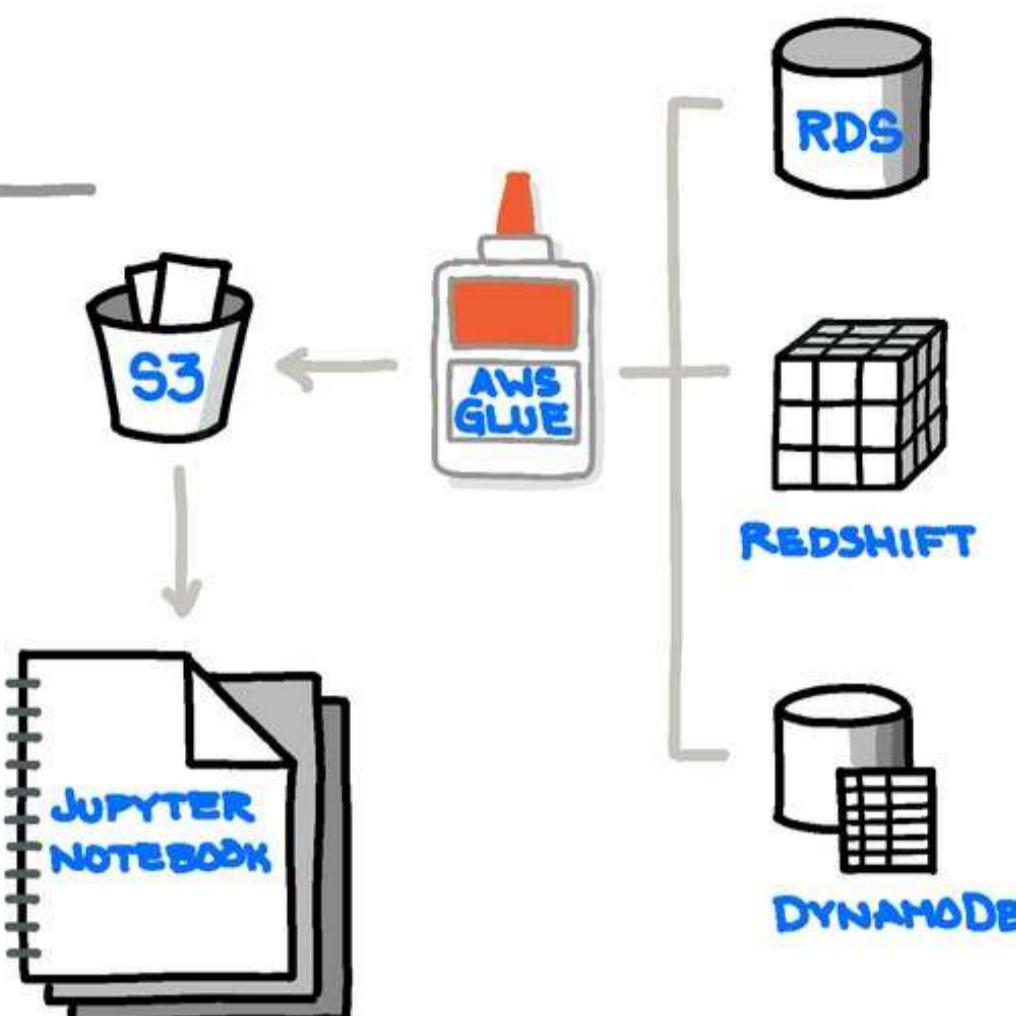
BUILD

COMMON TEMPLATES

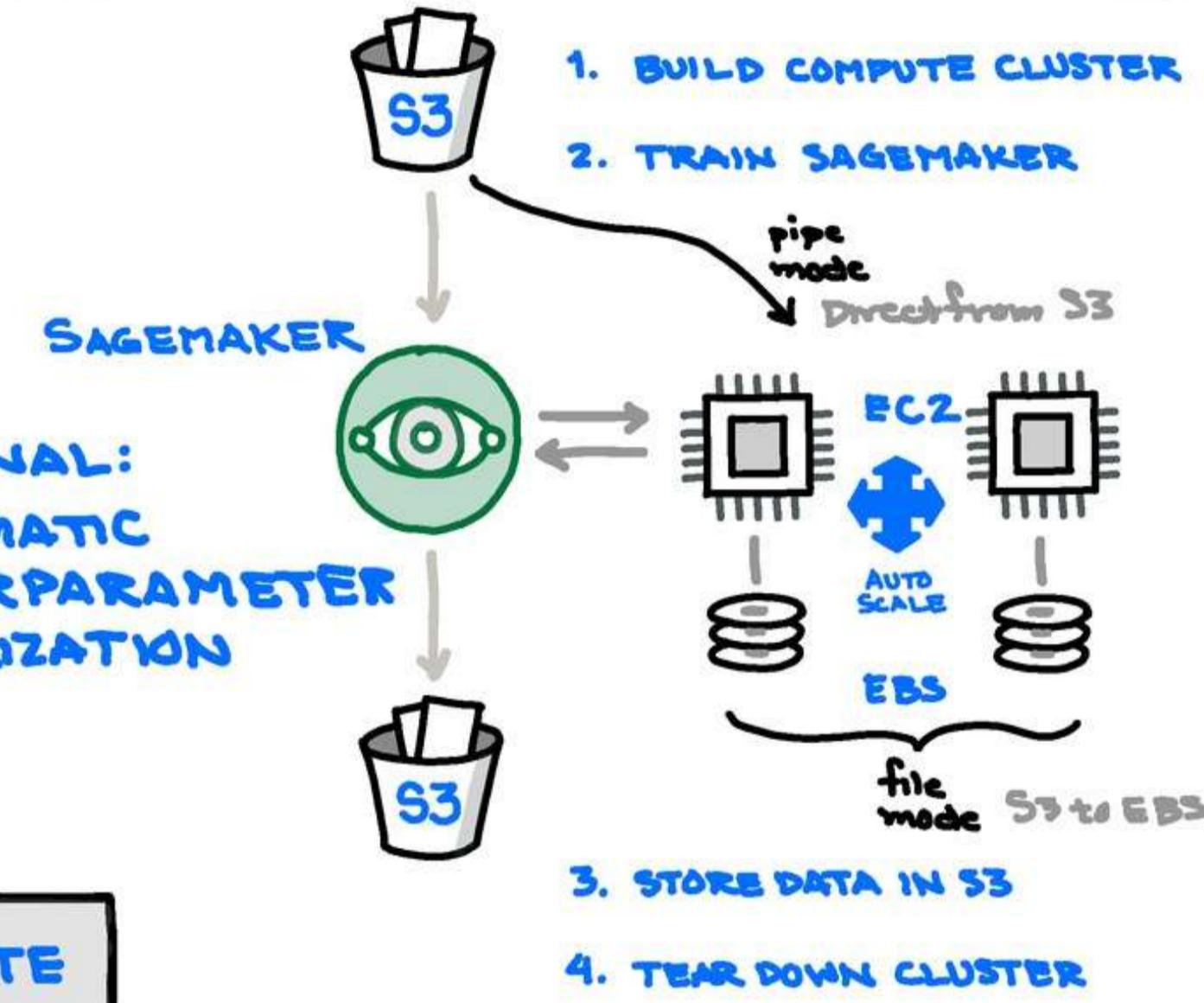
- TIME SERIES FORECAST
- DIRECT MARKETING TARGETS
- PREDICT CUSTOMER CHURN

ADV. TEMPLATES

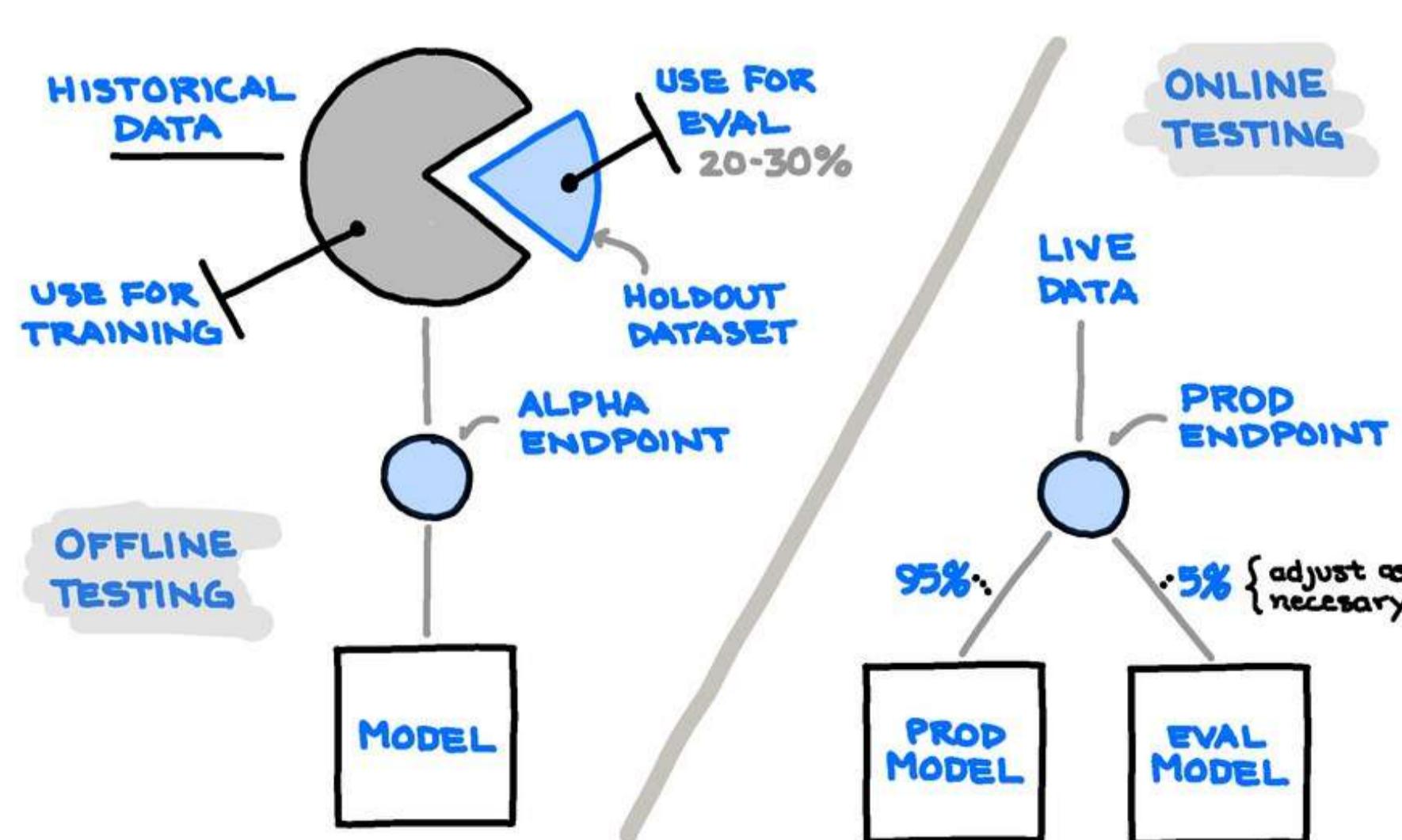
- BYO TENSORFLOW & MXNET CONTAINERS
- BYO SCIKIT OR R.ALGO



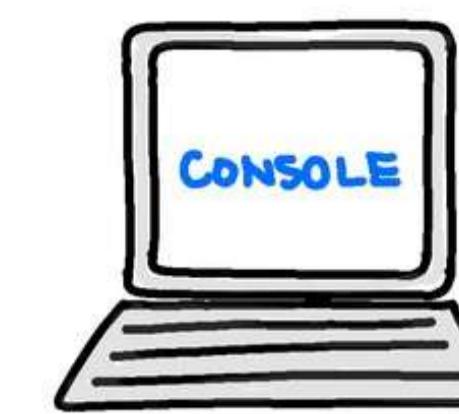
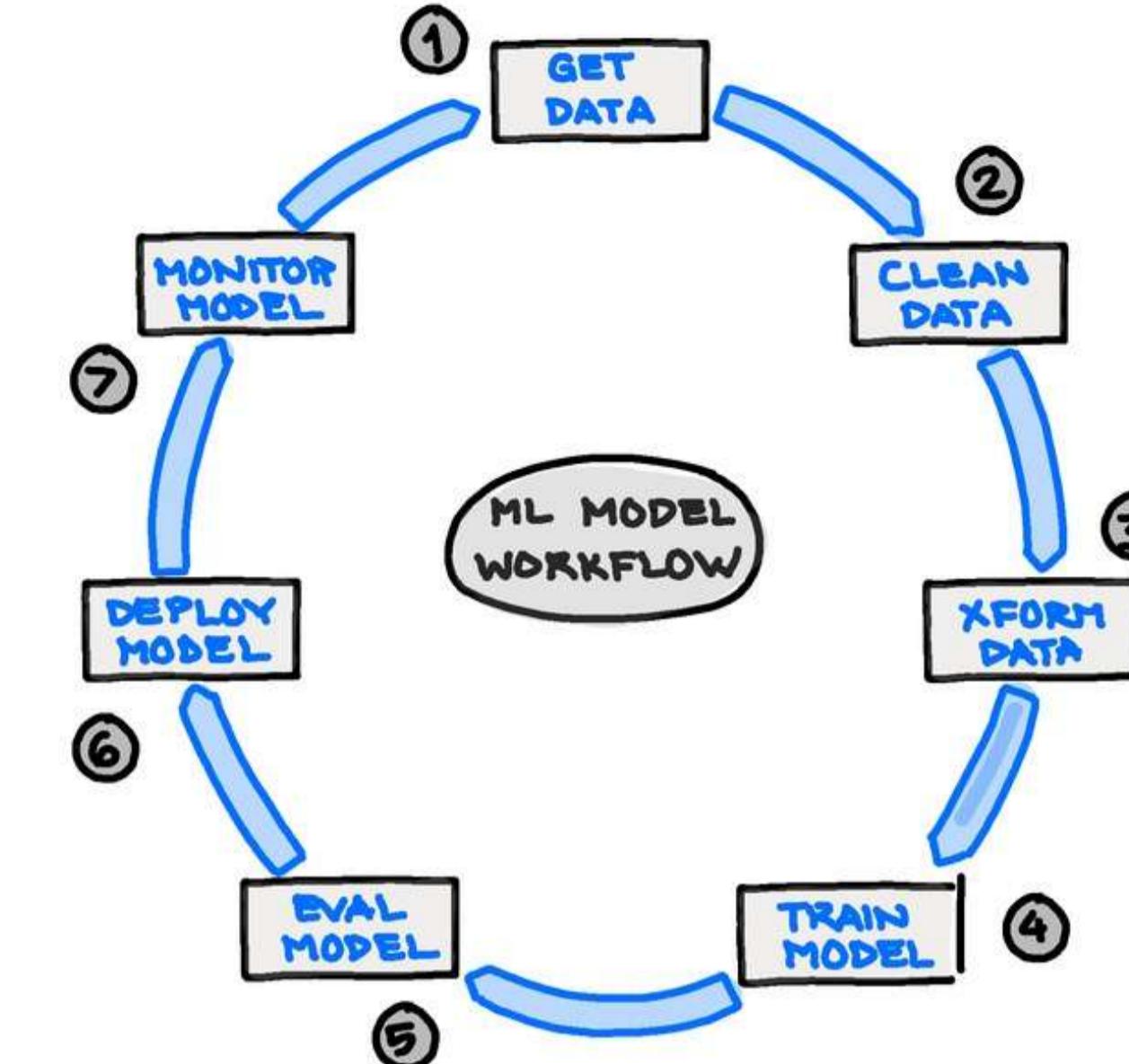
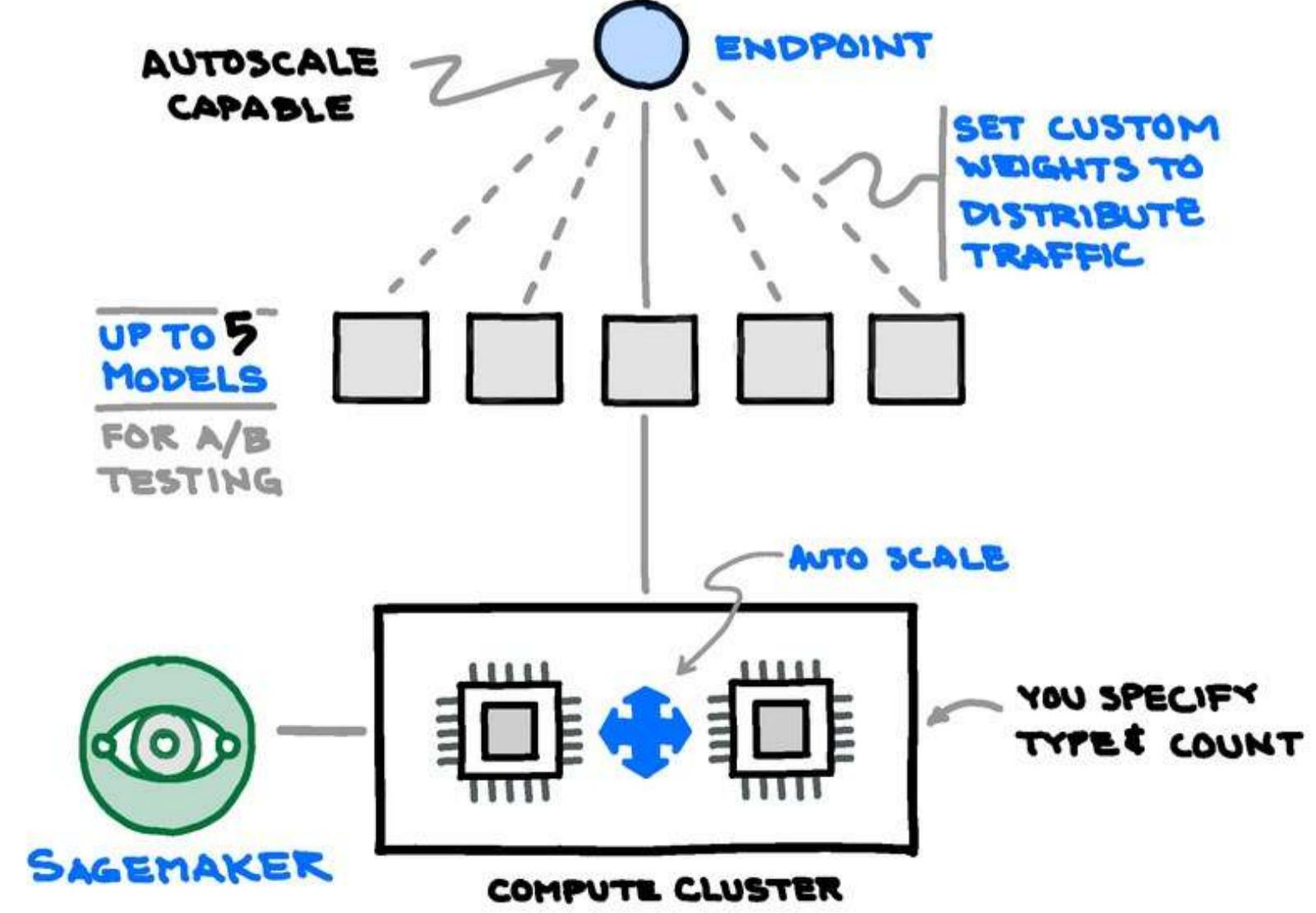
TRAIN



EVALUATE



DEPLOY



CONSOLE



PROGRAMMING
MODEL



INTEGRATE
Spark
v2.1.1 & v2.2.0



JUPYTER
NOTEBOOK

UPDATE EXISTING
NOTEBOOKS



PYTHON LIBRARY
def func:

end
AWS SDKS



SAGEMAKER

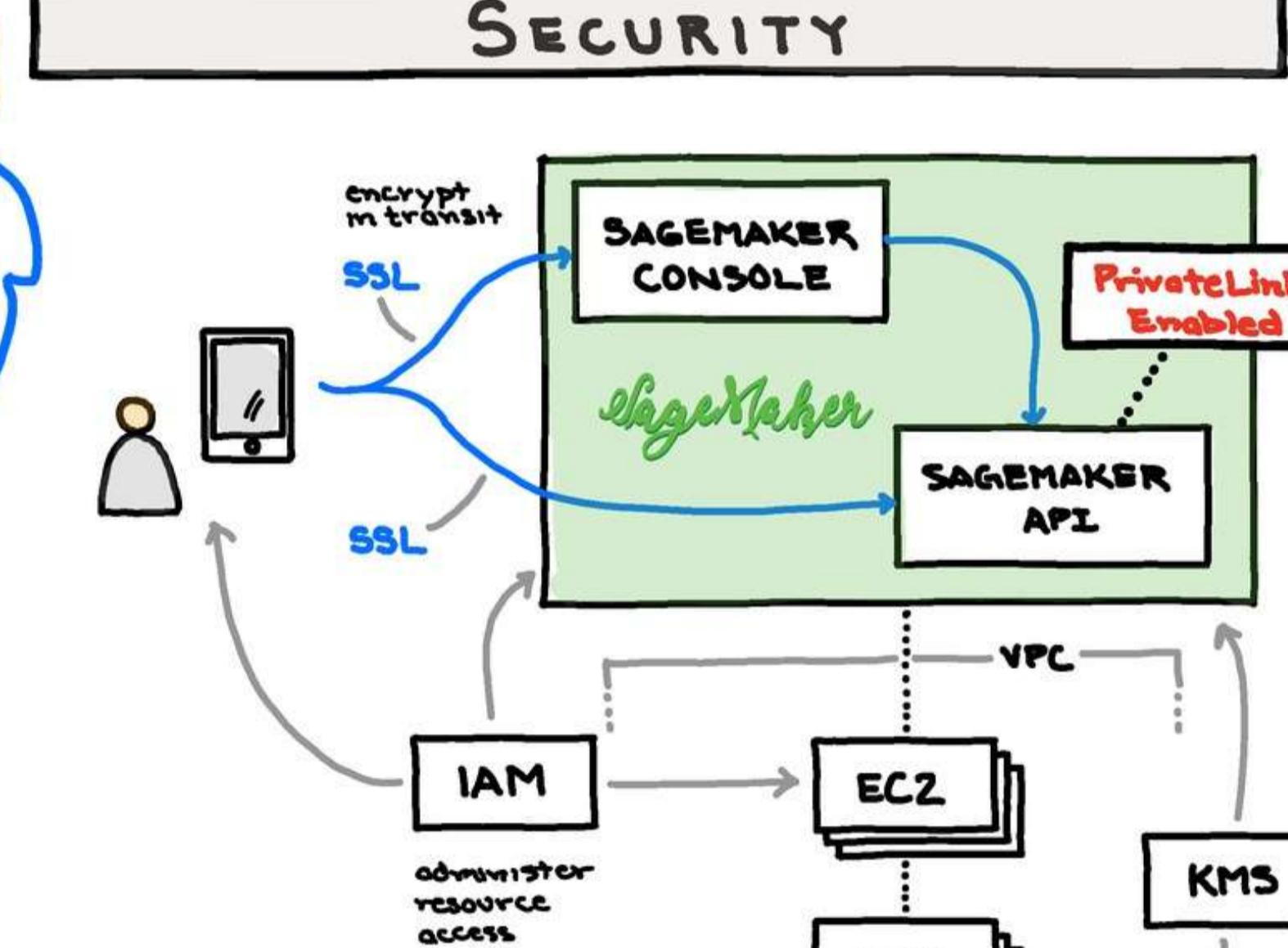
WRITE YOUR OWN
MODEL CODE

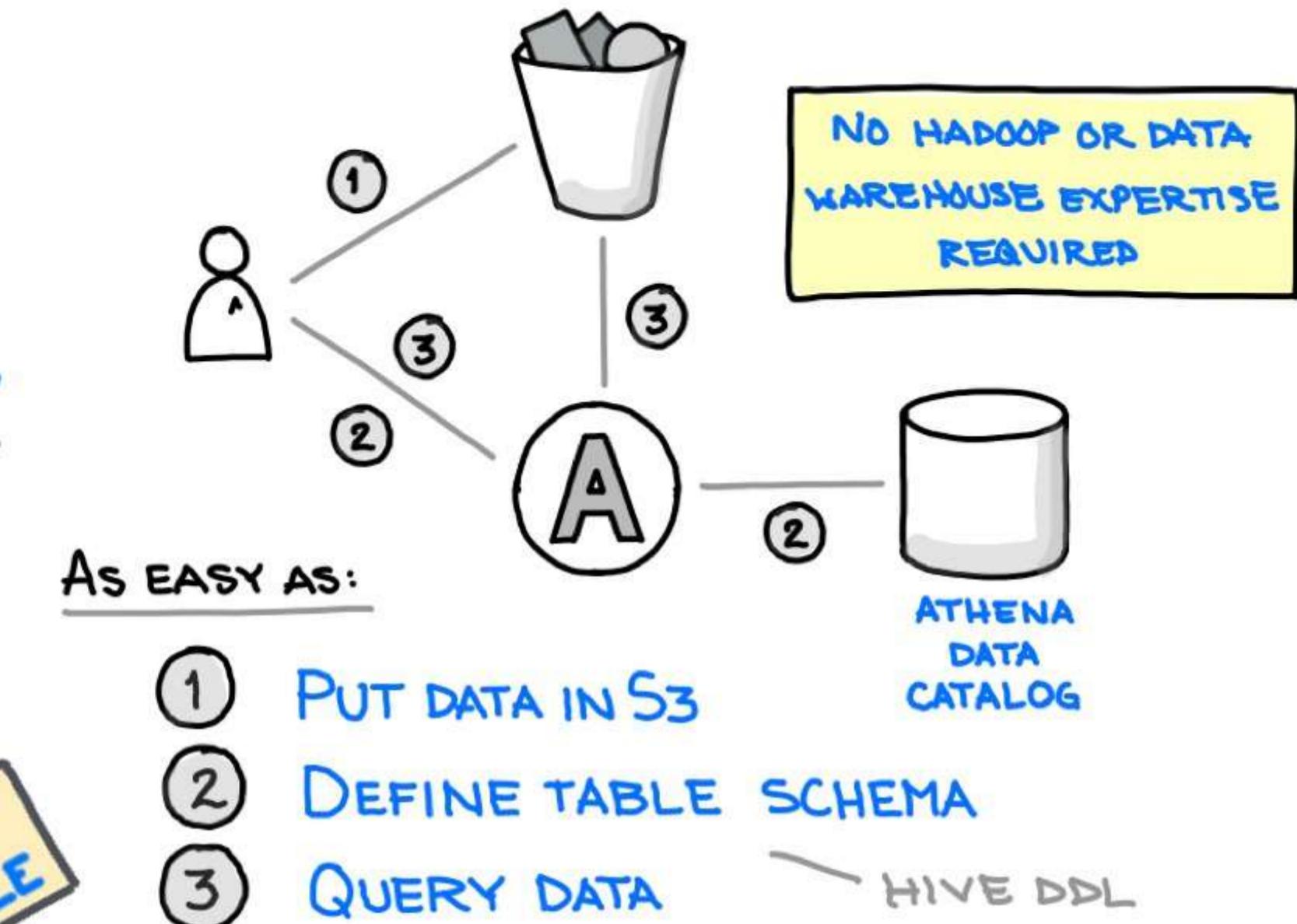
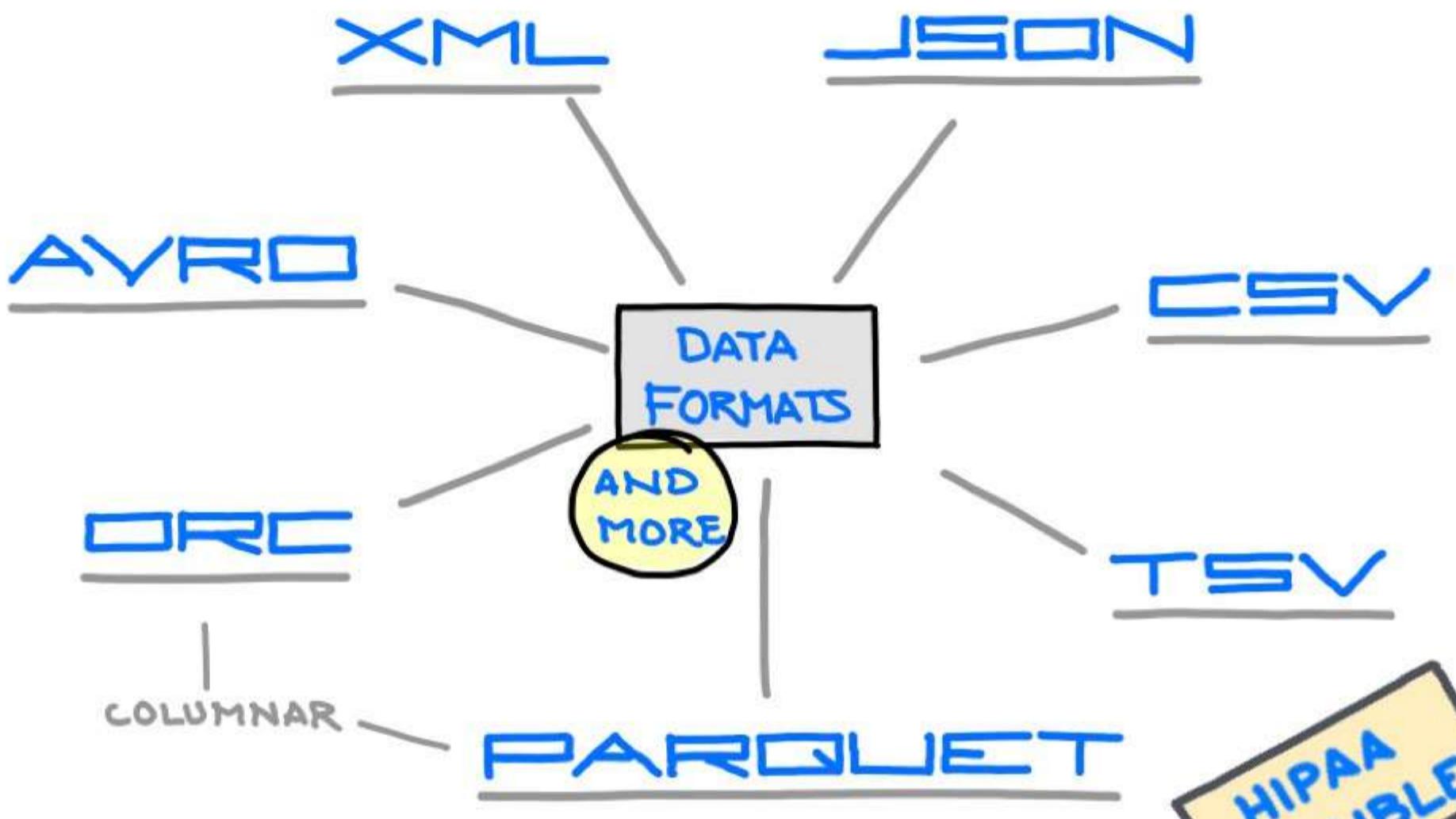
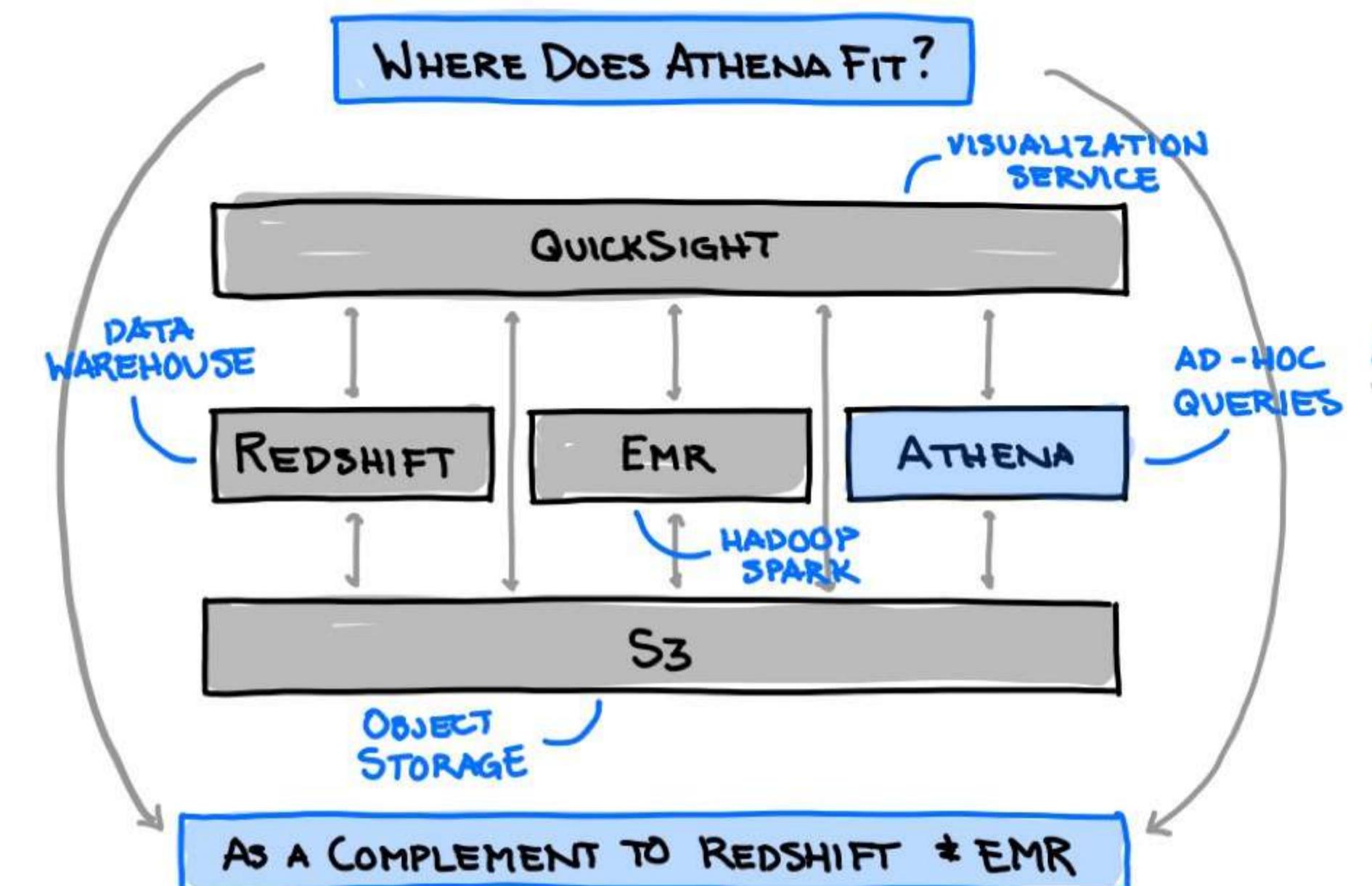
PRICING

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)



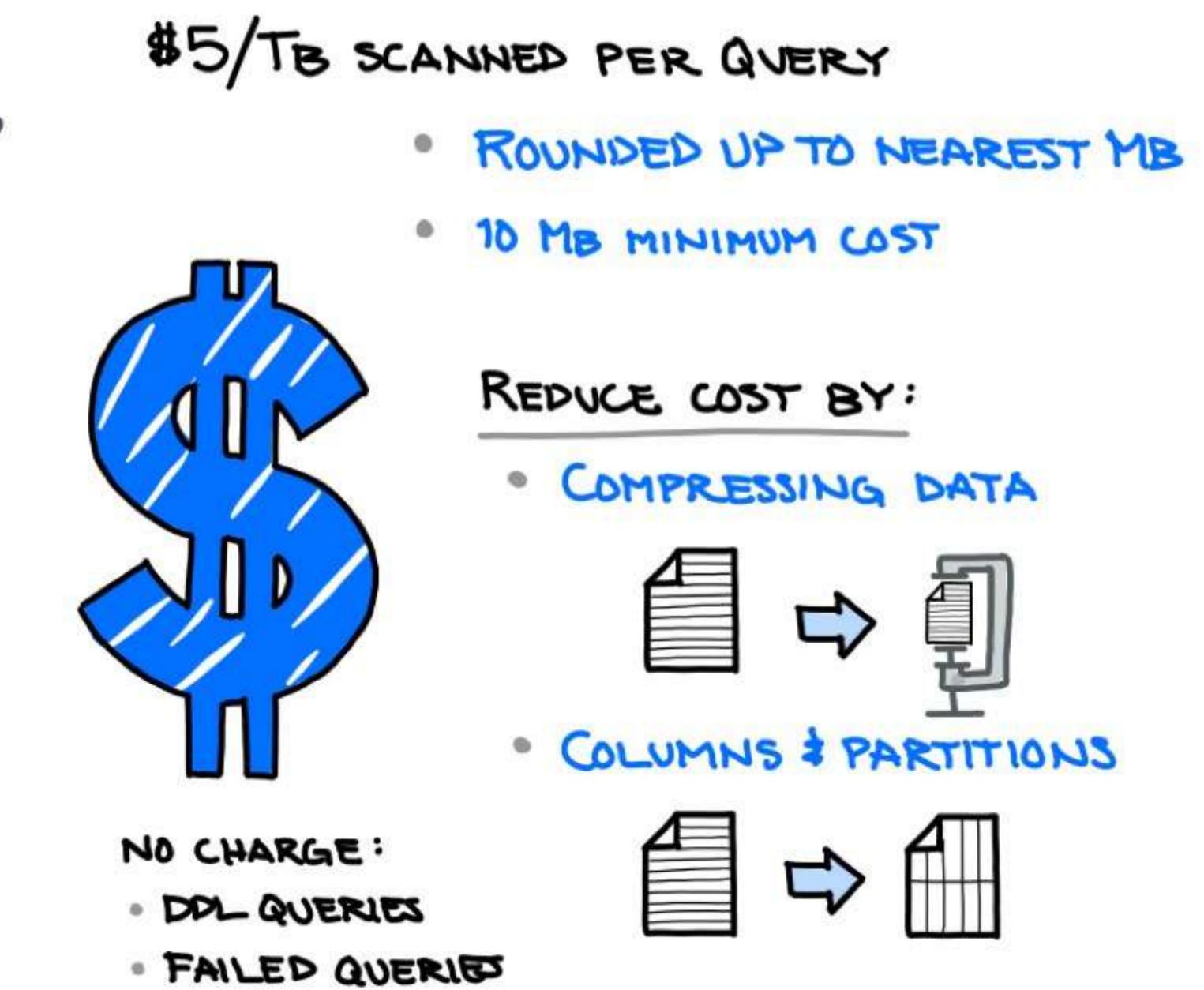
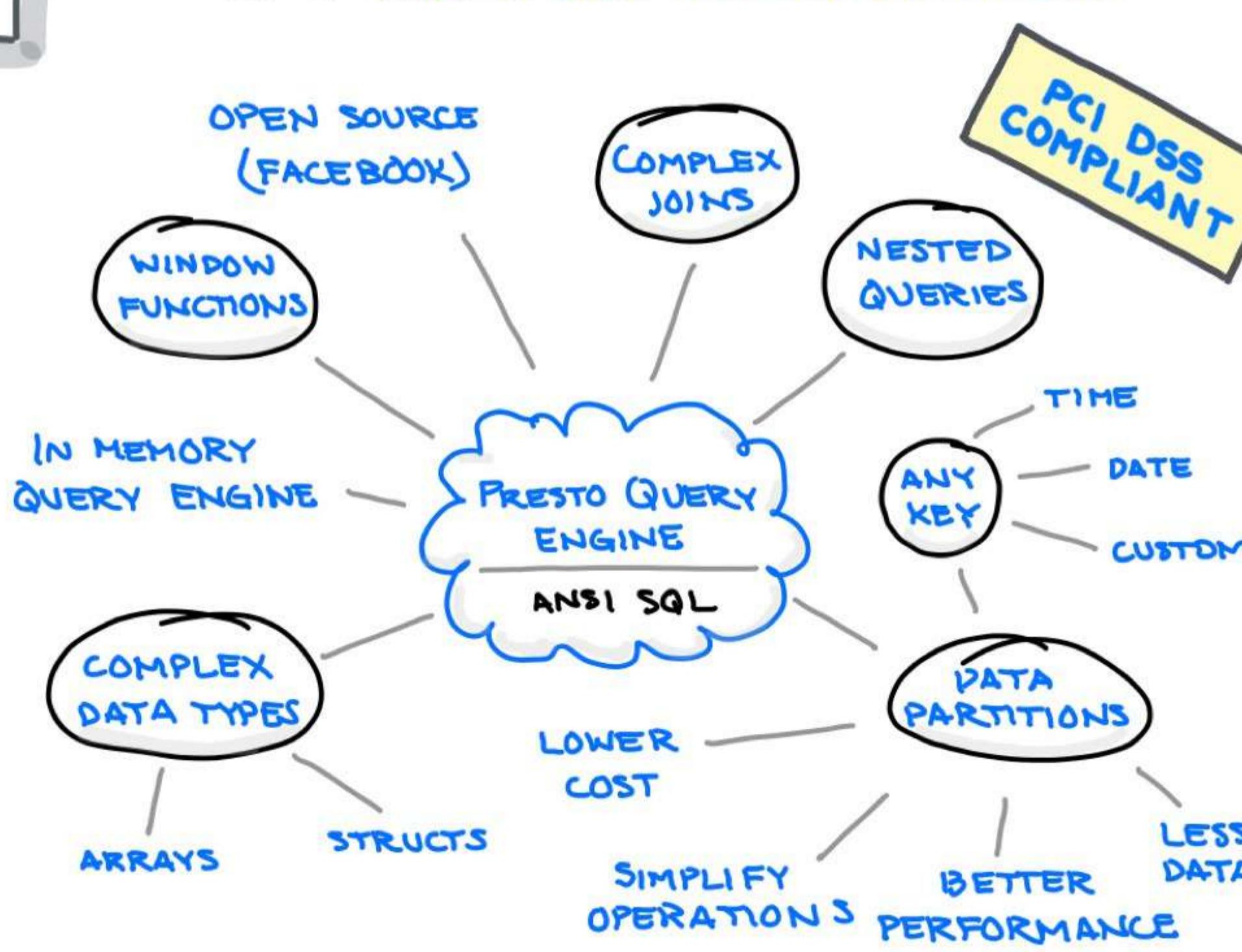
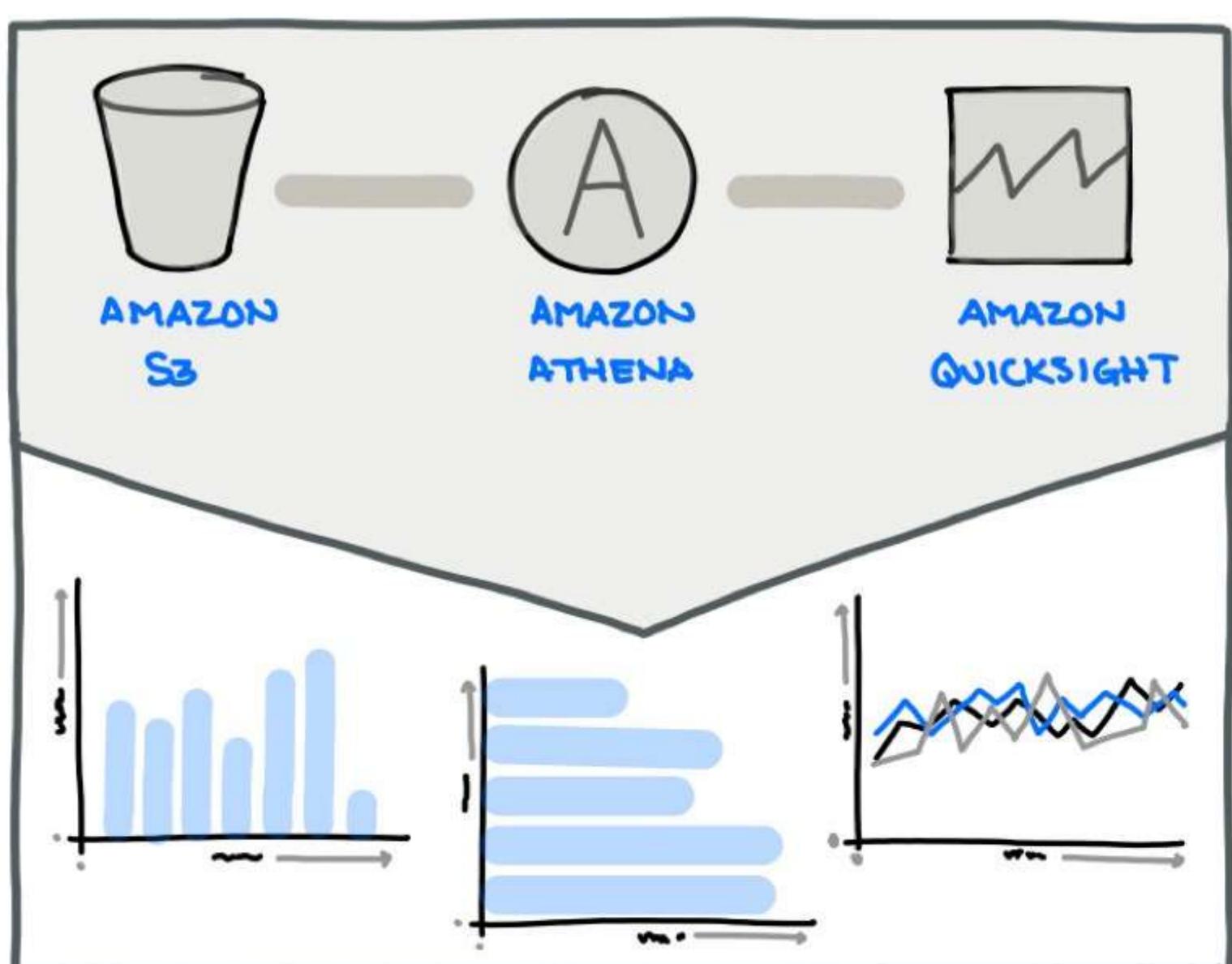
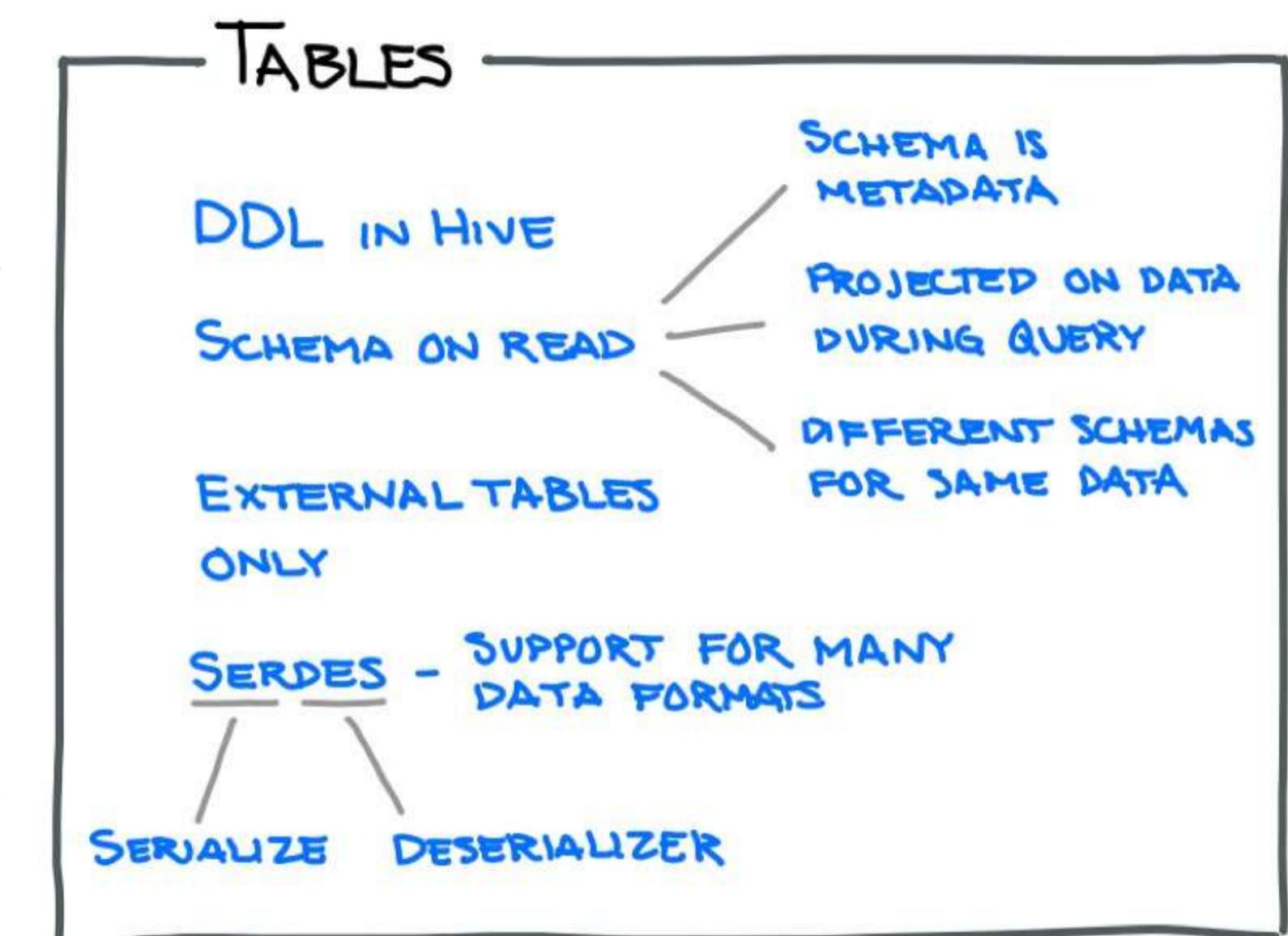


| | |
|---------------------|-------------------------|
| SERVERLESS | HIGHLY AVAILABLE |
| NO INFRA OR ADMIN | WARM COMPUTE POOLS |
| NO SPIN UP TIME | DATA IN S3 |
| NO MAINTENANCE | MULTIPLE AZ |
| CONVENIENT | PERFORMANT |
| NO DATA LOADING | AUTO PARALLELIZATION |
| NATIVE DATA FORMATS | STREAMING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

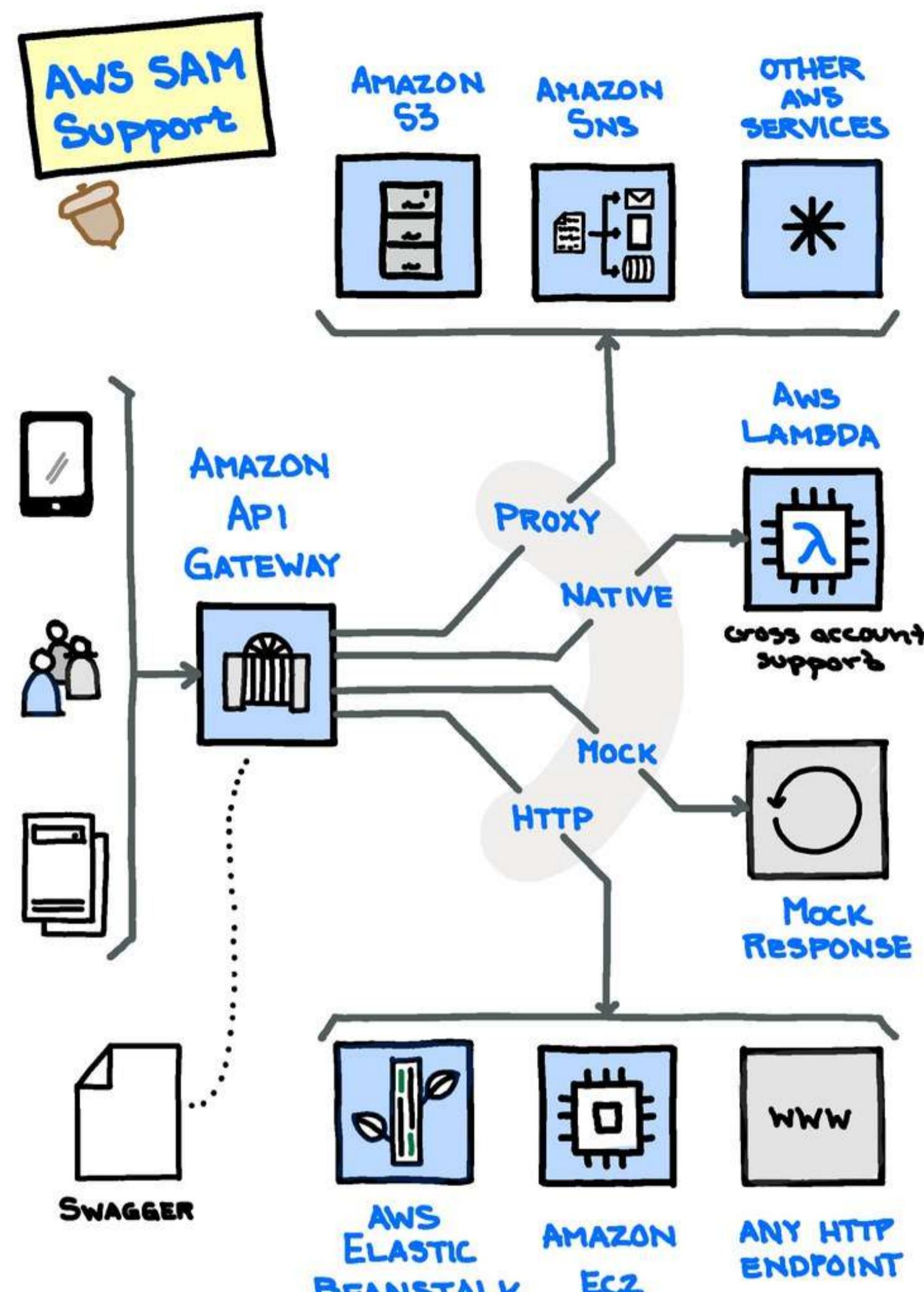
3/6/20 @awsgeek

AMAZON athena

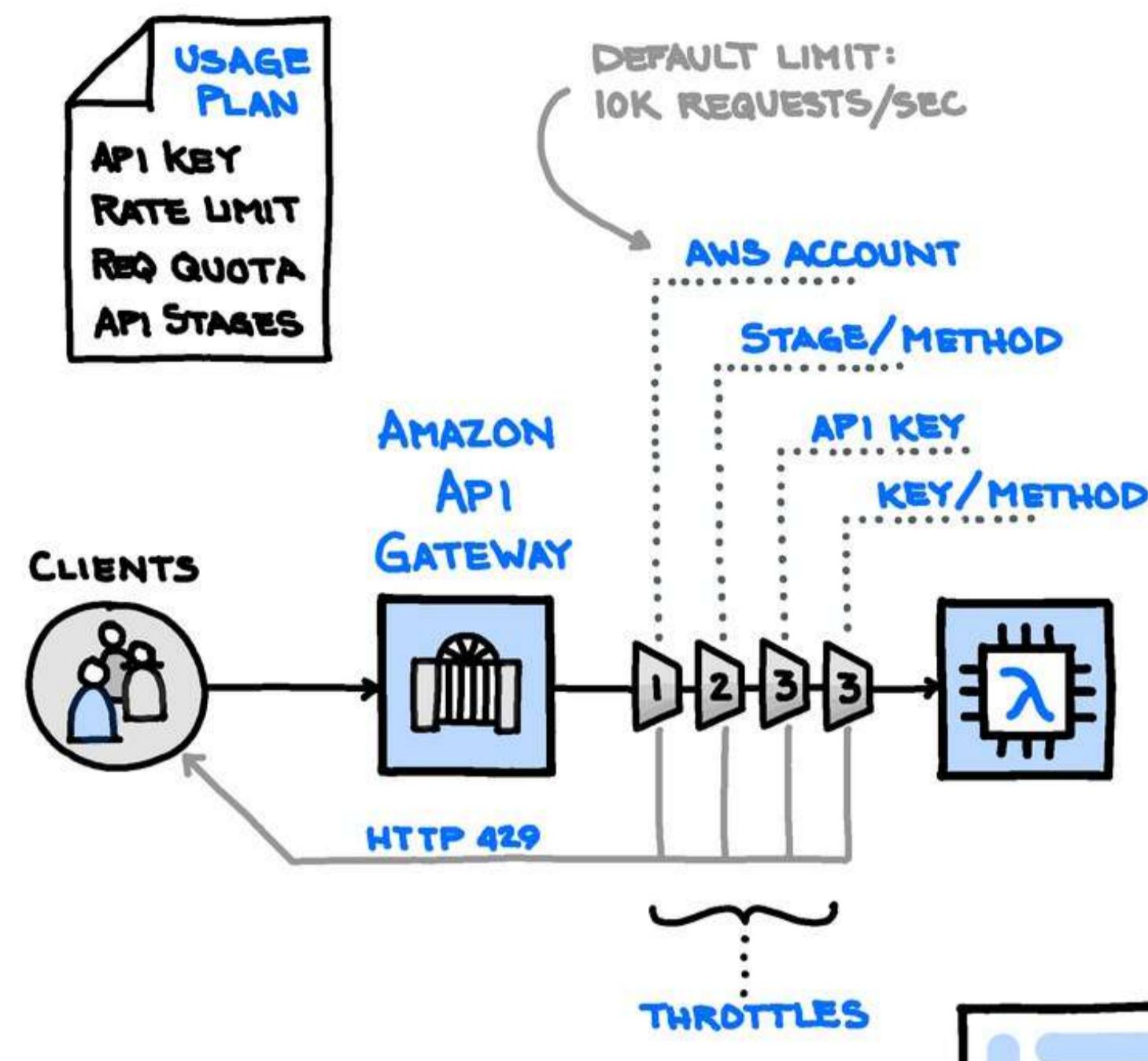
GOAL: MAKE IT EASY TO ANALYZE DATA IN S3



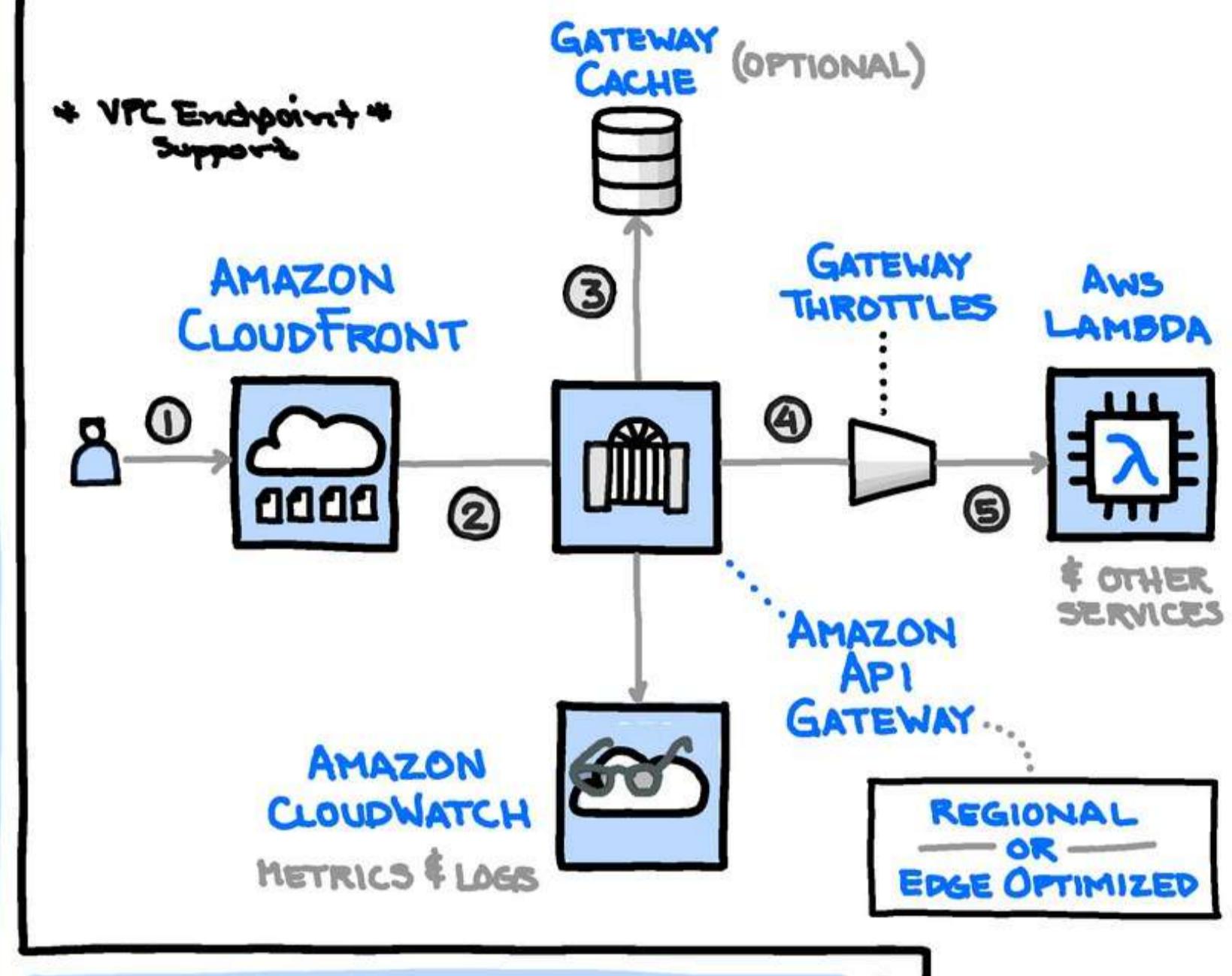
THE INTEGRATIONS



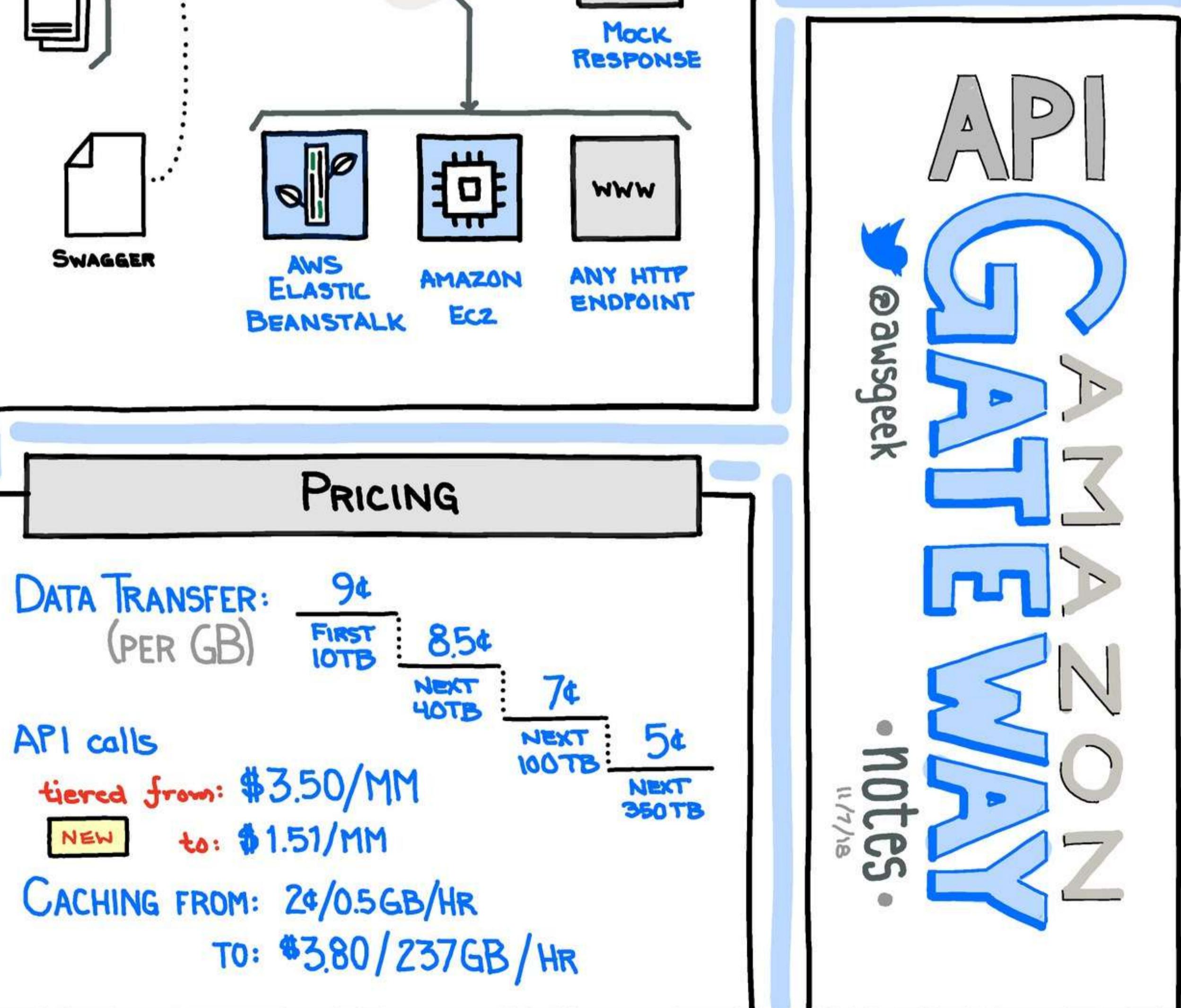
THROTTLING

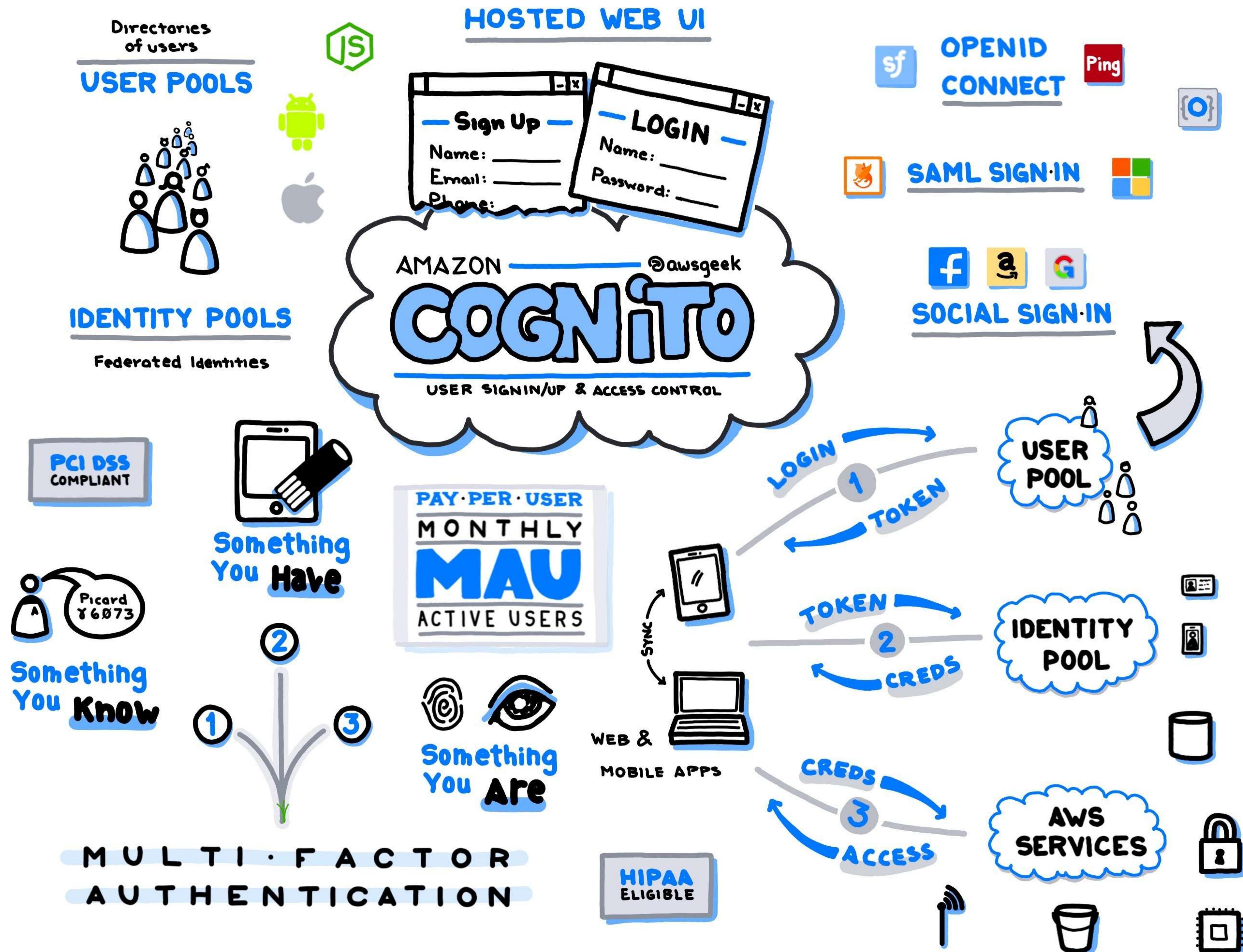


UNDER THE HOOD



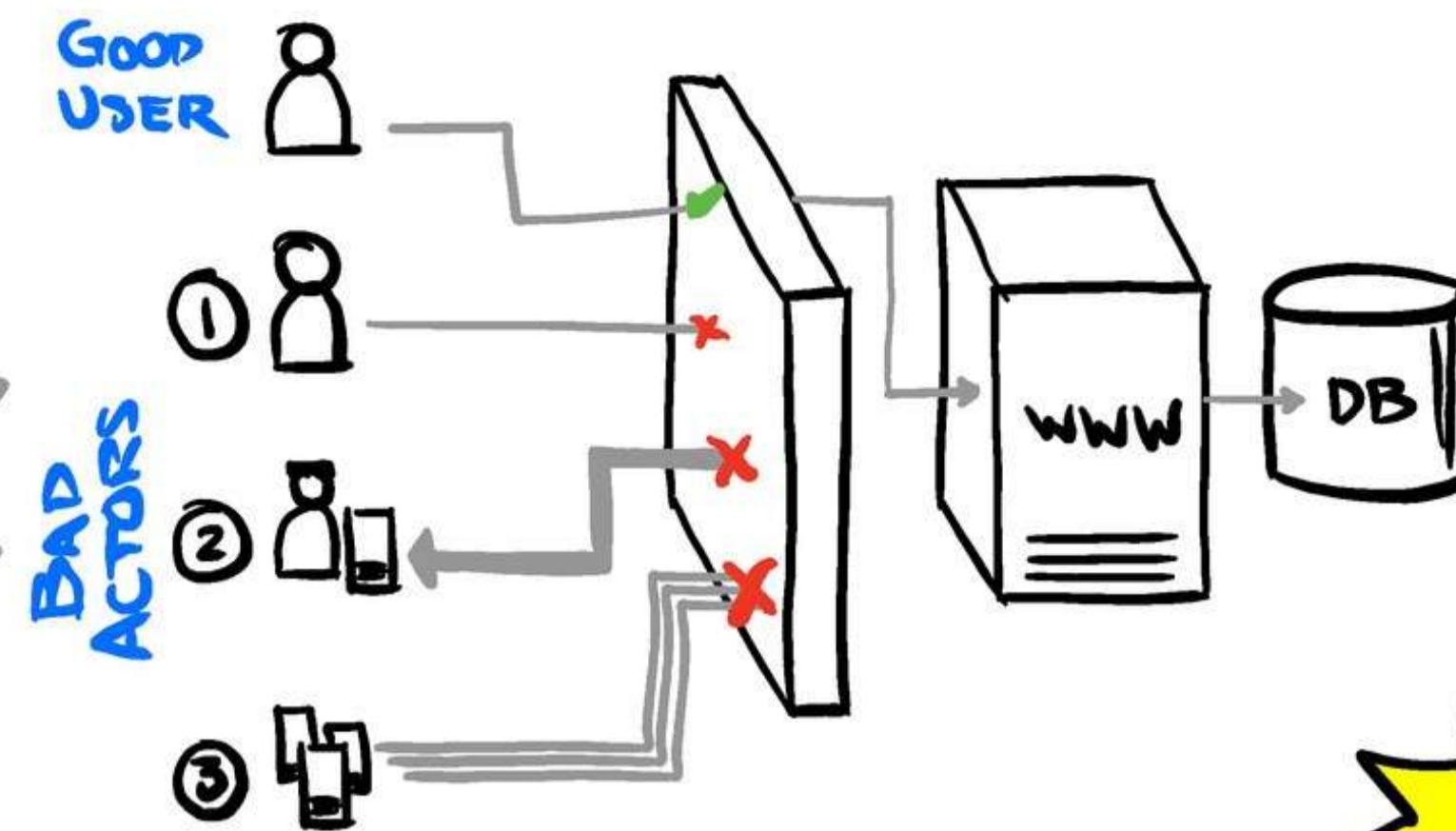
EVOLUTION OF AN API



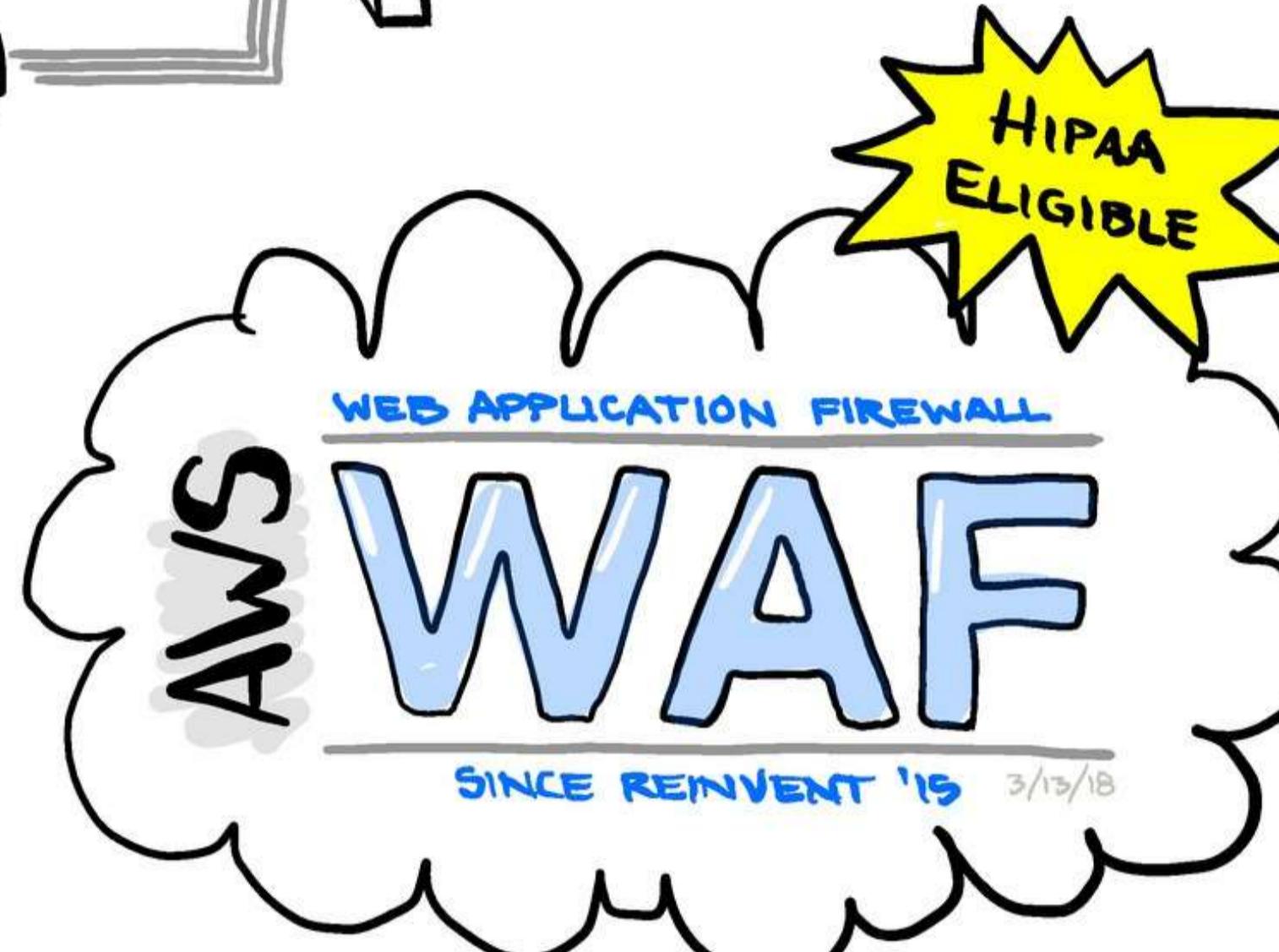
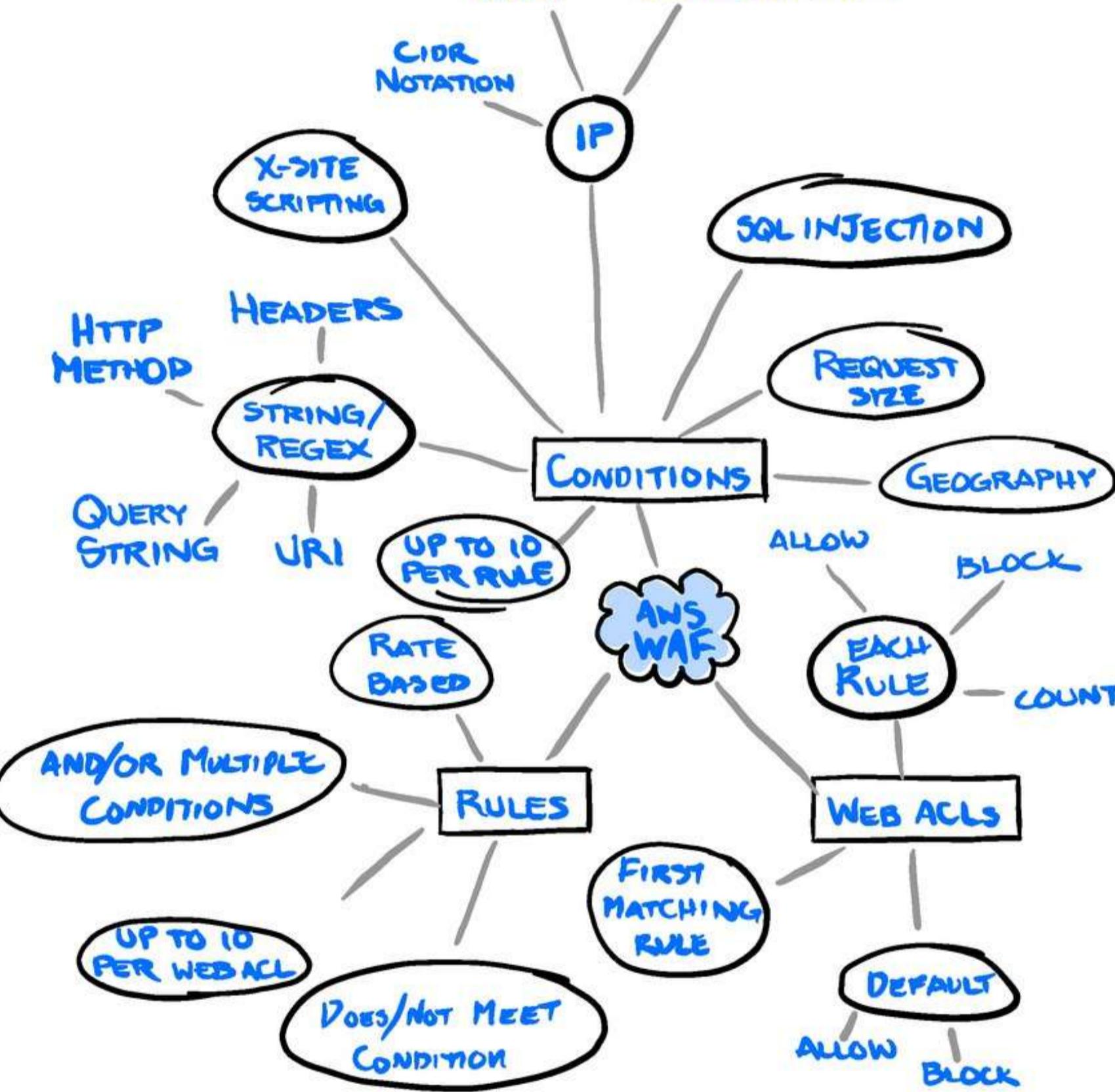


COMMON WAF USE CASES

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

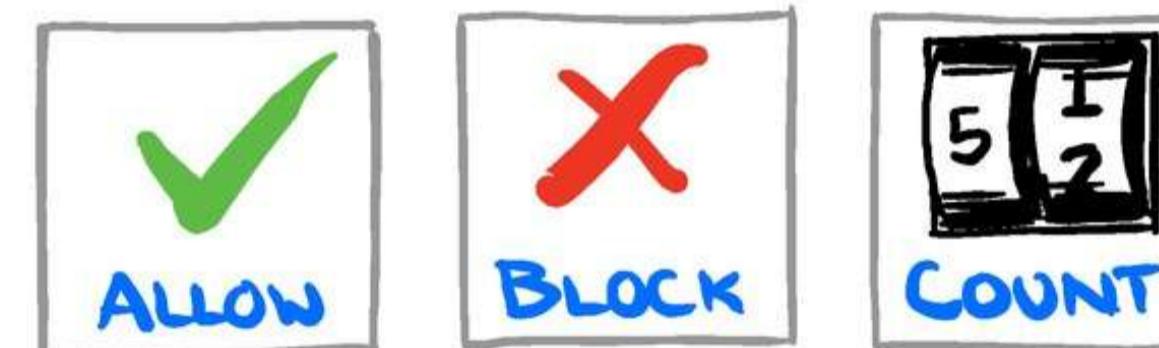


18,16,24,32 ONLY UPTO 10K PER CONDITION



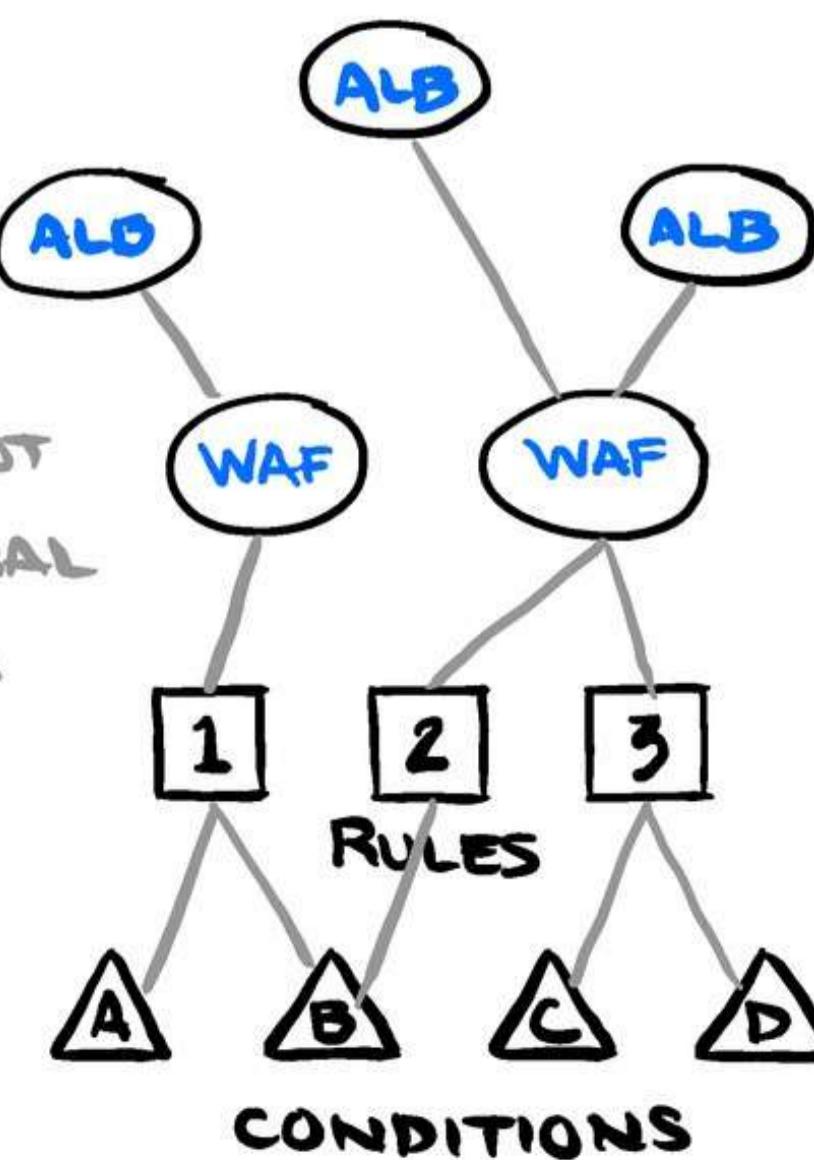
@awsgeek

jerry.hargrove@



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

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



PRECONFIGURED PROTECTIONS

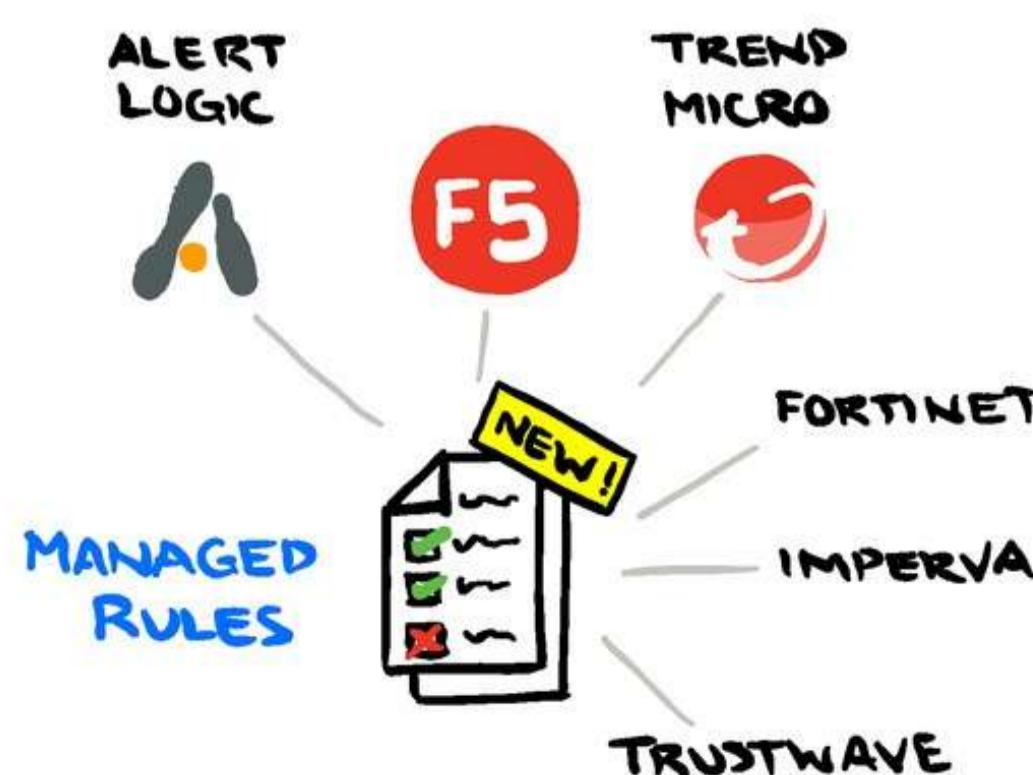
- BAD BOT/SCRAPER
- SQL INJECTION
- CROSS-SITE SCRIPTING
- HTTP FLOOD, SCANNER, PROBE
- IP WHITE/BLACK LIST
- KNOWN ATTACKER

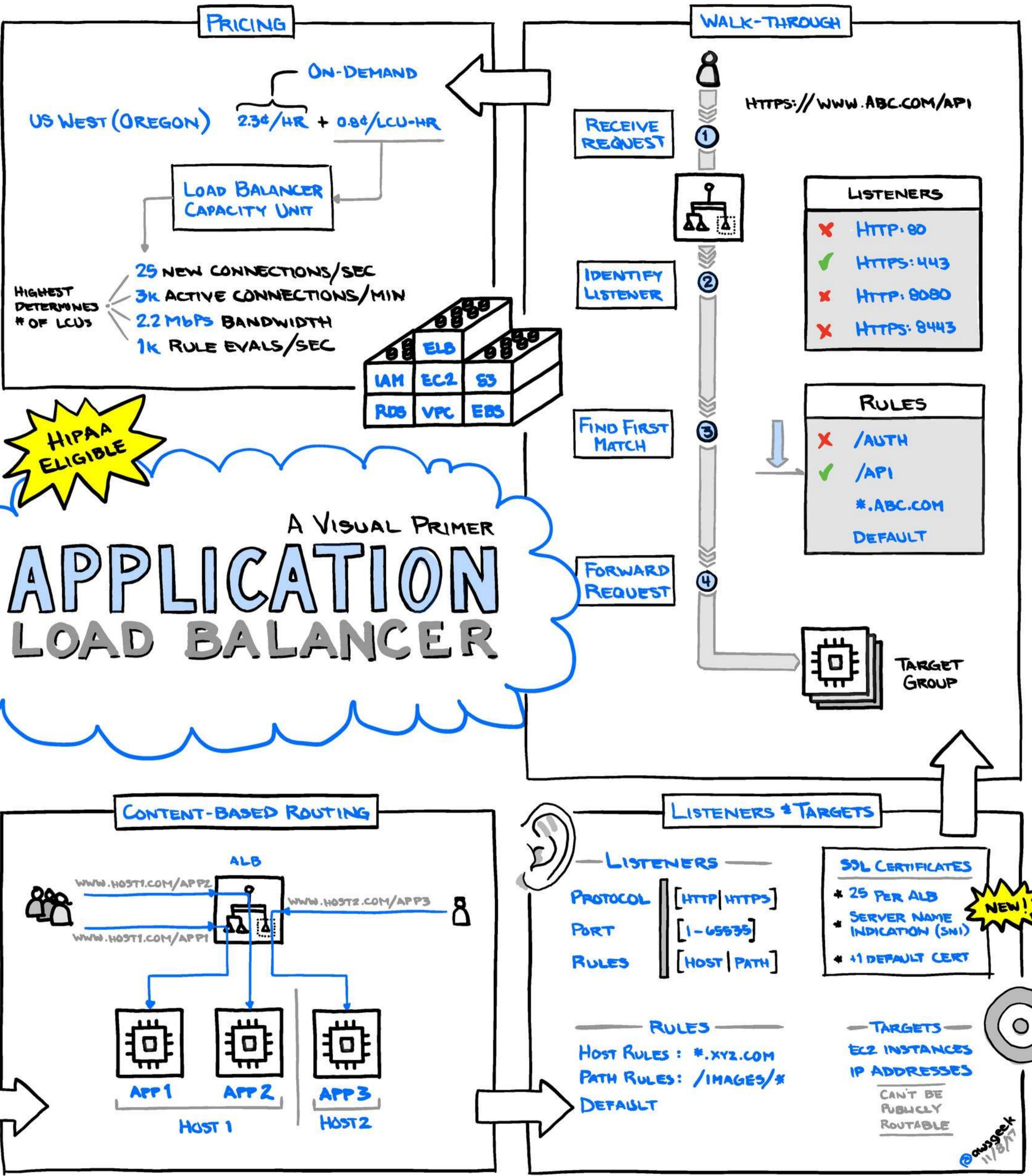
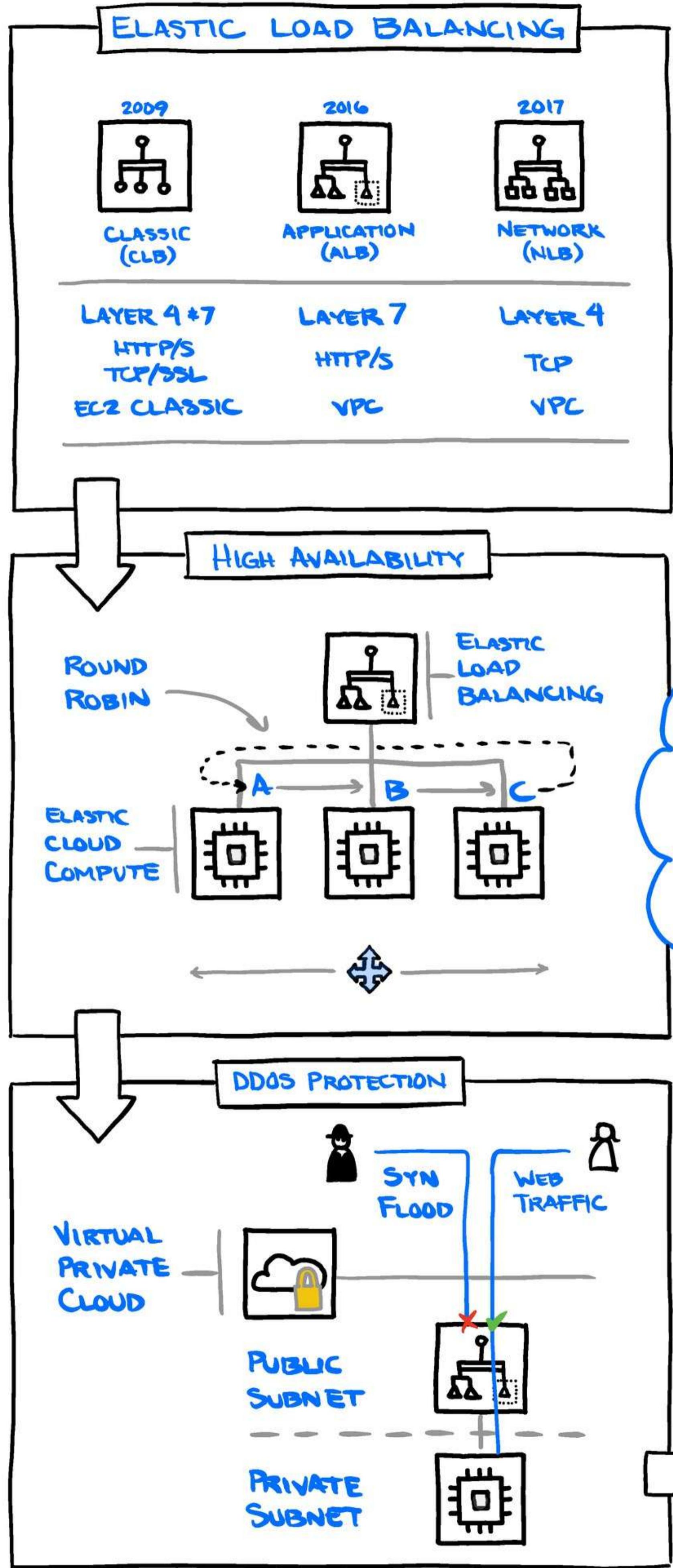
VIA CLOUDFORMATION
NEW OR EXISTING WAF

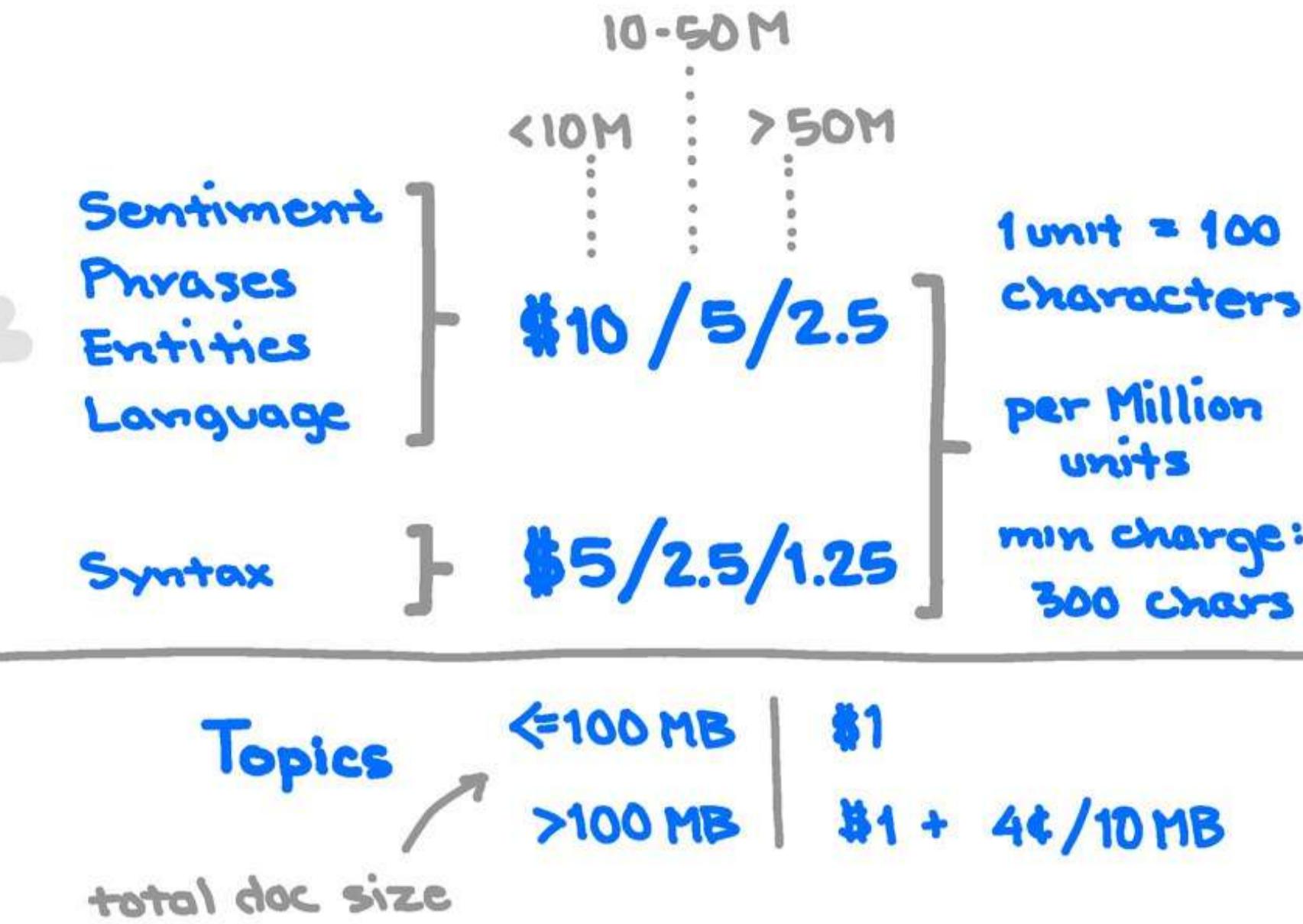
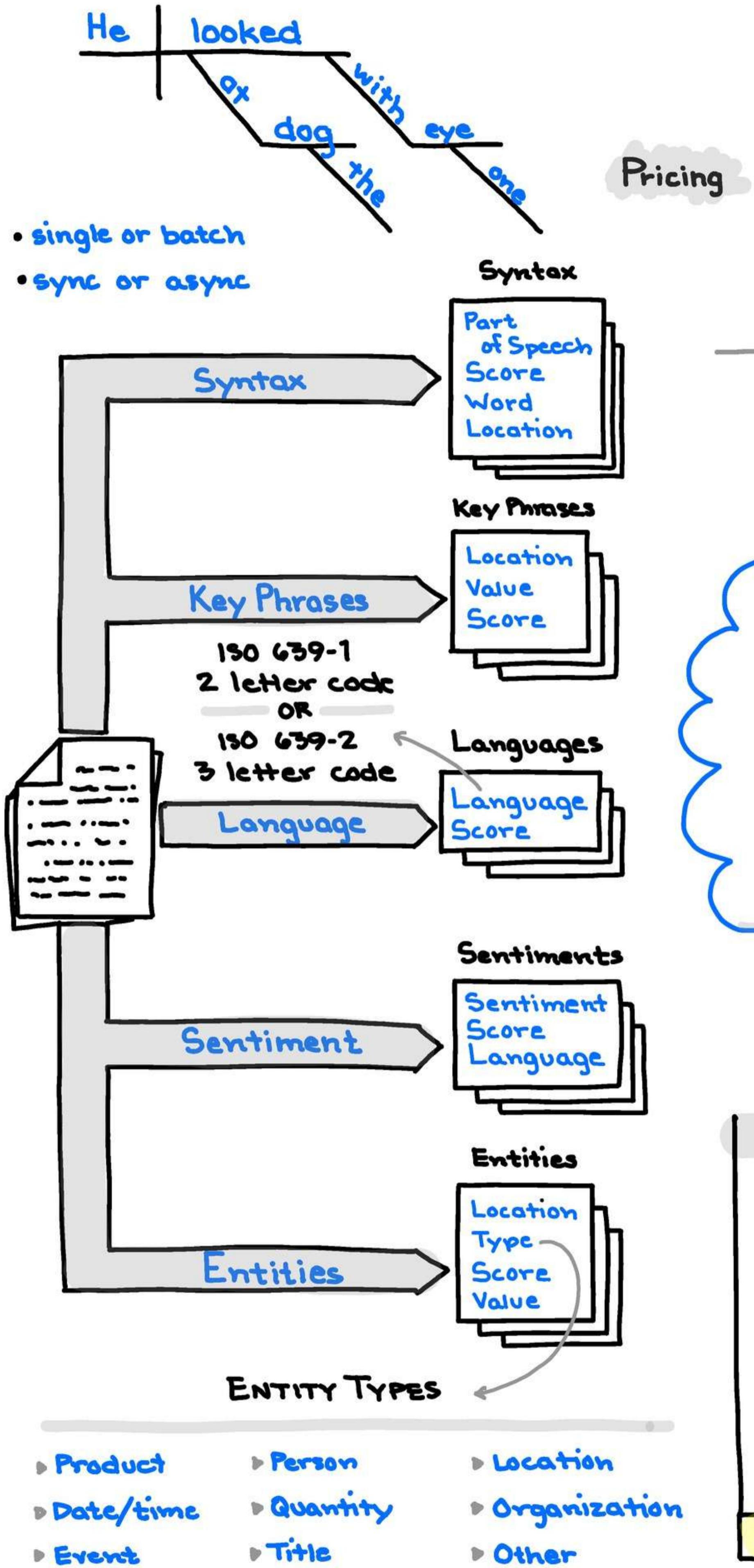


\$5/WEB ACL/Mo
\$1/RULE/WEBACL/Mo
60¢/MM REQUESTS

FOLLOW:
Aws SECURITY BLOG





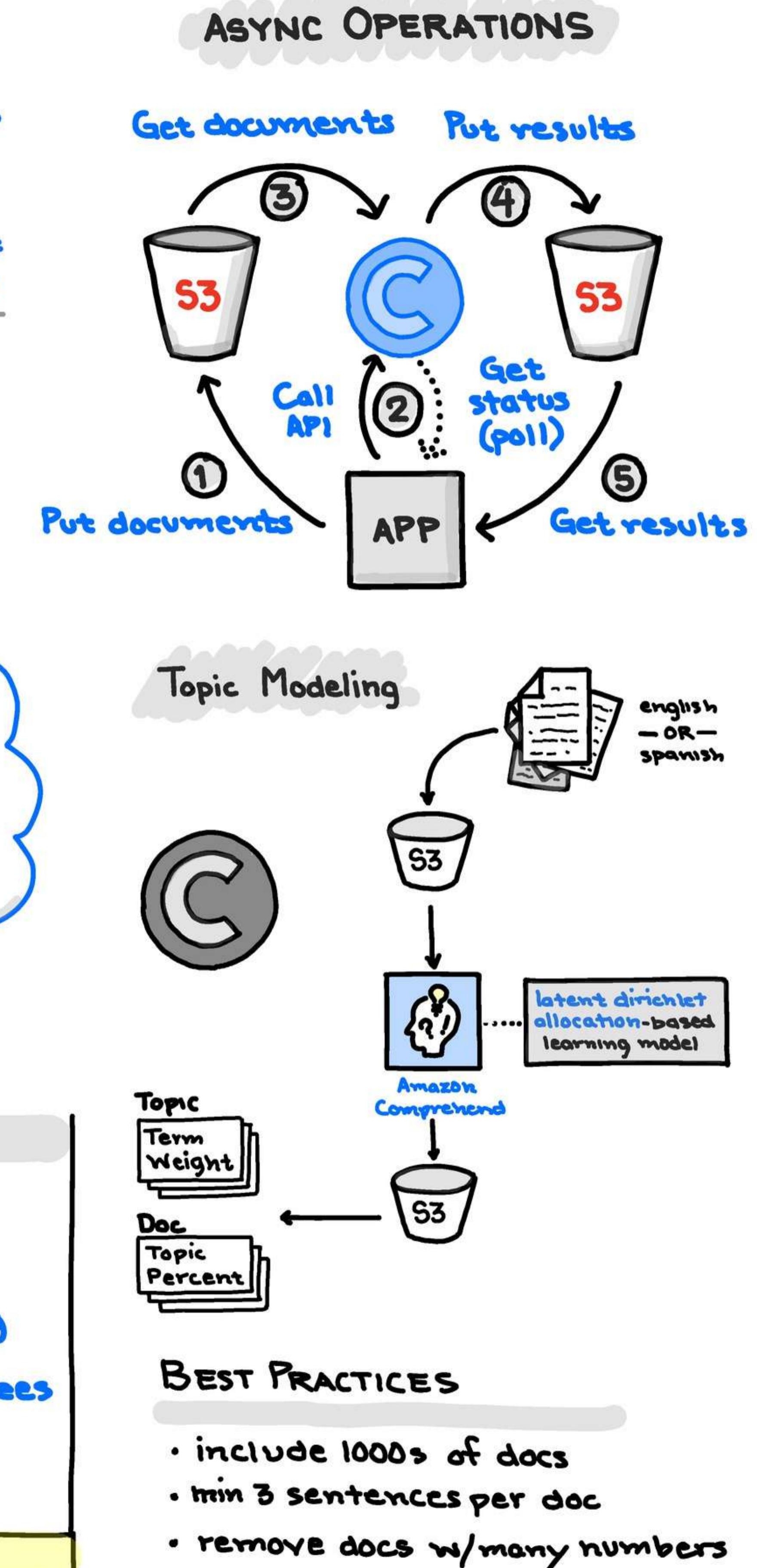


DATA PRIVACY

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



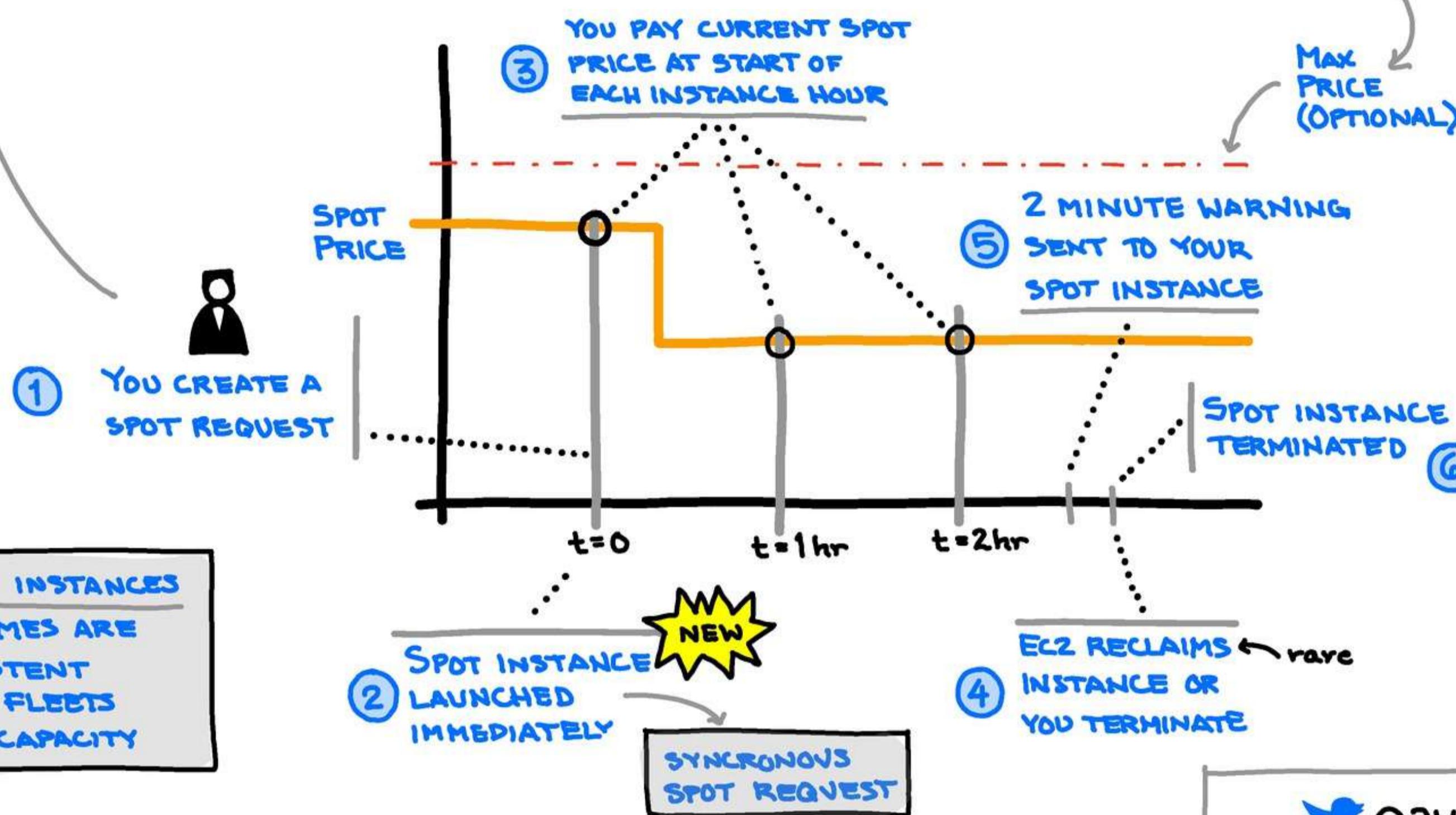
SPOT REQUEST

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

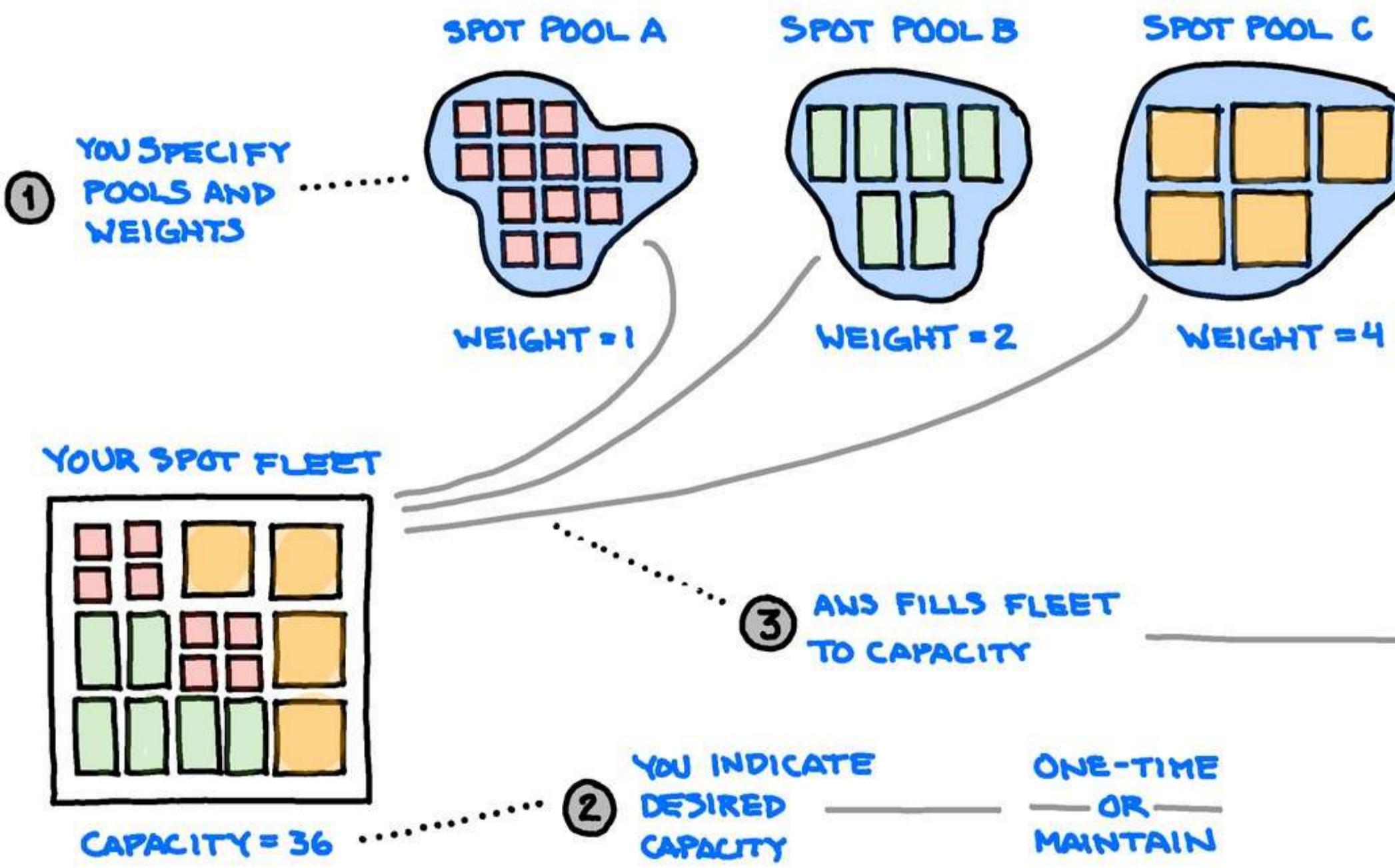
SPOT POOL

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

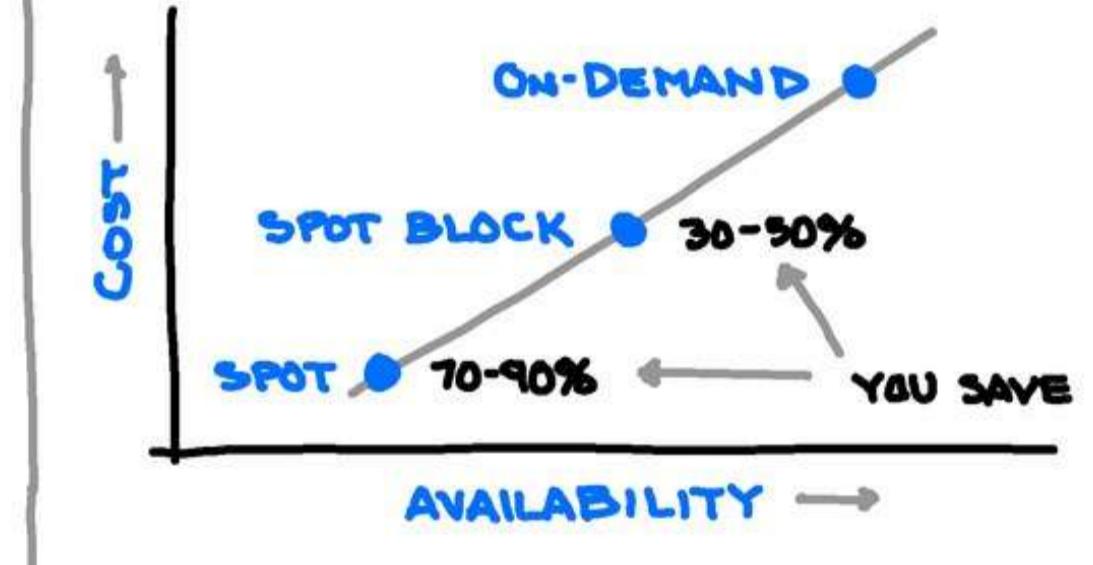
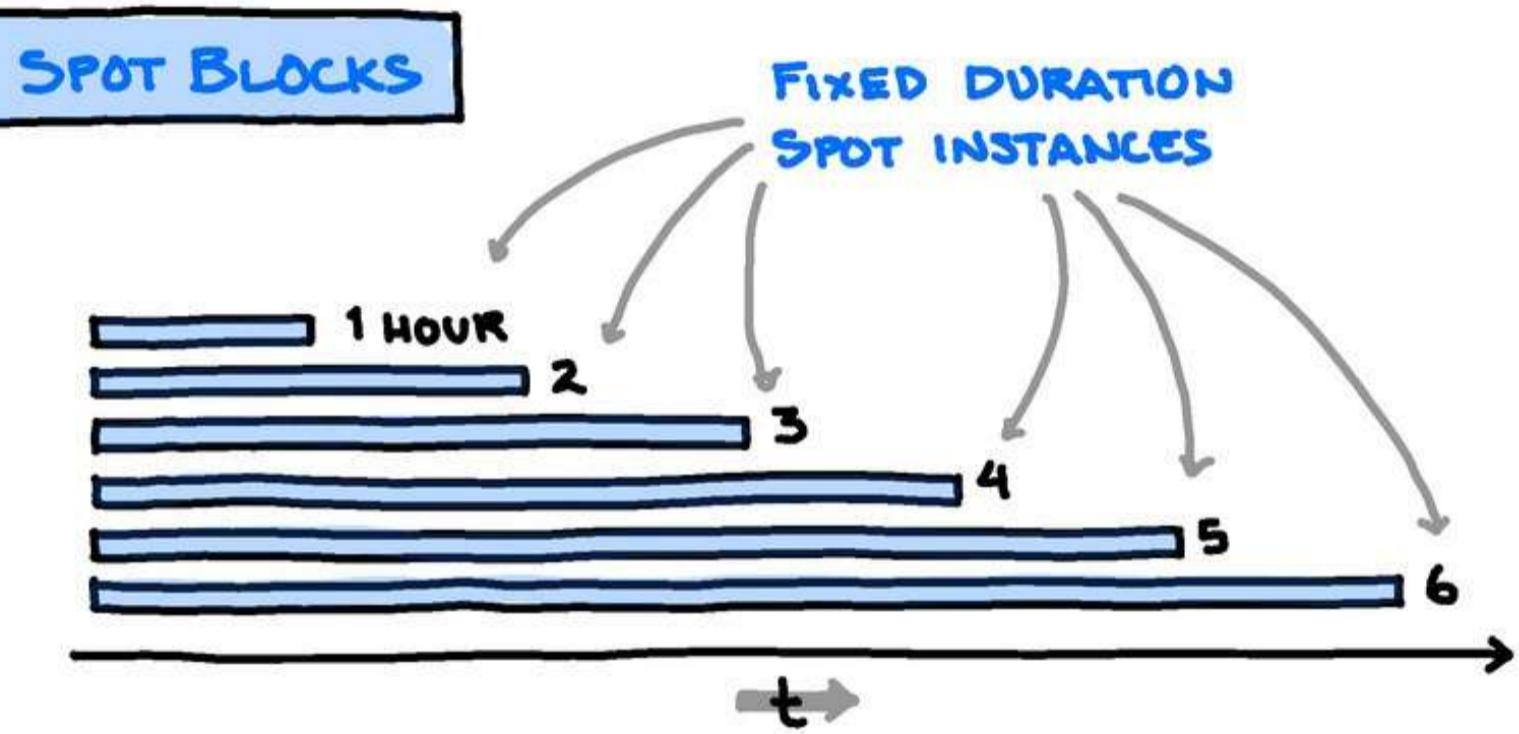
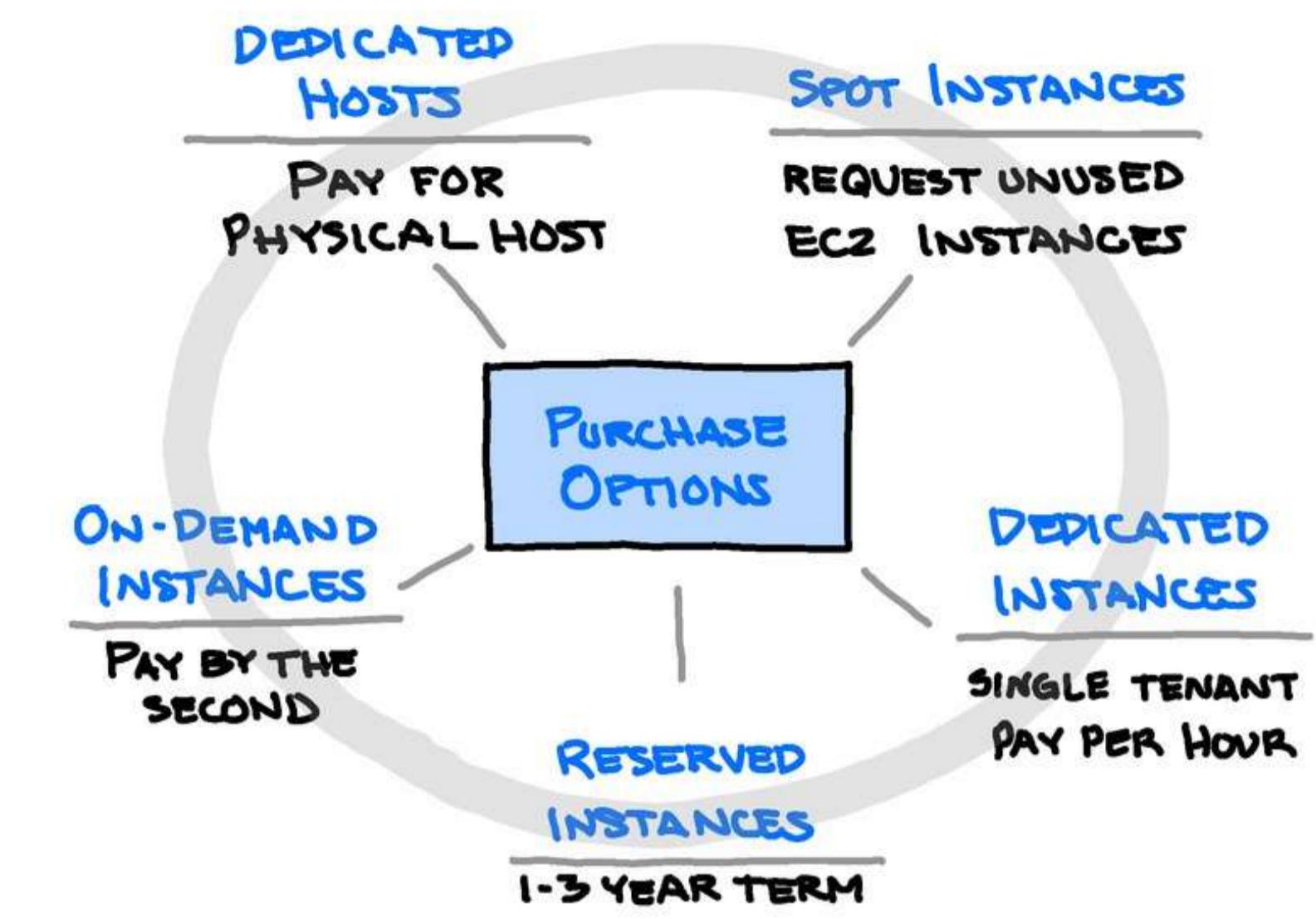


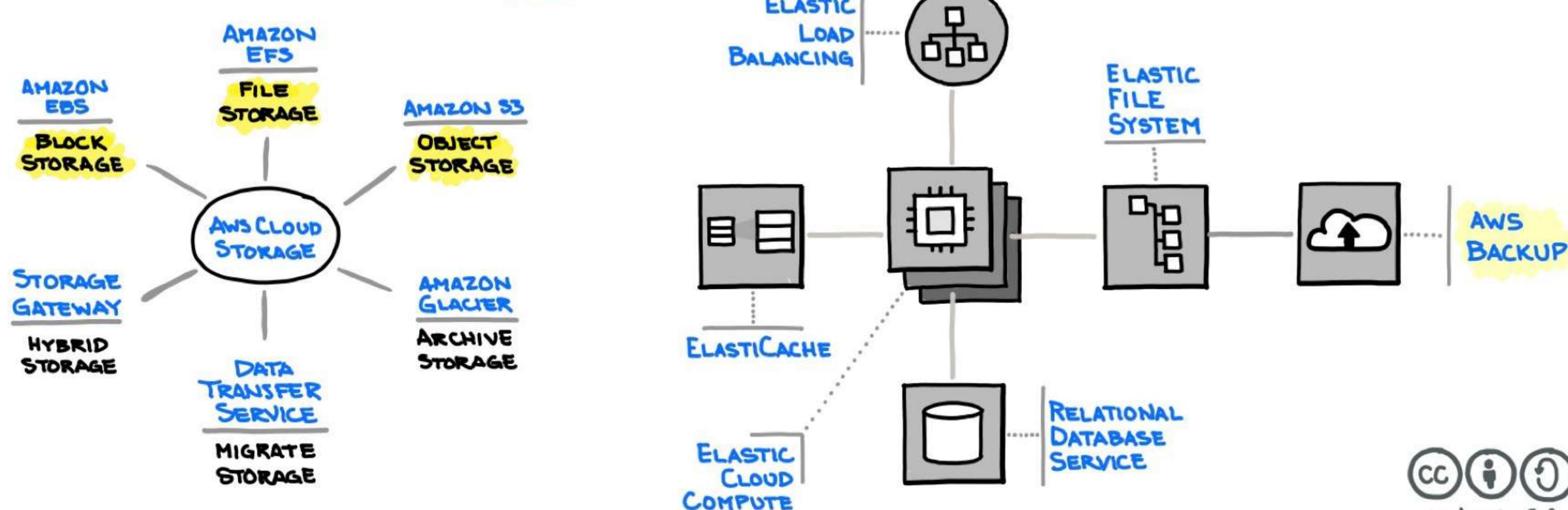
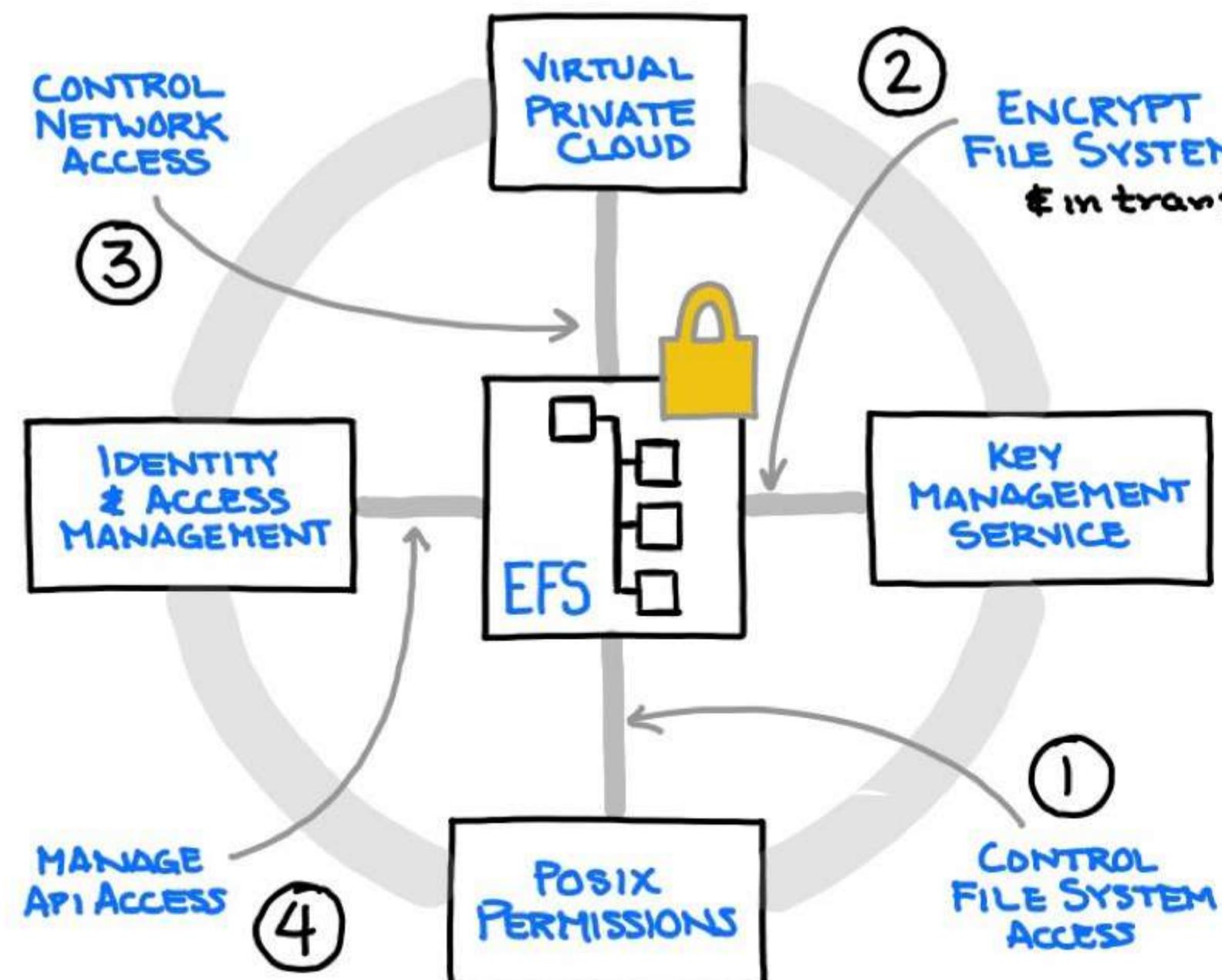
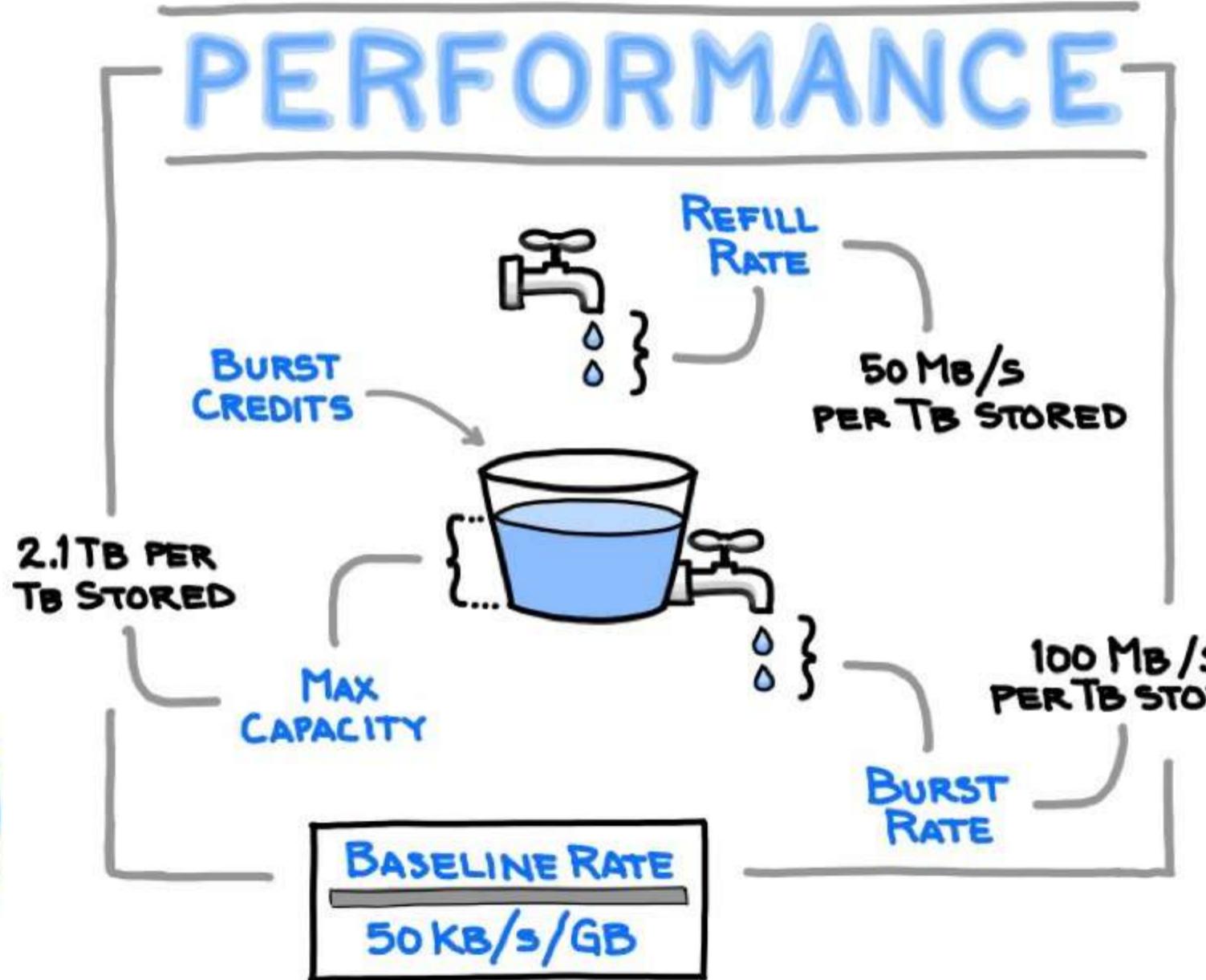
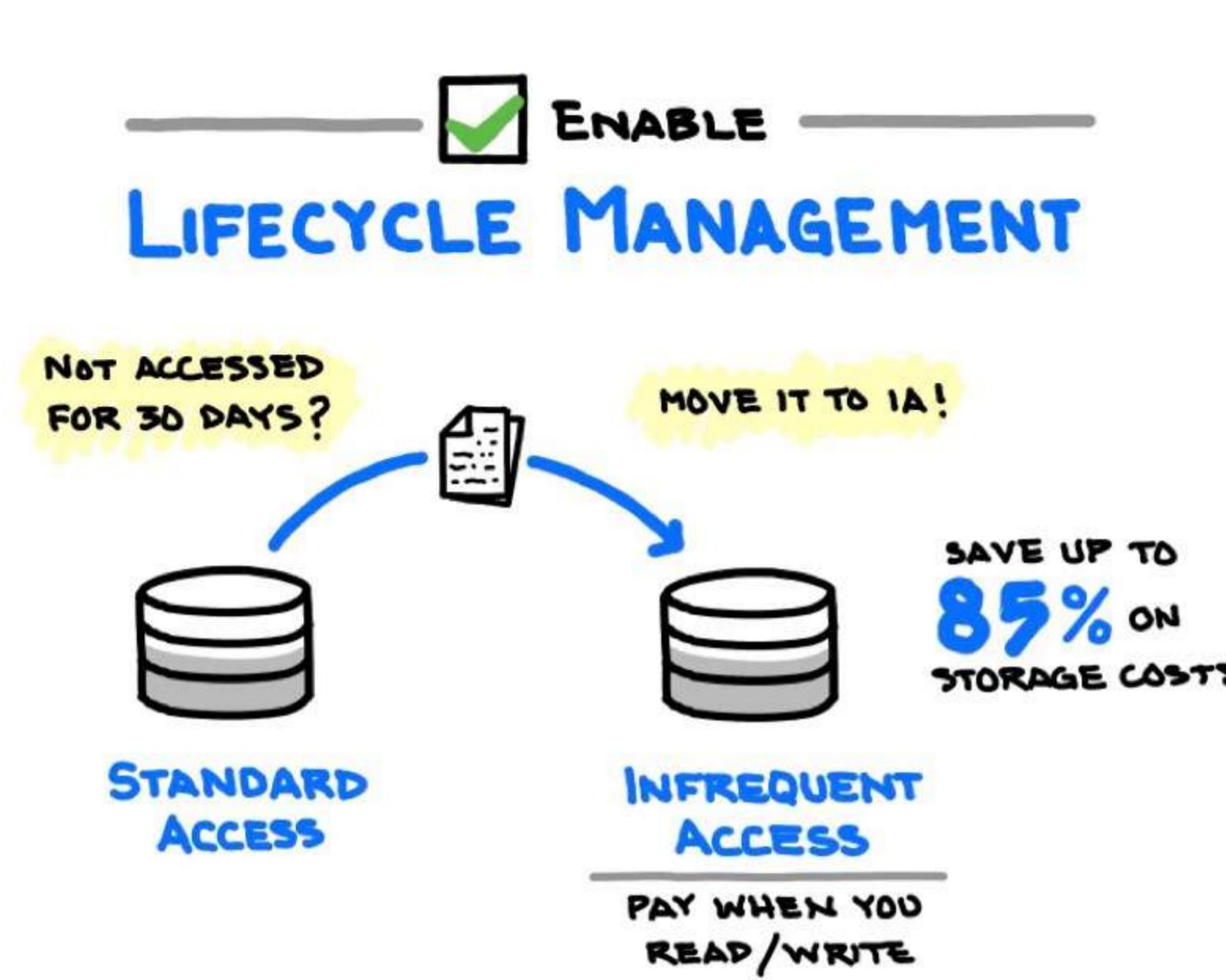
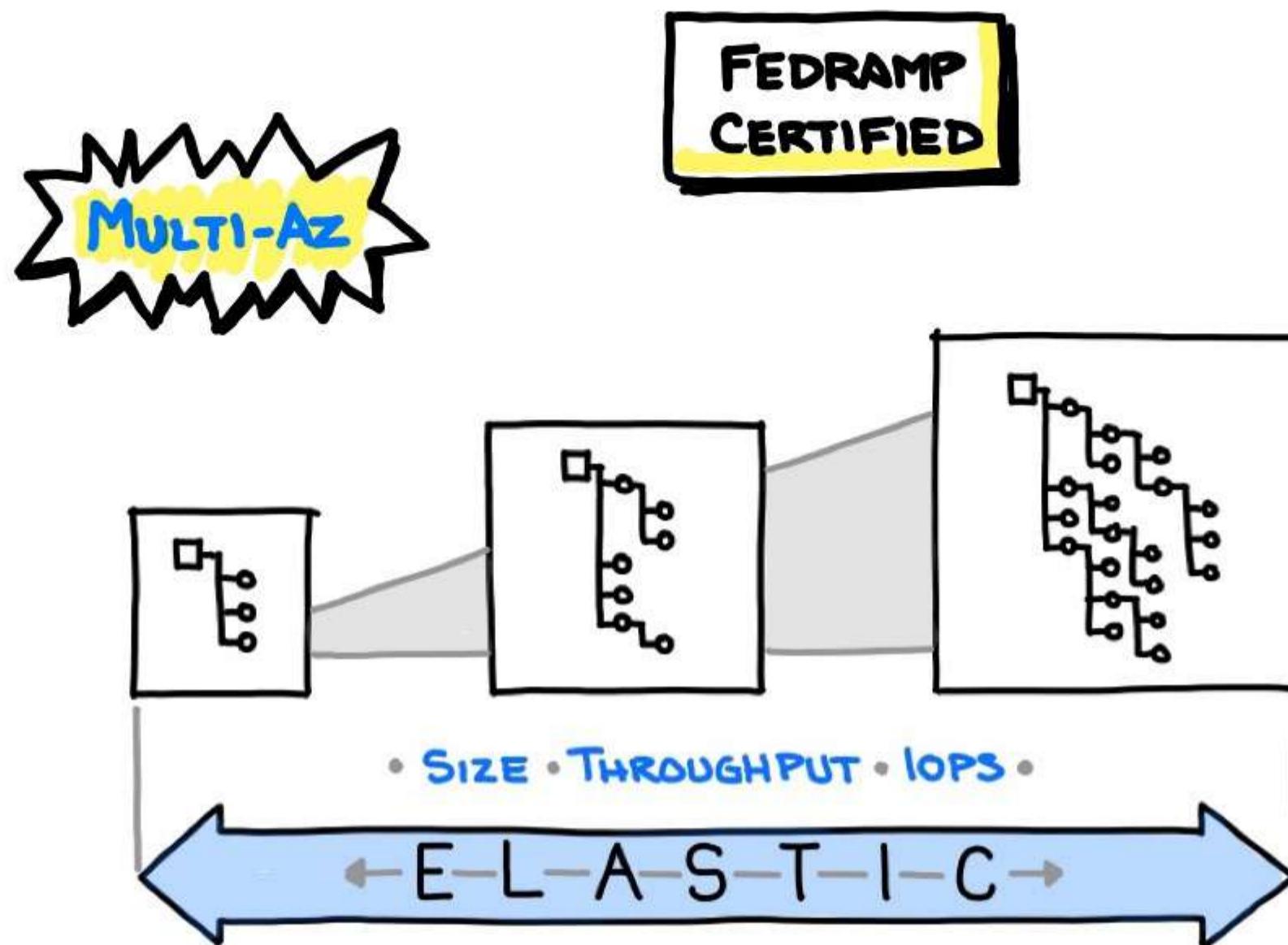
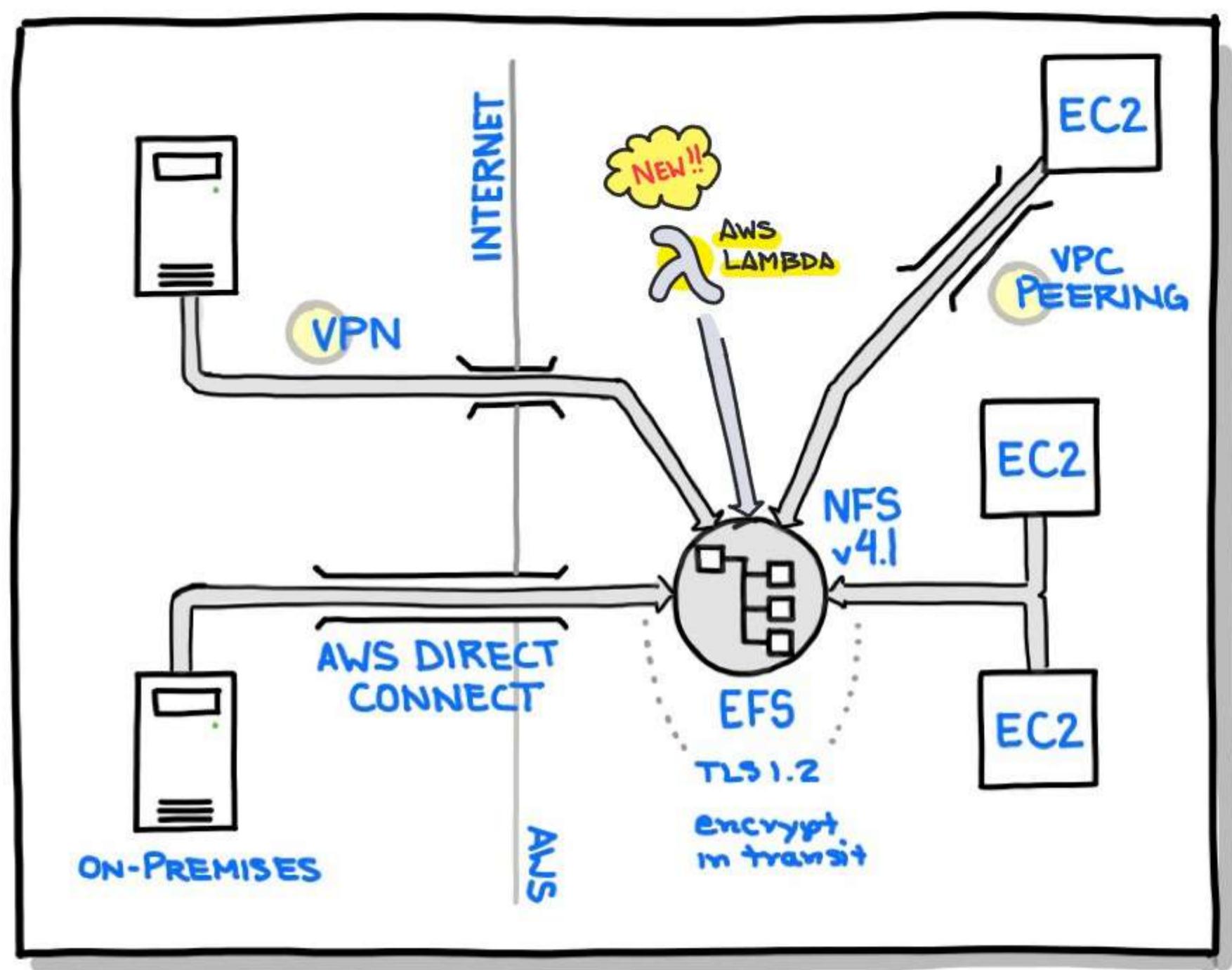
ALLOCATION STRATEGY

USE CHEAPEST POOL — OR — EQUALLY DISTRIBUTE

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

11/29/17





TIMELINE

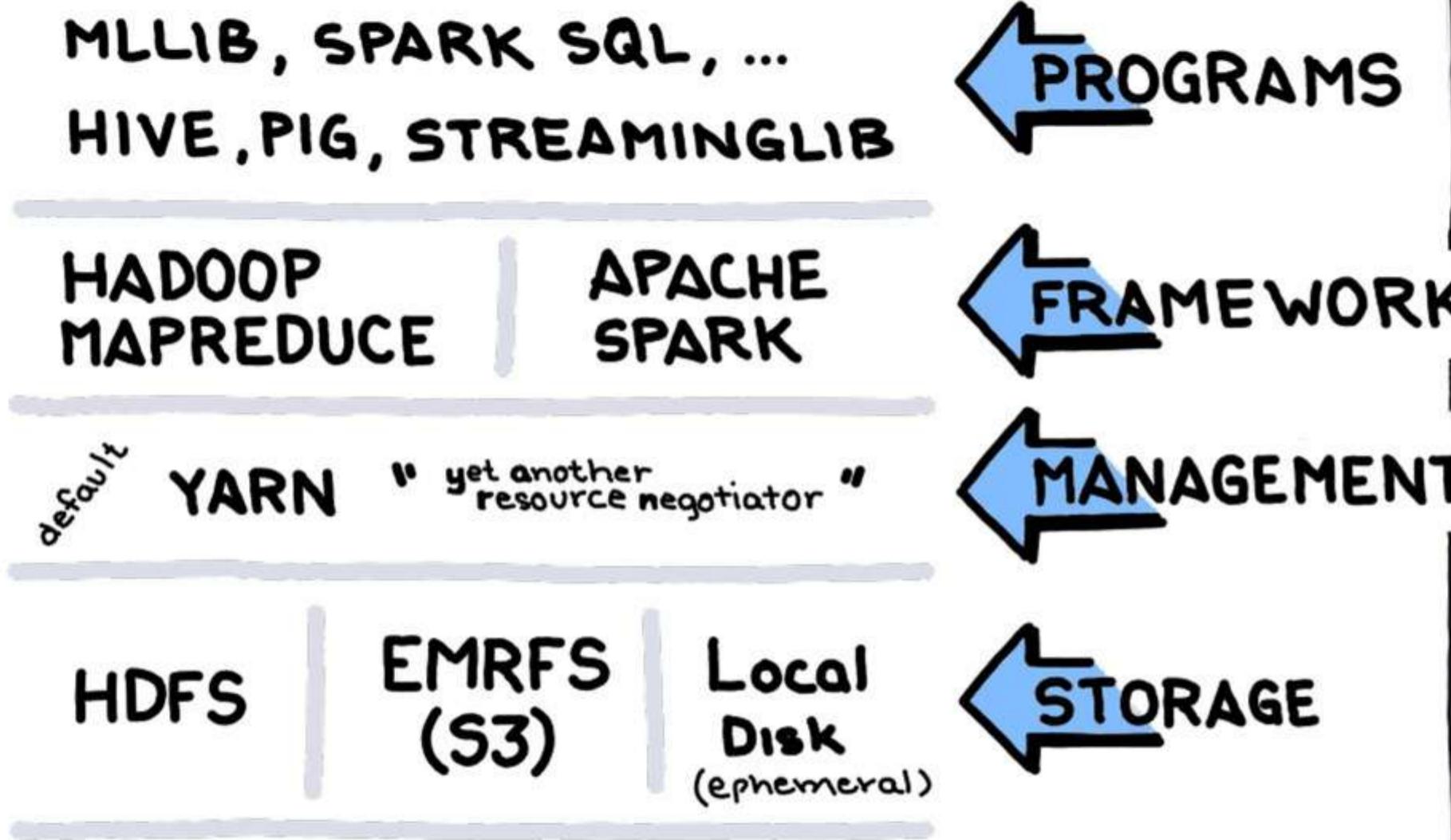
- 2009: BETA LAUNCH
PIG & HIVE
- 10: CC1/GPU INSTANCES
BOOTSTRAP ACTIONS
- 11: SPOT INSTANCES
- CC2 INSTANCES
HBASE
- DATA PIPELINE
- 13: S3 SSE
- IMPALA
- 14: IAM ROLES
- HUNK
- 15: APACHE SPARK
- PRIVATE SUBNETS
- CLOUDFORMATION
- FLINK
- 17: AUTO-SCALING
- MXNET
- NOTEBOOKS
- TENSORFLOW
- 2019: 99.9%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



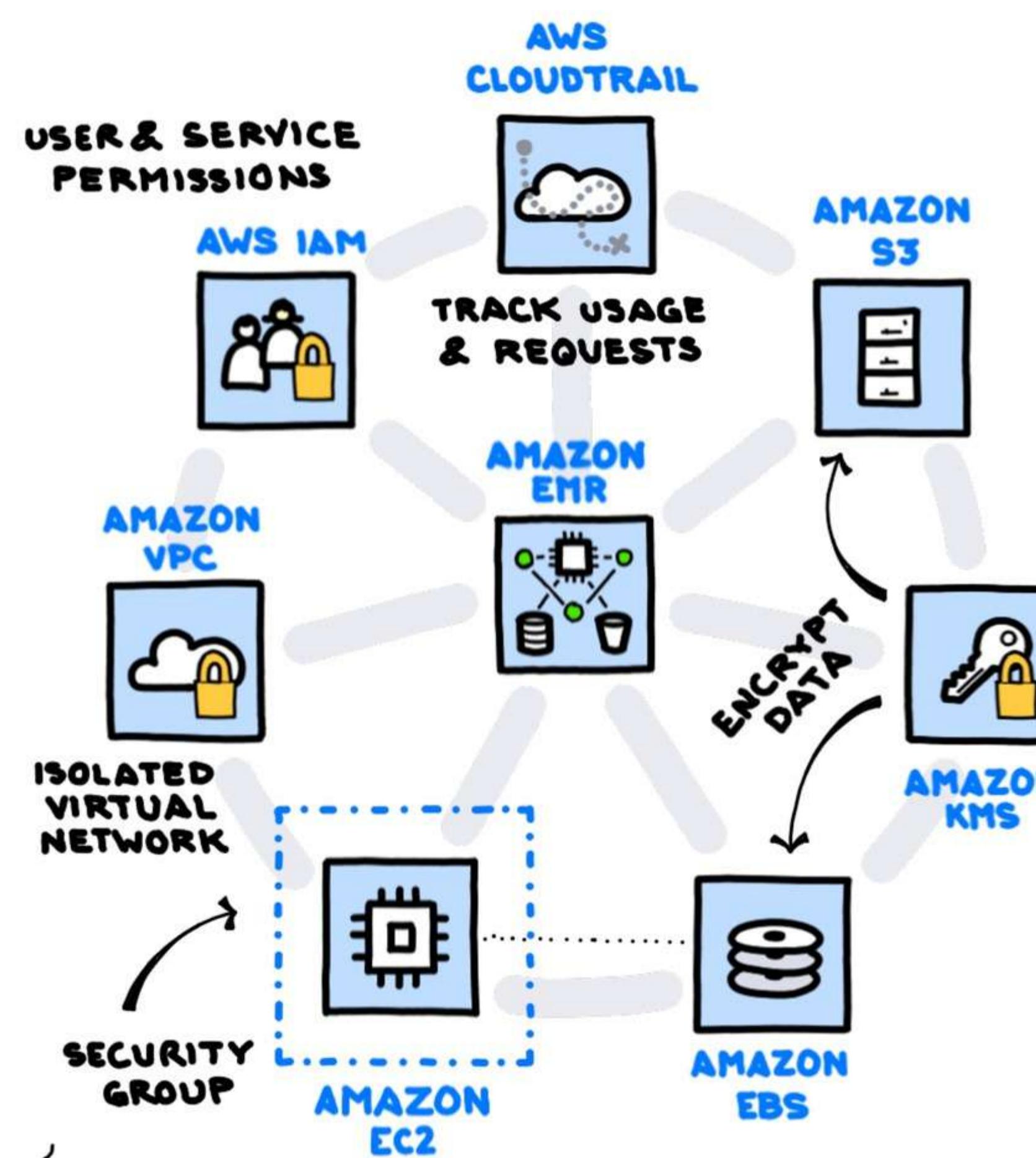
- MACHINE LEARNING
- REALTIME STREAMING
- CLICKSTREAM ANALYSIS
- GENOMICS
- ETL

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

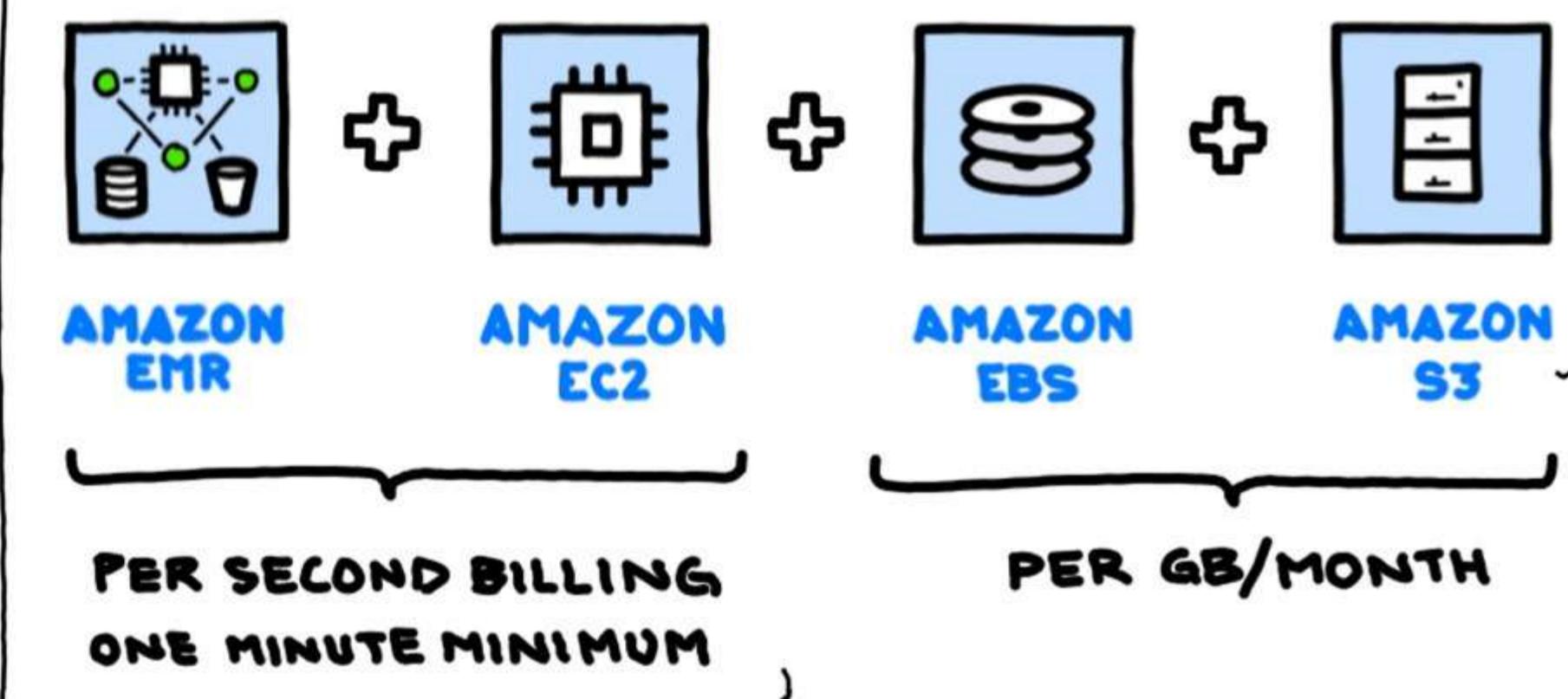
LAYERS



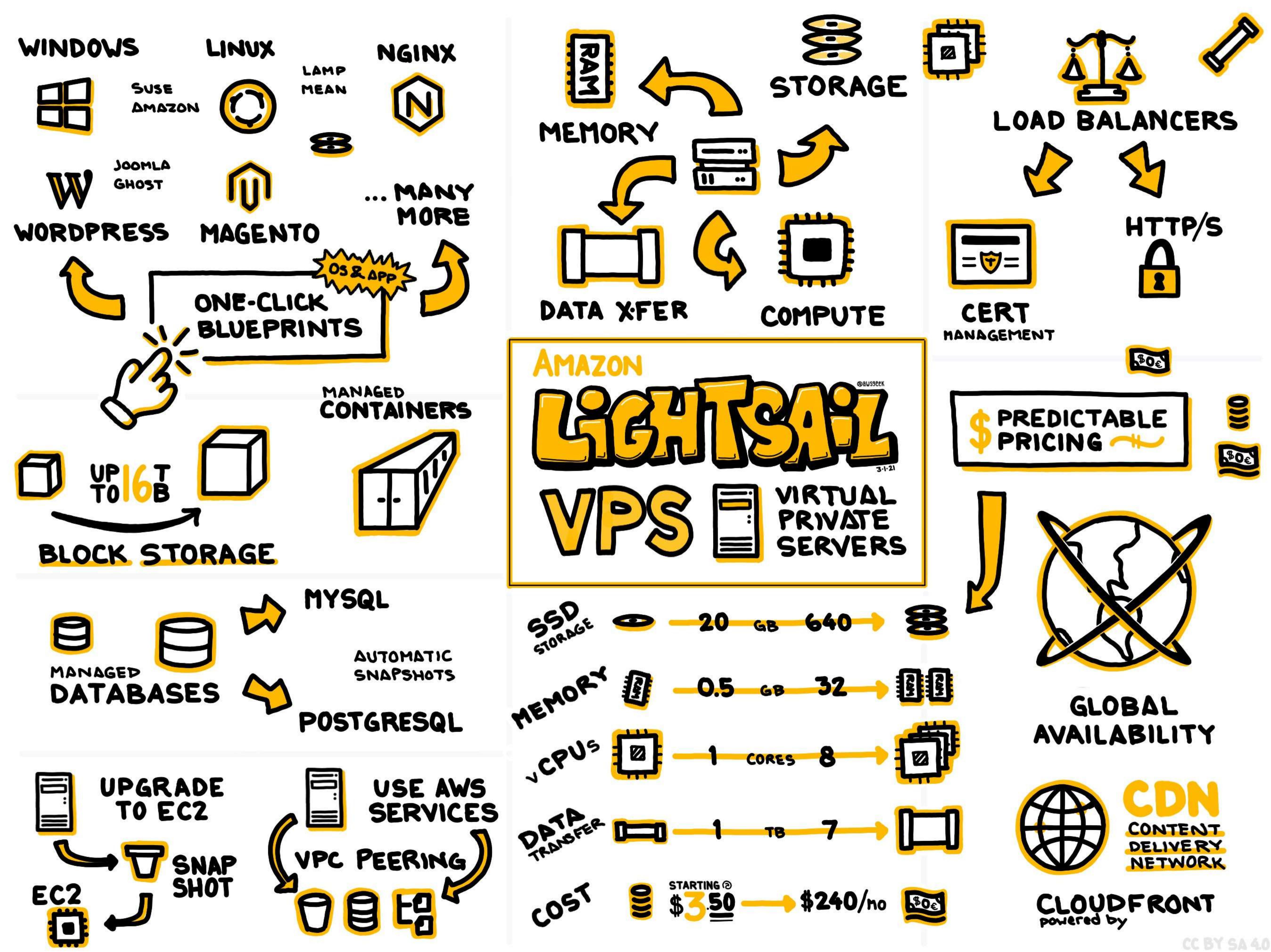
SECURITY

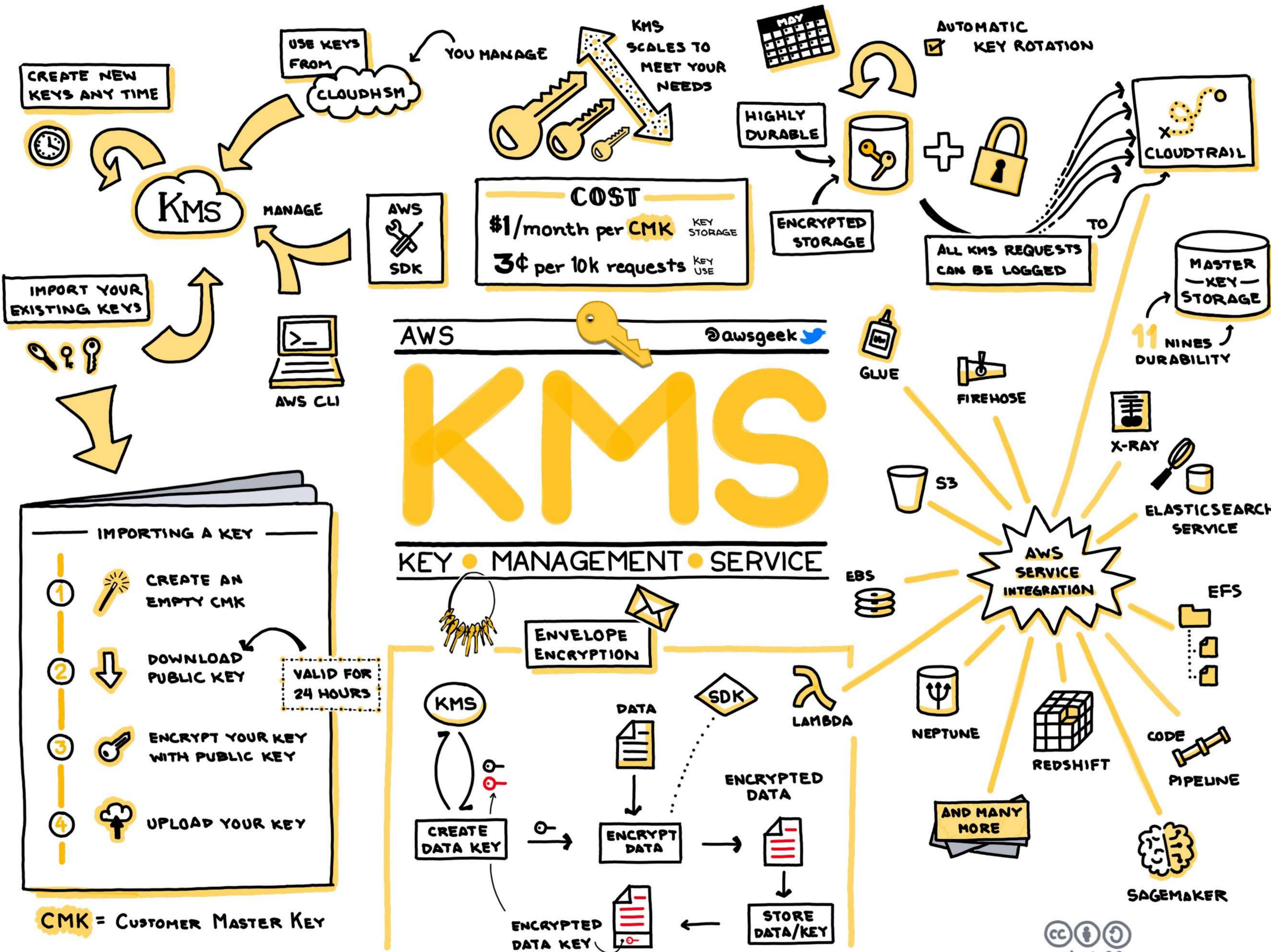


PAY-AS-YOU-GO PRICING ...



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#

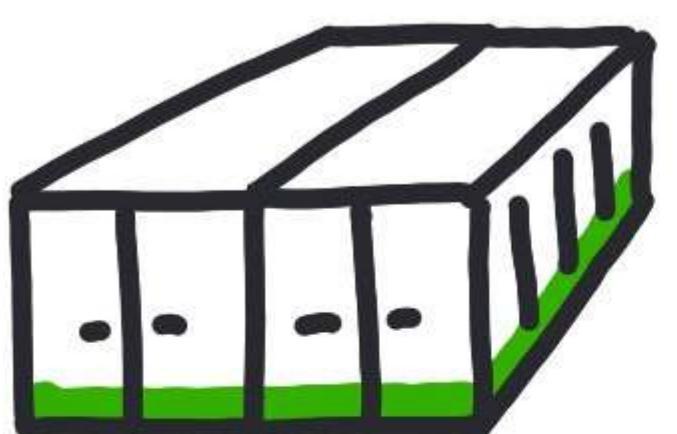
JS

ELASTIC
BEANSTALK

dotNET



JAVA

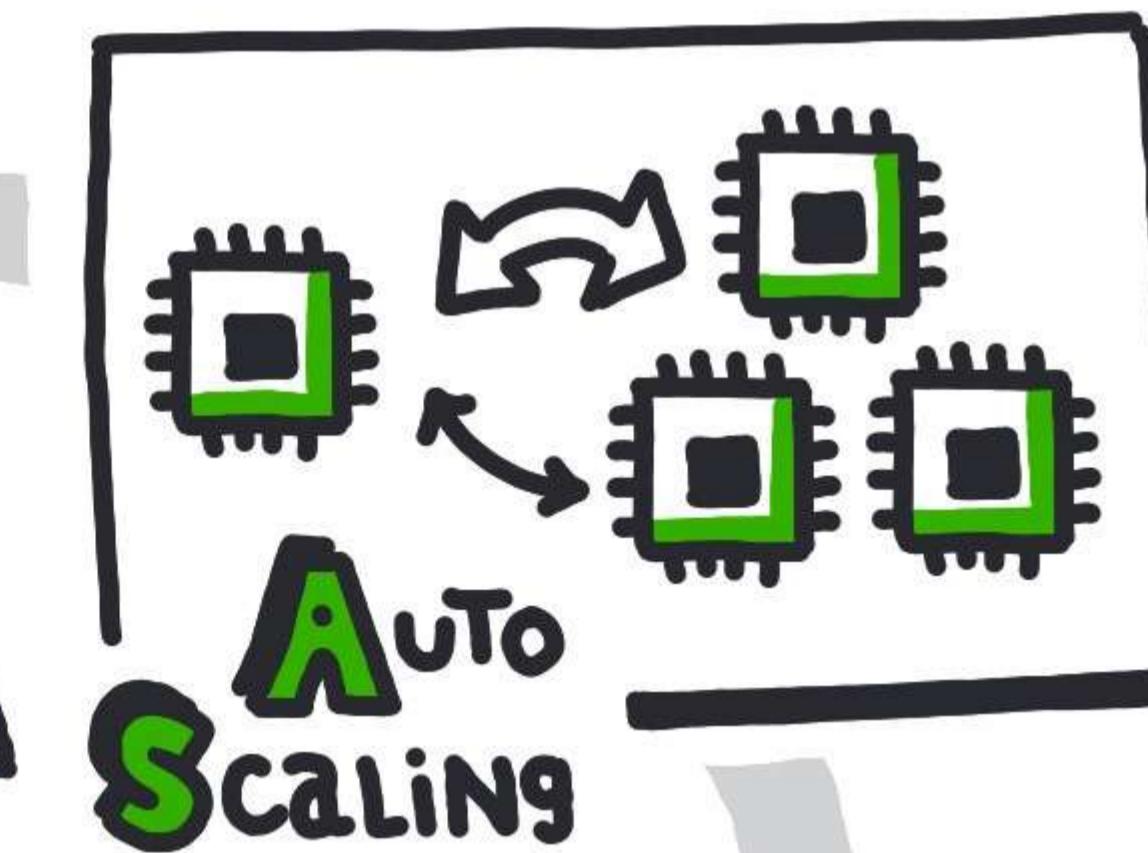


DOCKER CONTAINERS

Python

Console
SDK
CLI

ADMIN



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 •

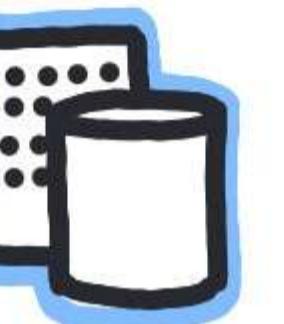
SECURE, SCALABLE, & COST EFFECTIVE ARTIFACT MANAGEMENT FOR SOFTWARE DEVELOPMENT

Maven

Central

NuGet.org

npm



PyPI



AWS
Code
Artifact

- AWS Managed -
Centralized
Repository

Maven

Gradle

NuGet

npm

twine

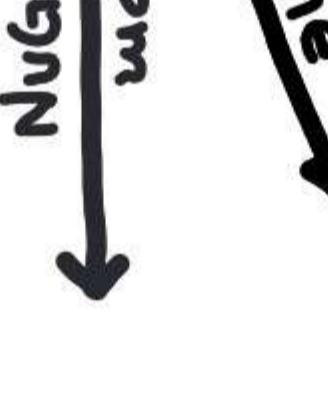
pip



Java



.Net



JavaScript



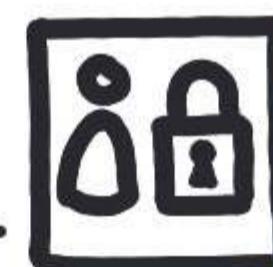
Python



Public Repos



AWS KMS
ENCRYPTION



AWS IAM
RESOURCE PROTECTION

Development
Teams

CI/CD
Systems

PAY-PER-USE



\$

BYTES STORED

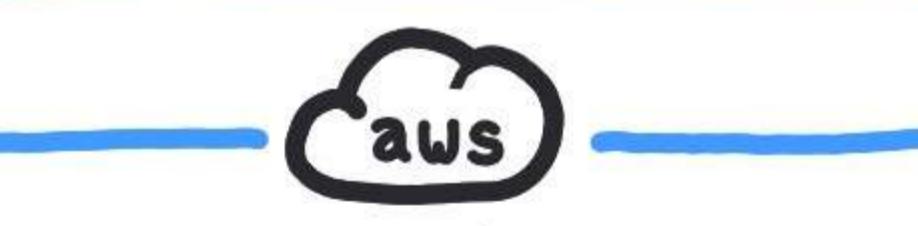
DATA TRANSFER

out of Region



\$
API CALLS

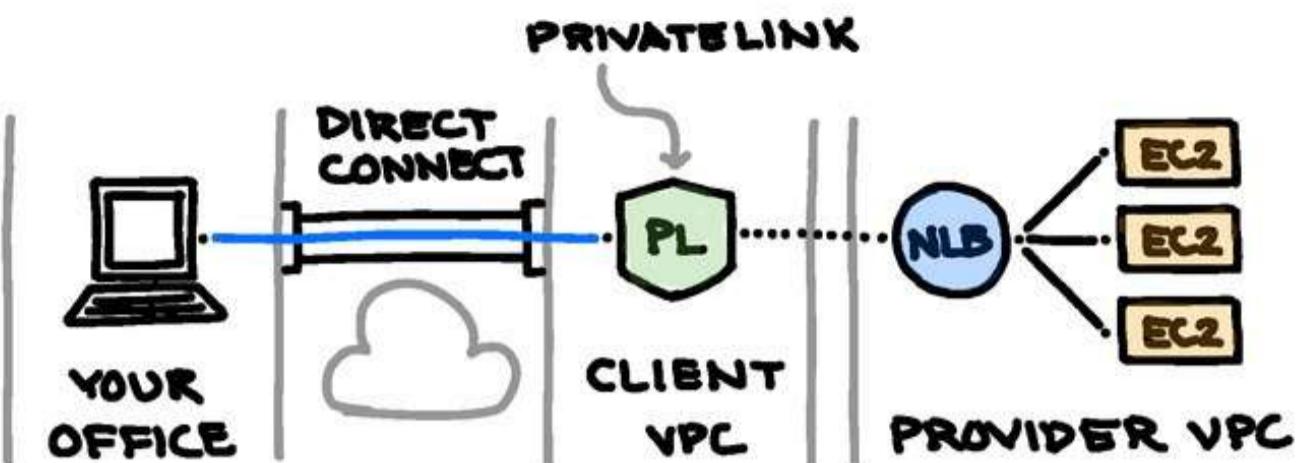
005



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

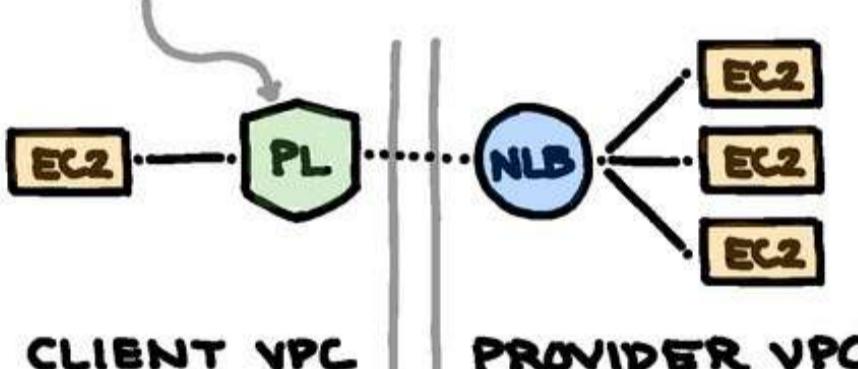
CLOUDWATCH, SNS, SAGEMAKER
KINESIS, CODEBUILD, CONFIG

EC2, API GATEWAY, AWS SERVICE CATALOG

ELB, CLOUDFORMATION

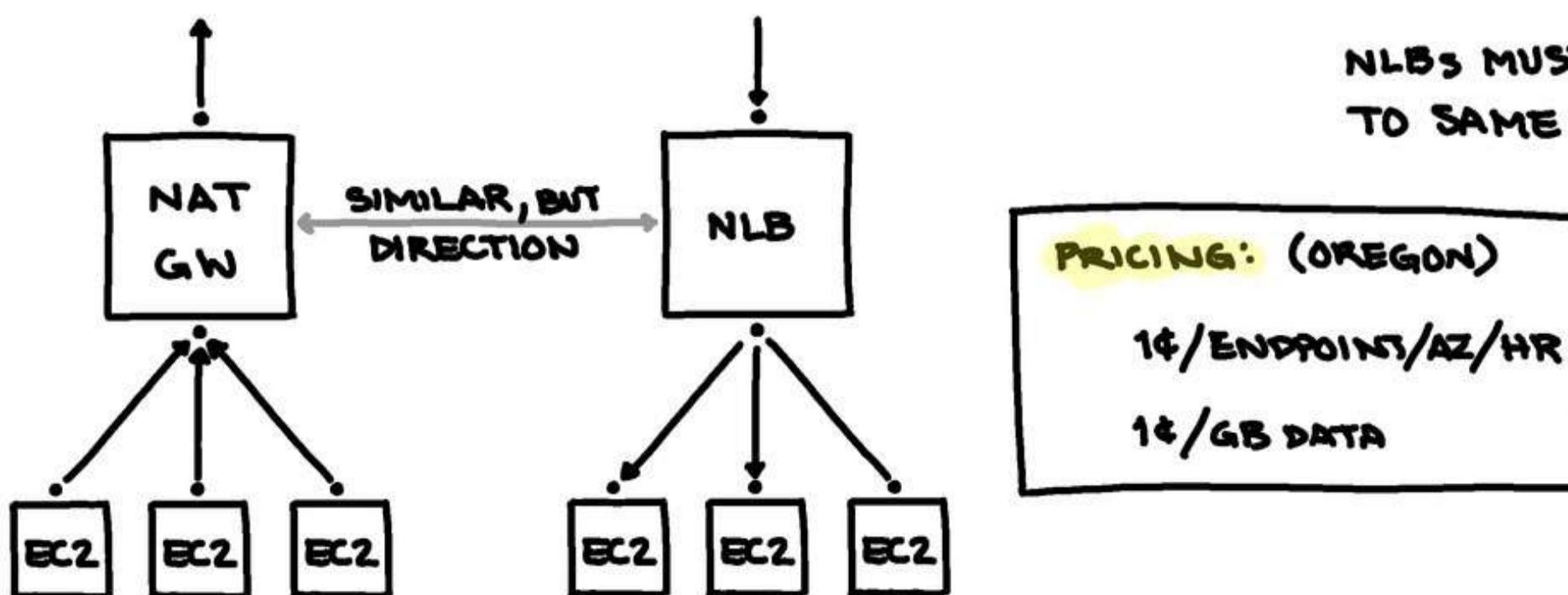
EC2 SYSTEMS MANAGER

PRIVATELINK

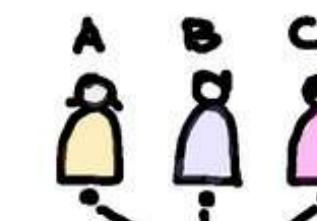


EFS — NAT GW — NLB — PRIVATELINK HYPERPLANE NODES

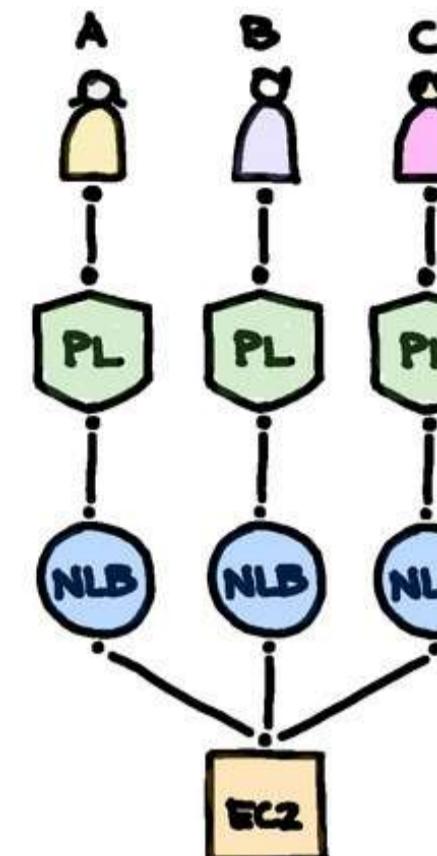
- BASED ON S3 LOAD BALANCER ARCHITECTURE
- HYPERPLANE NODES ARE REALLY EC2 INSTANCES
- USED BY AWS TO MANAGE STATE & ROUTE PACKETS



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



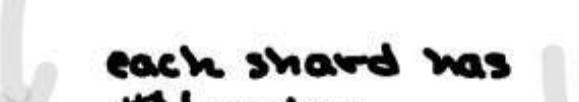
CASCADING FAILURES
OR NOISY NEIGHBORS

LOAD
BALANCED

horizontal
scalability

IMPACT
EVERYONE

CUSTOMER



SIMPLE
SHARDING



reduces
blast radius

BETTER

RANDOM PLACEMENT



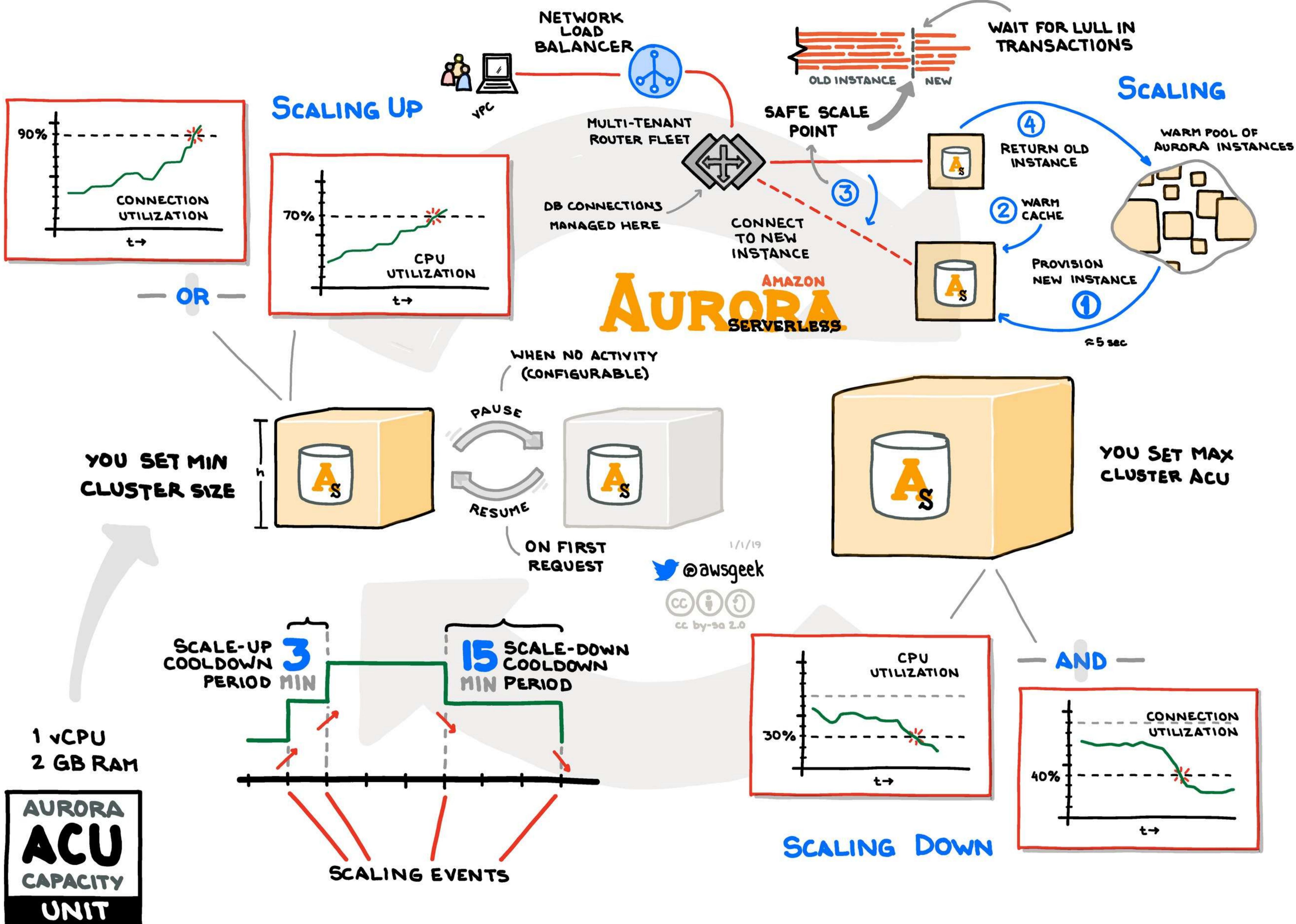
minimize
blast radius

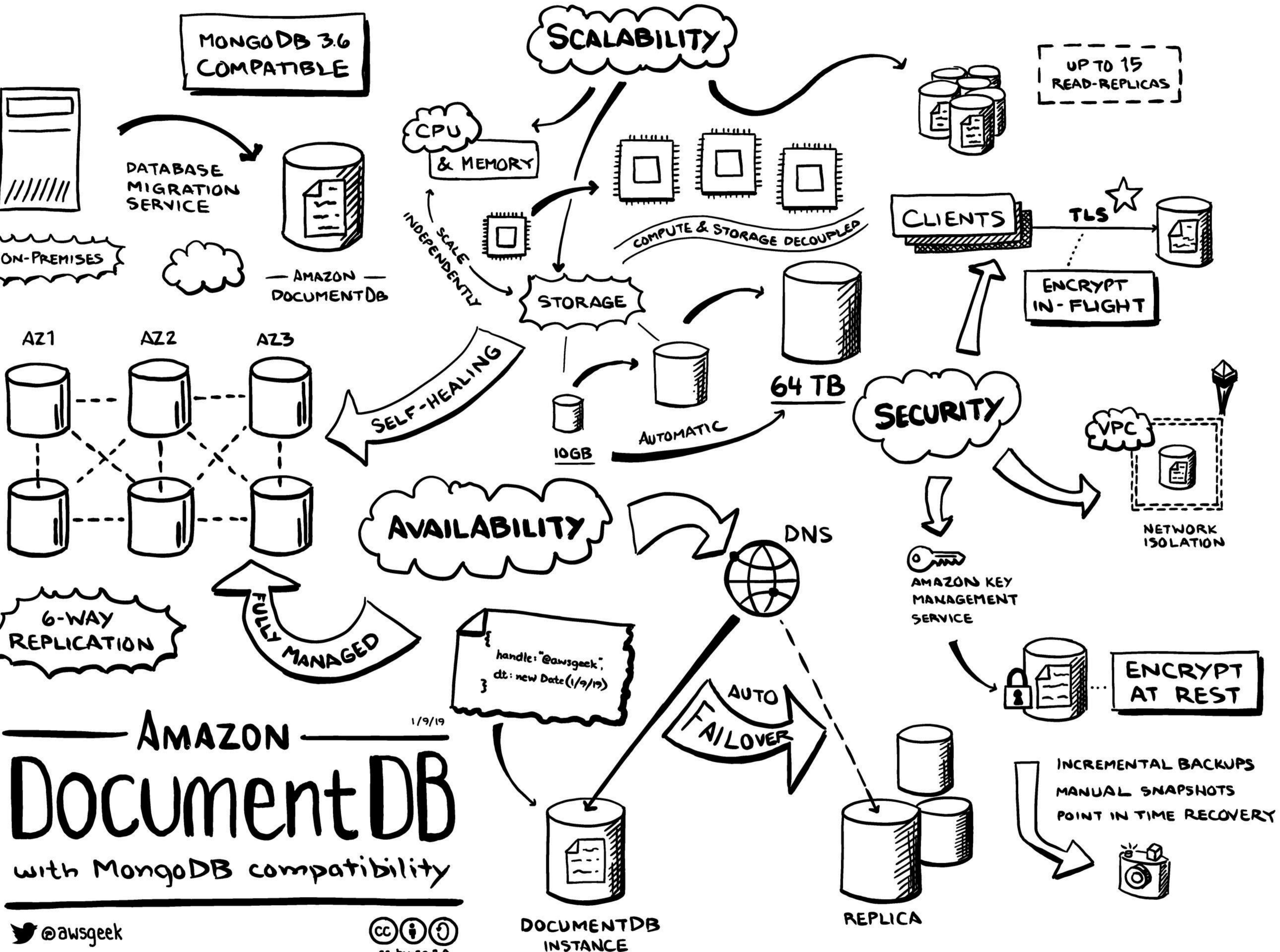
SHUFFLE
SHARDING

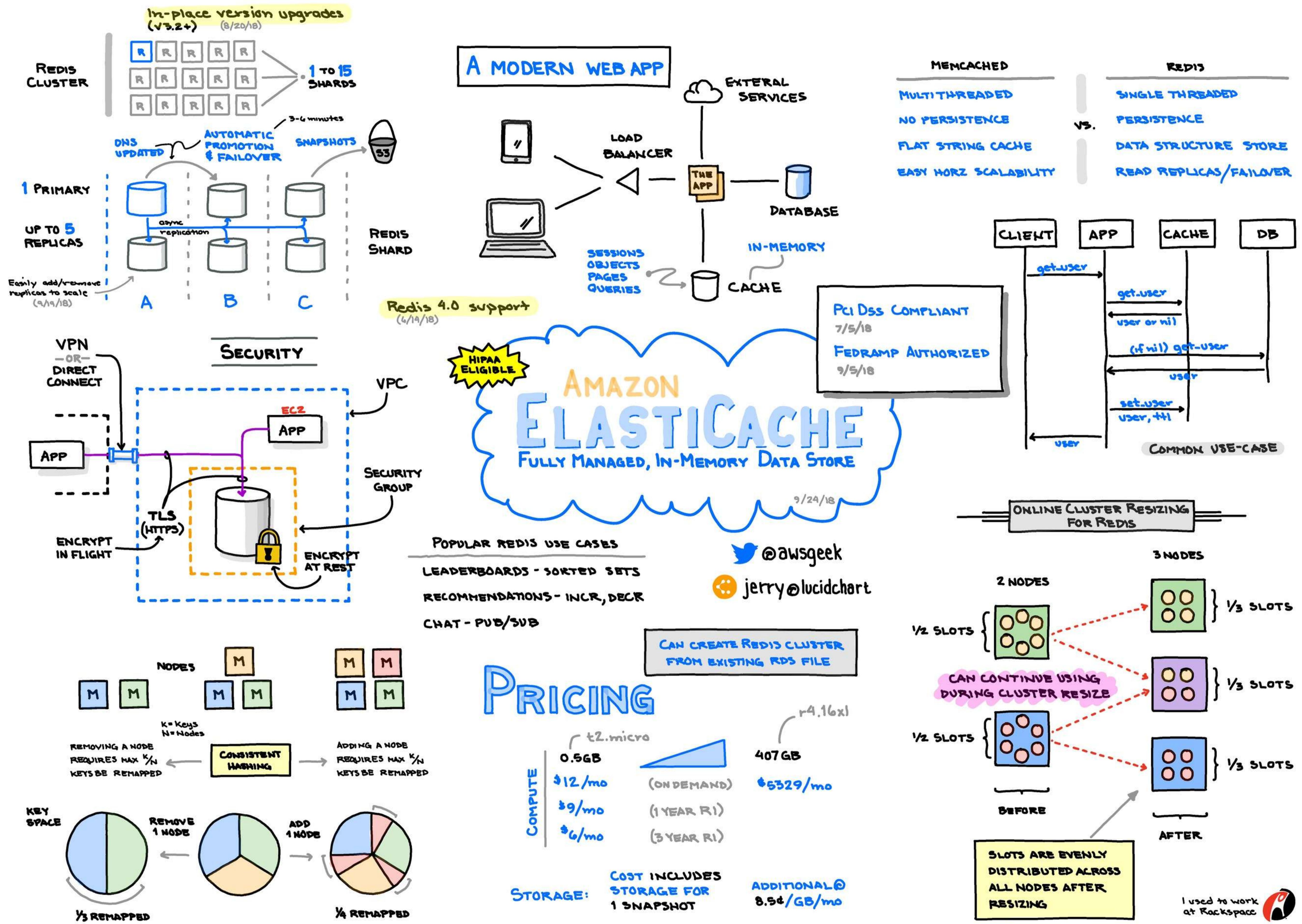
requires fault
tolerant client

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

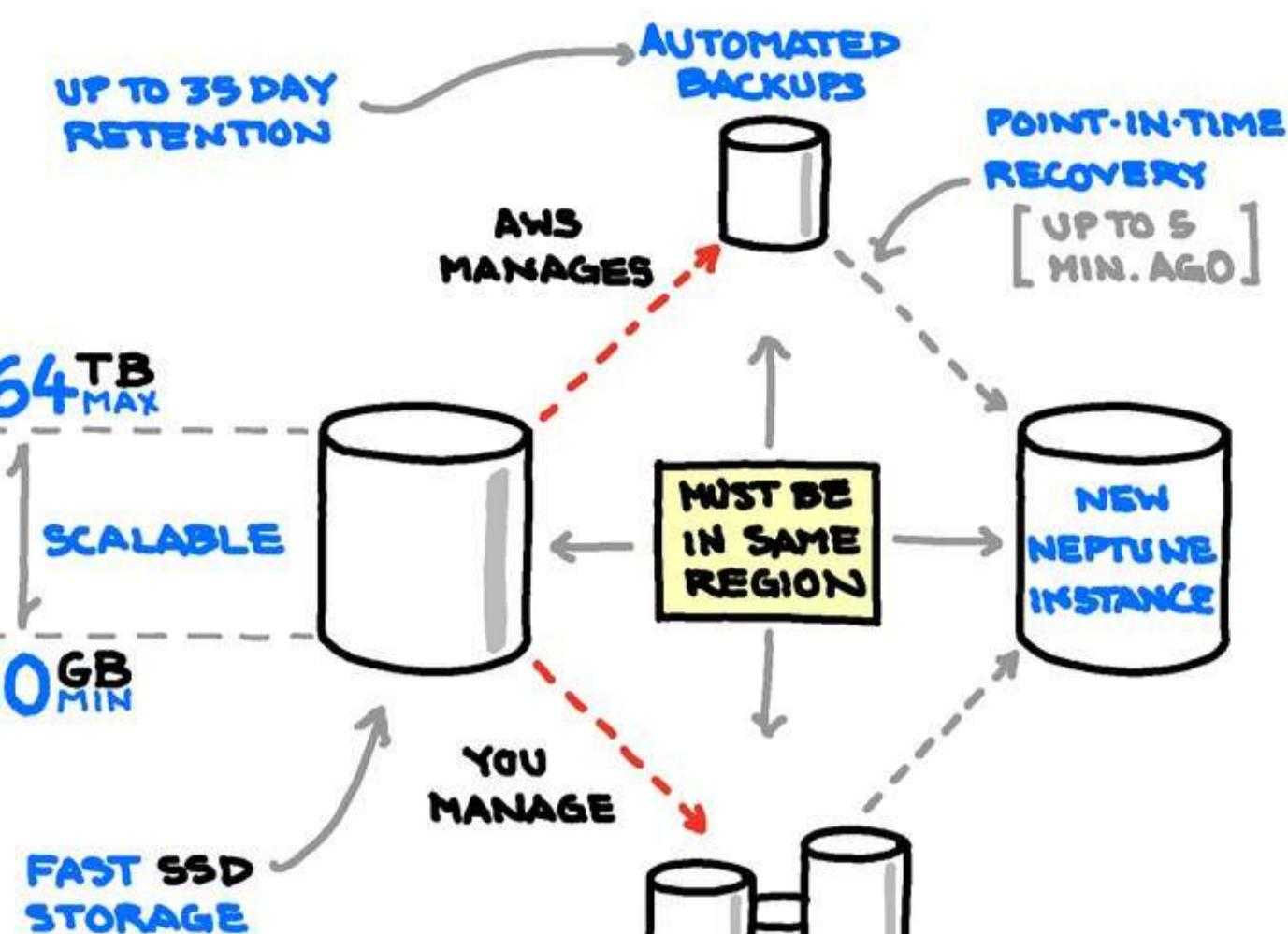
RECOMMENDATION ENGINE
MAKE PURCHASE SUGGESTIONS BASED ON OTHER USERS WITH SIMILAR INTERESTS

FRAUD DETECTION
DETECT CONNECTIONS TO KNOWN FRAUD SCENARIOS

KNOWLEDGE GRAPHS
STORE AND QUERY INFO & RELATIONSHIPS BETWEEN USERS

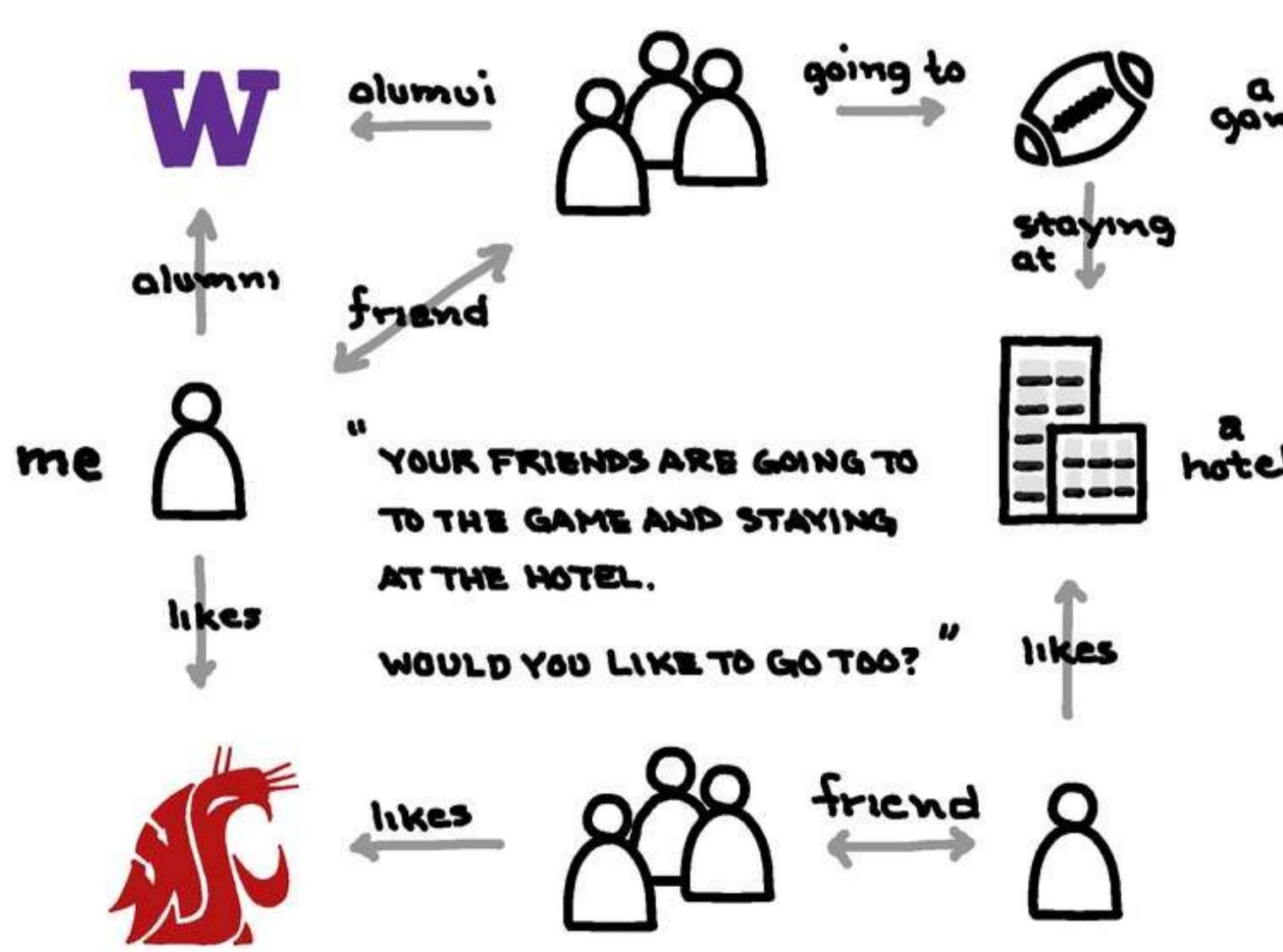
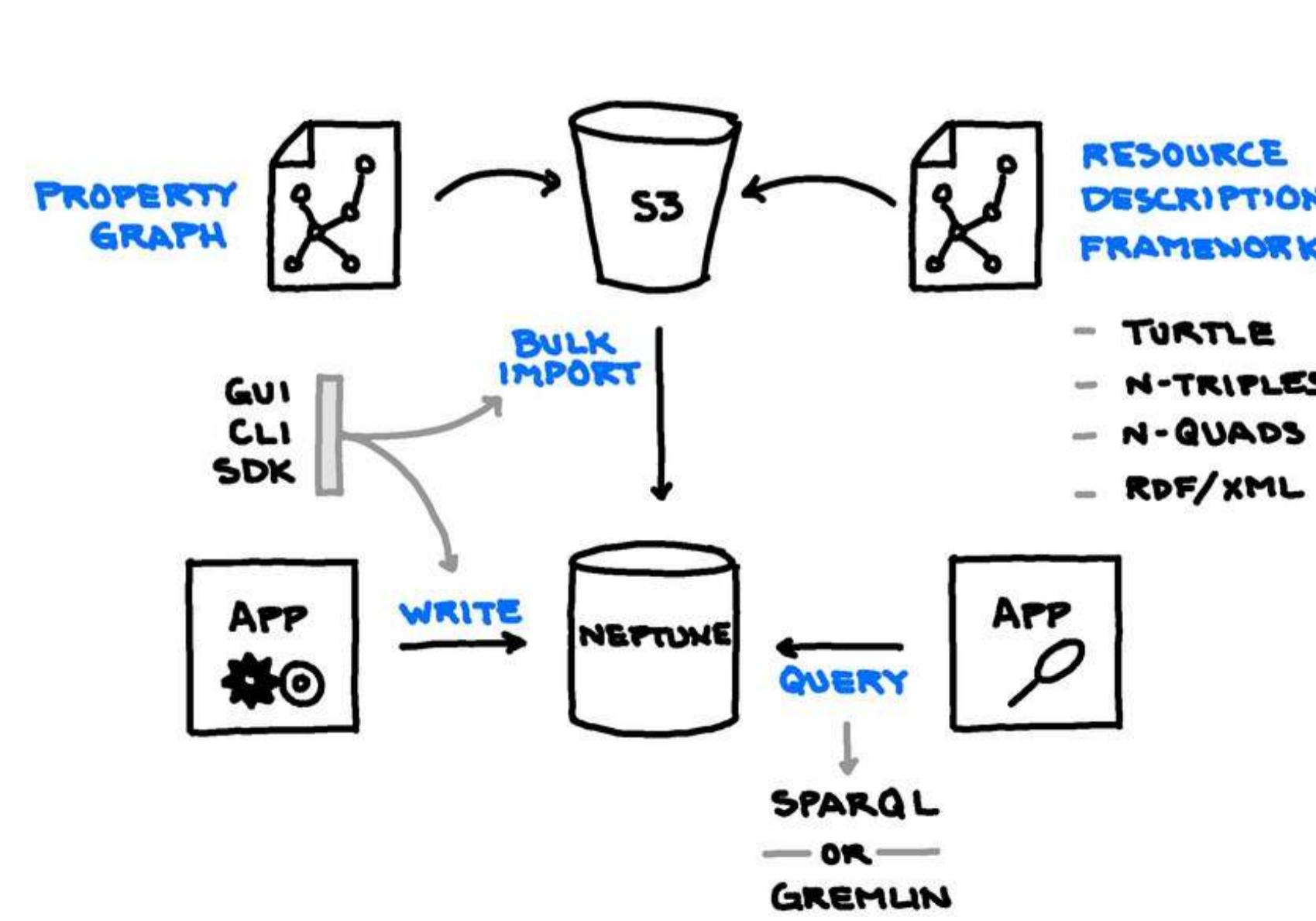
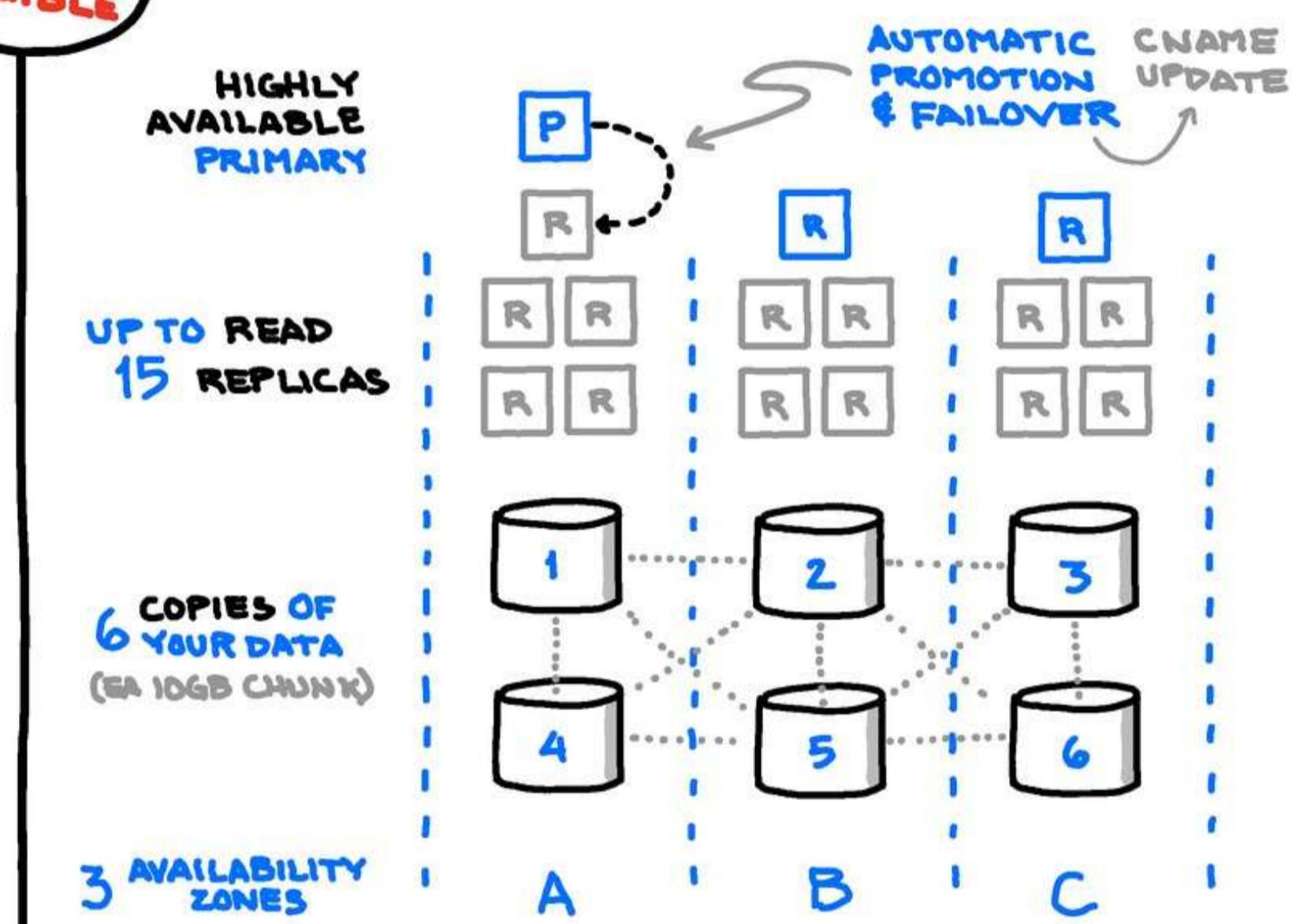
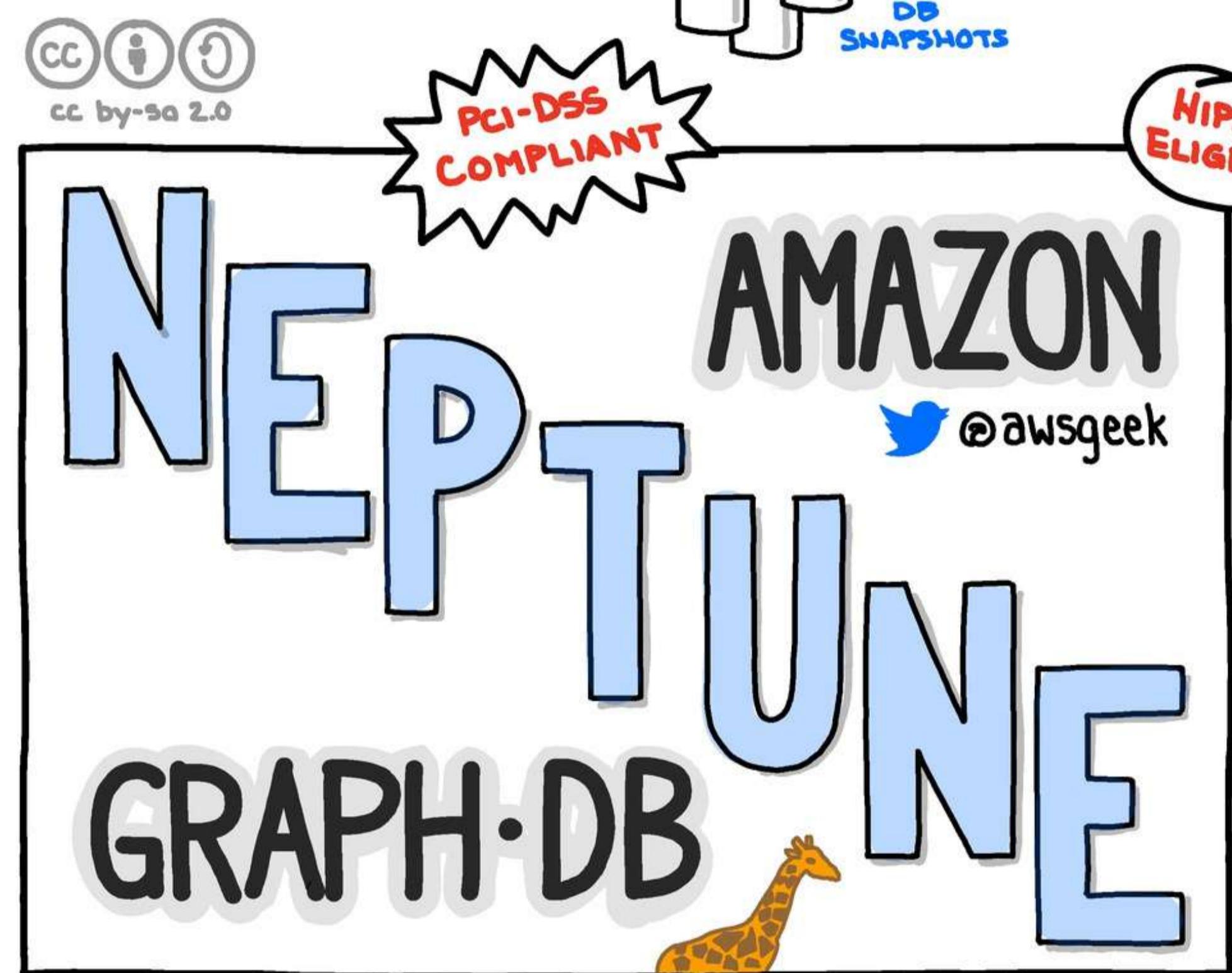
LIFE SCIENCES
SECURELY STORE AND PROCESS PATIENT & HEALTHCARE DATA

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

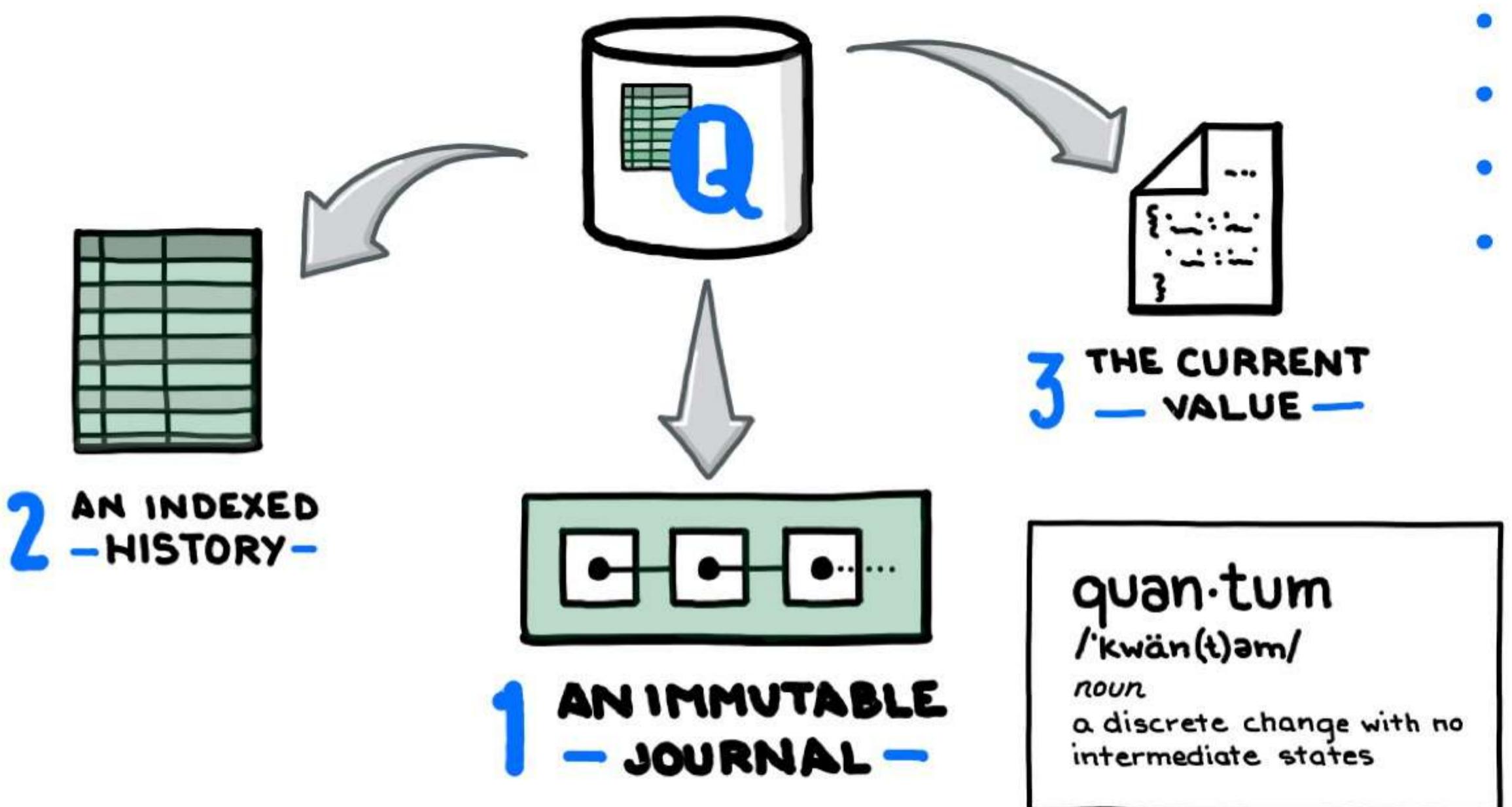


PRICING

| | | |
|---------------|---|------------------------------|
| 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?

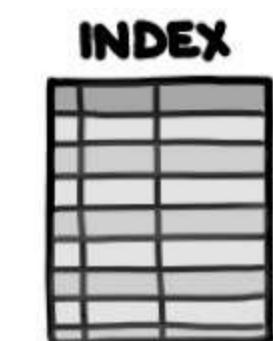
im·mu·ta·ble
/i(m)'myooðab(ə)b/
 adjective
 unchanging over time or unable to be changed

5¢ TO 9¢ PER GB

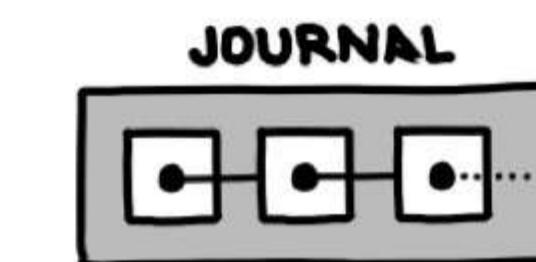
US EAST (VIRGINIA)

70¢ WRITE / MILLION REQUESTS

13.6¢ READ / MILLION REQUESTS

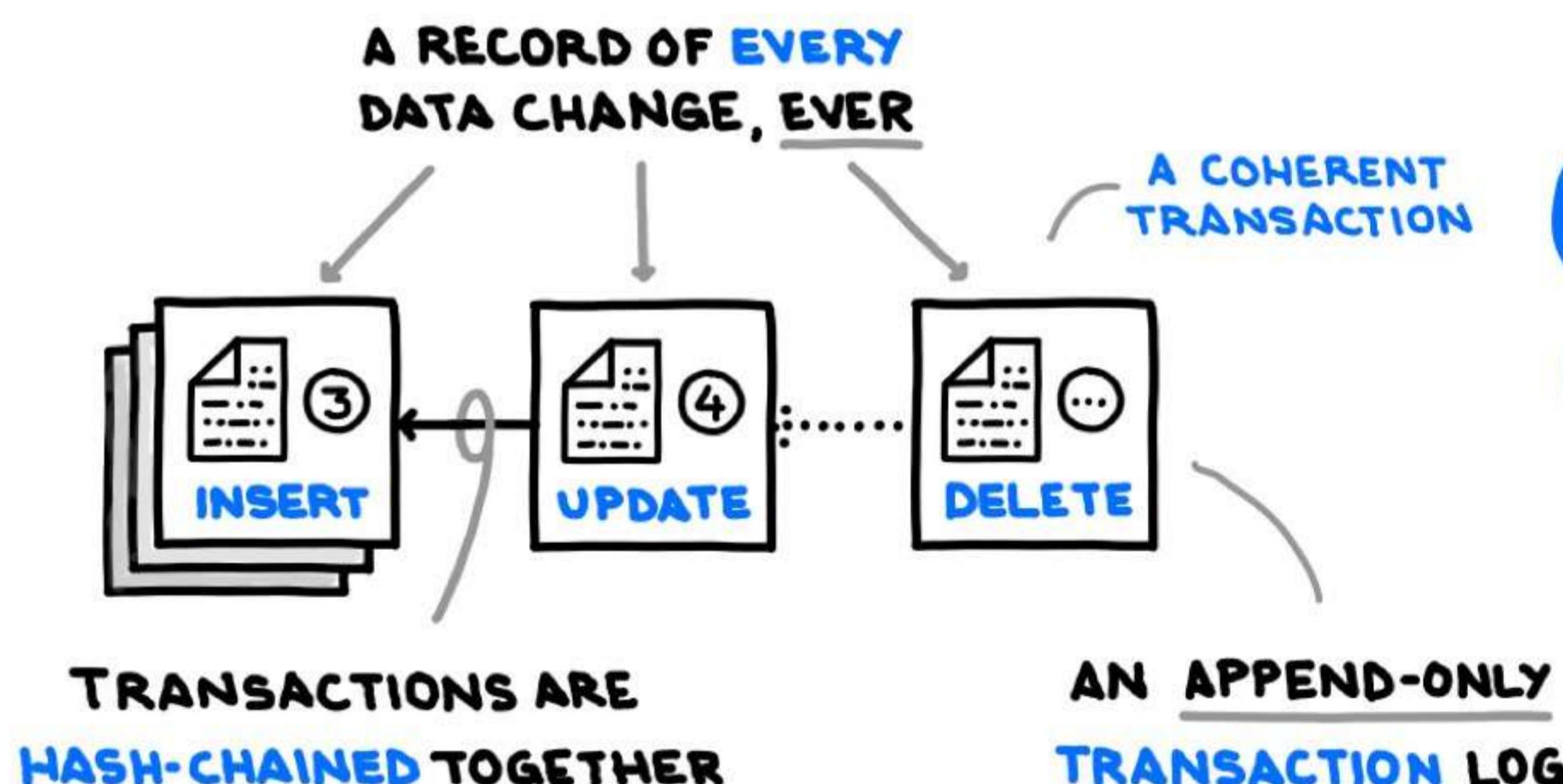


25¢ PER GB/MO

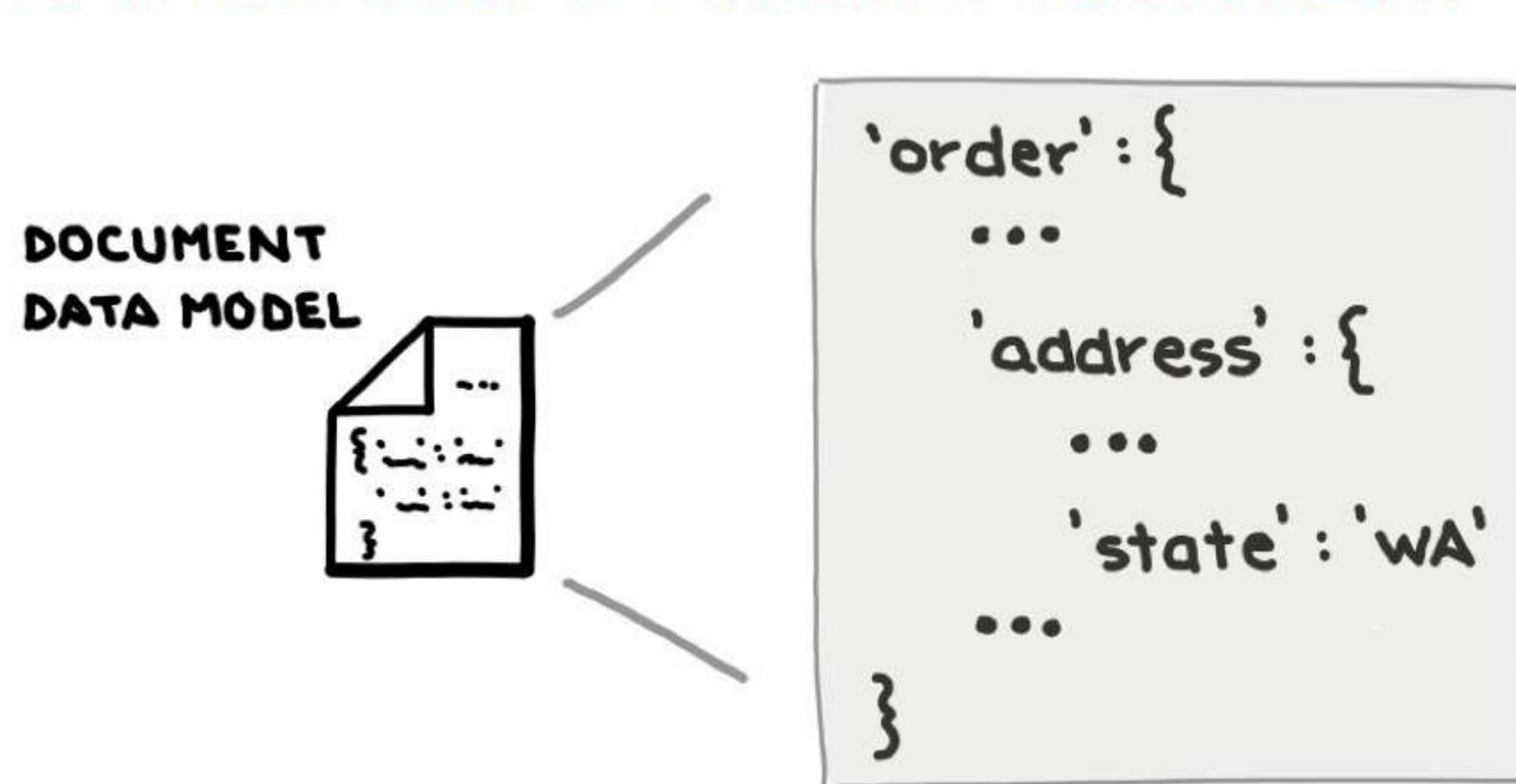


3¢ PER GB/MO

WHAT IS AN IMMUTABLE JOURNAL?



How is Data Stored/Queried?



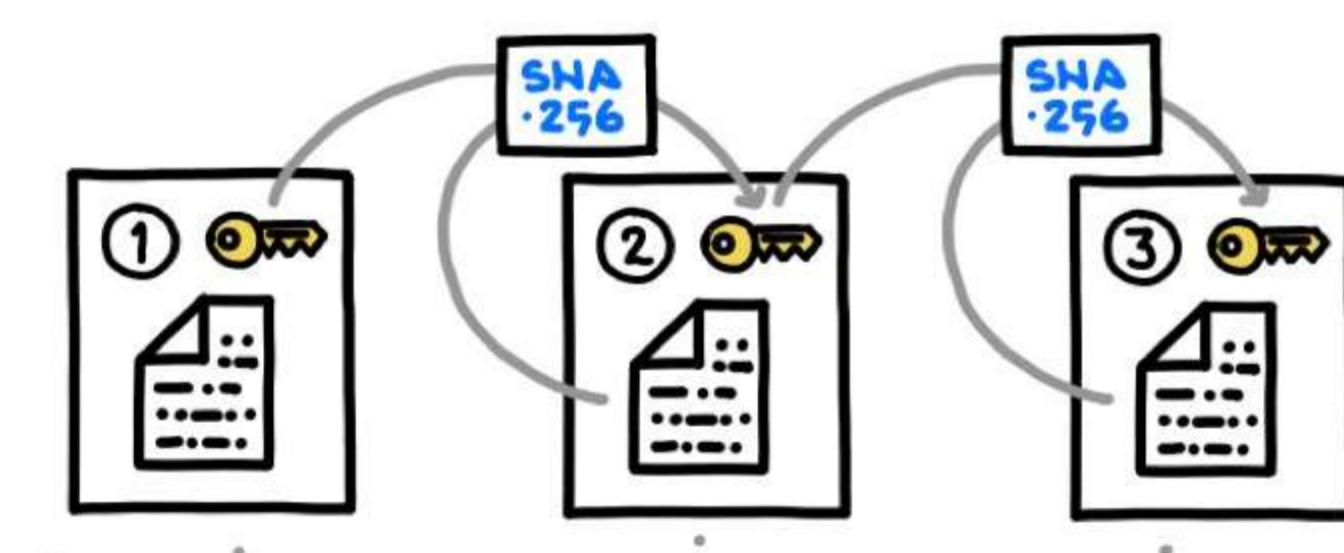
NESTED DOCS
LIKE JOINED
TABLES

FOR SYSTEM OF RECORD APPS

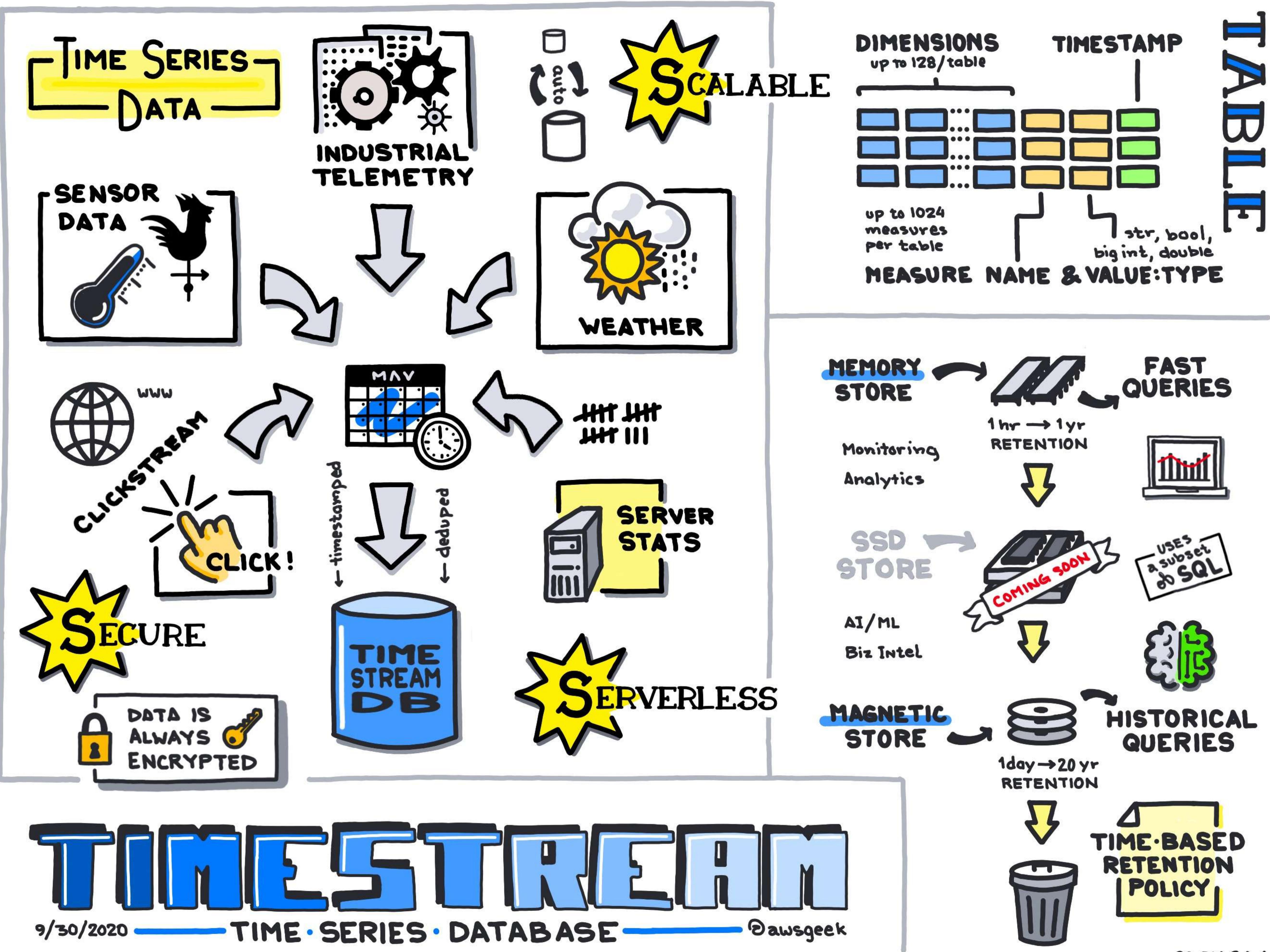
SELECT *
FROM orders AS o
WHERE o.address.state = 'WA'

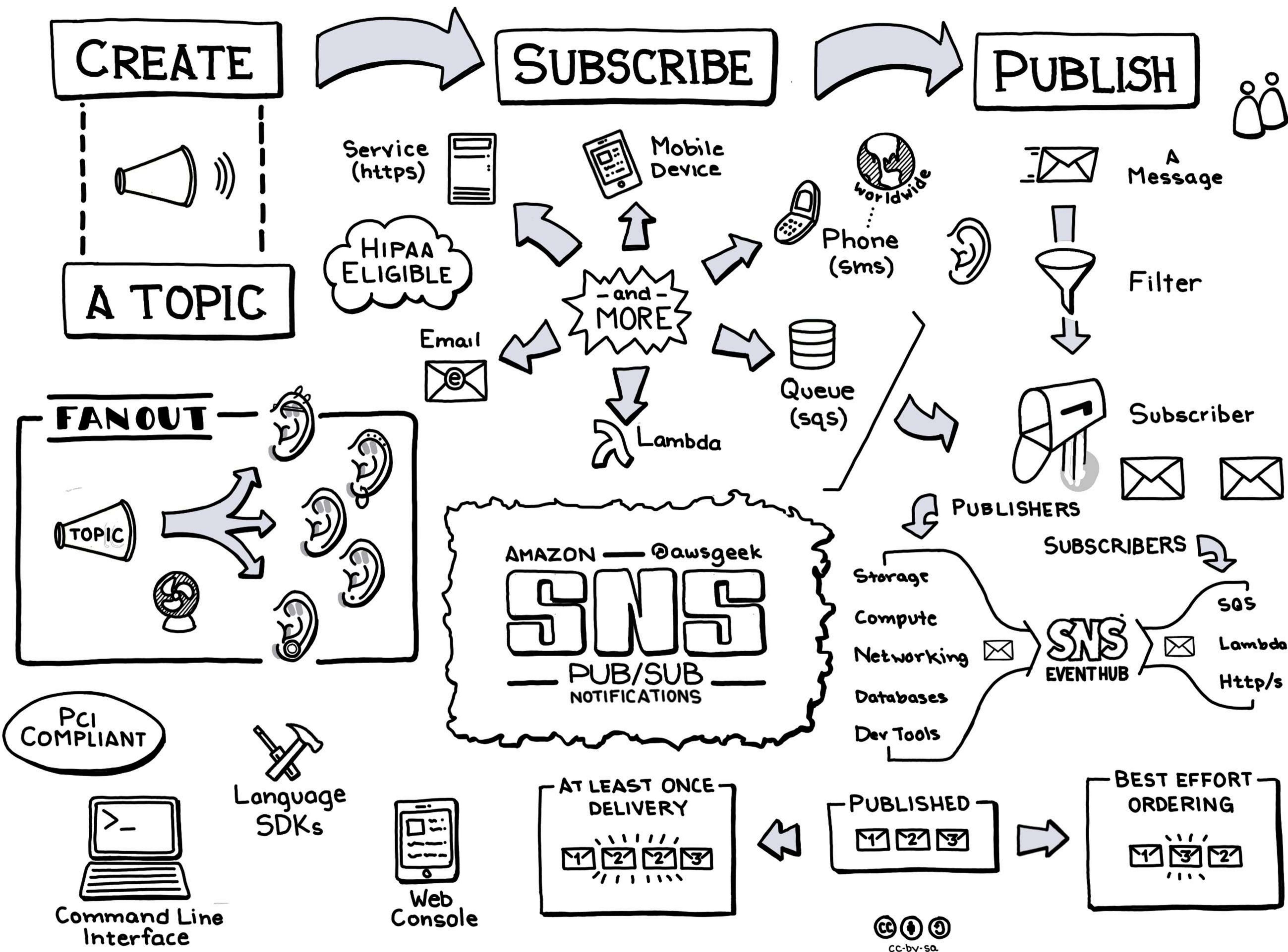
- MANUFACTURING • HR
- INSURANCE • FINANCE
- SUPPLY CHAIN • PAYROLL

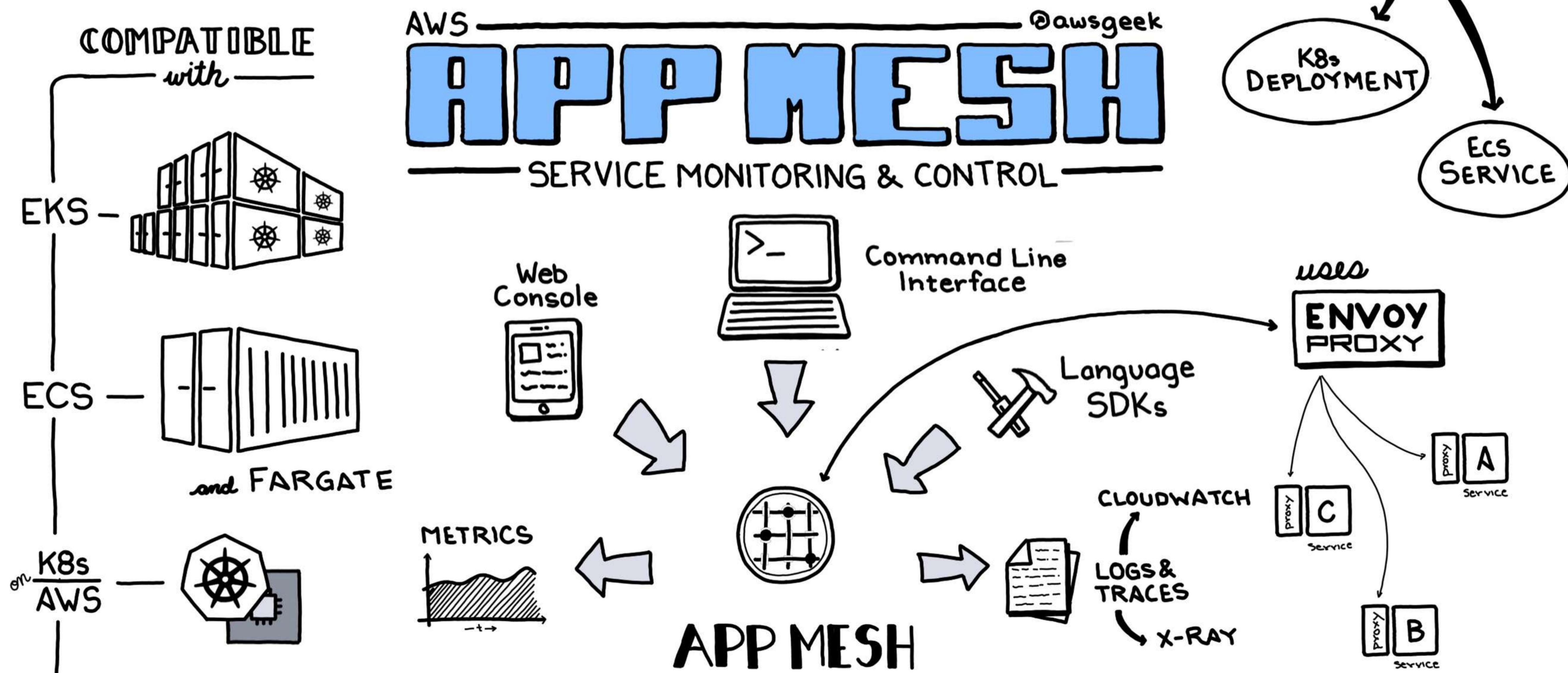
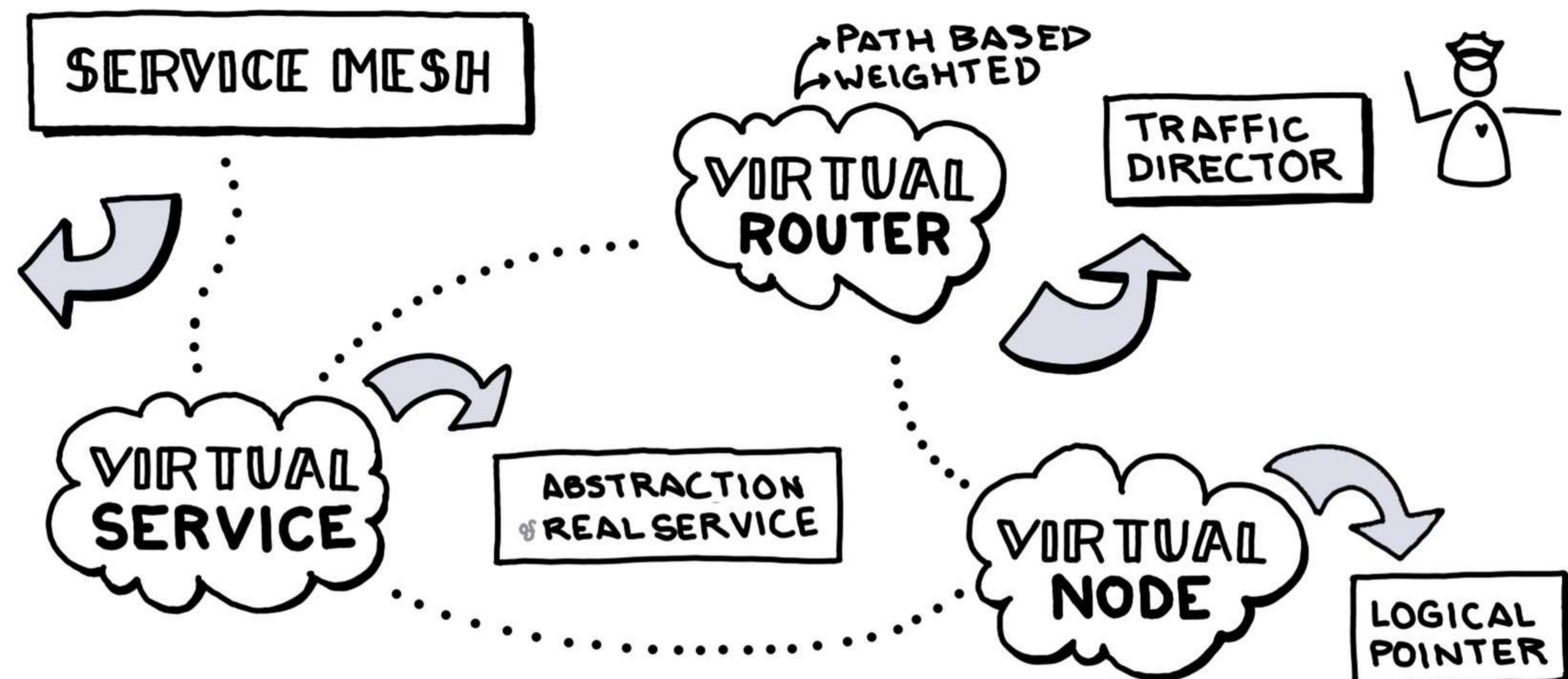
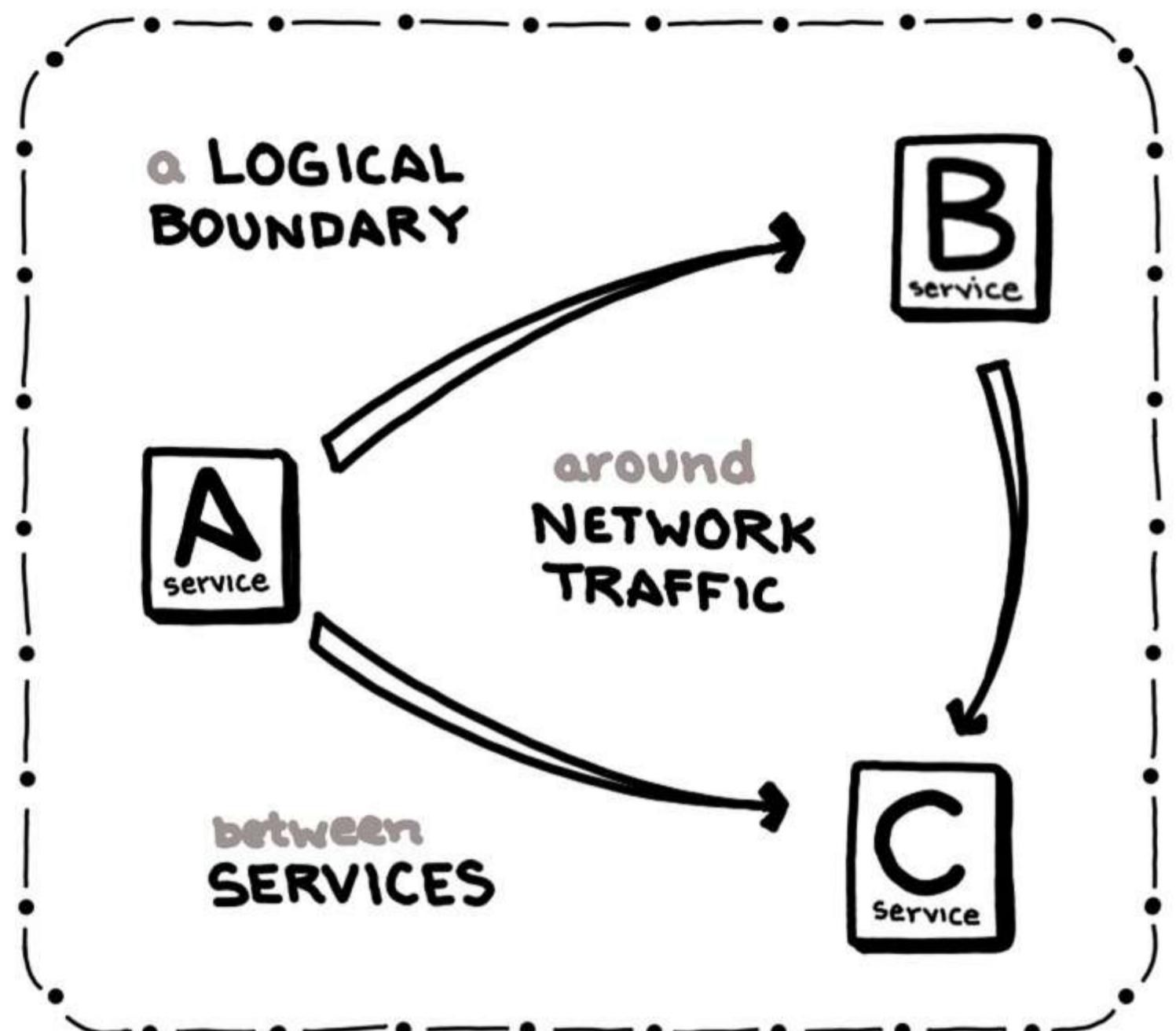
CHANGES
IMMEDIATELY
DETECTABLE

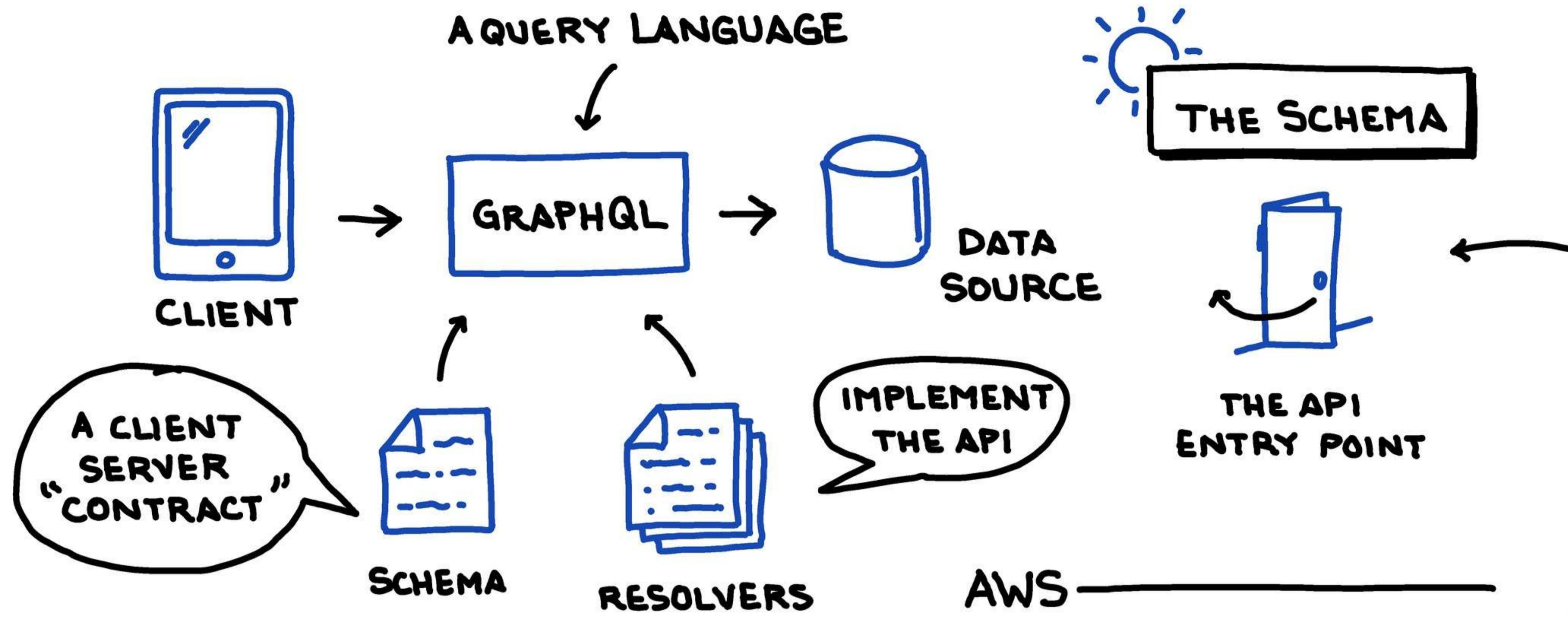


TRANSACTIONS RECORDS ARE CRYPTOGRAPHICALLY VERIFIABLE

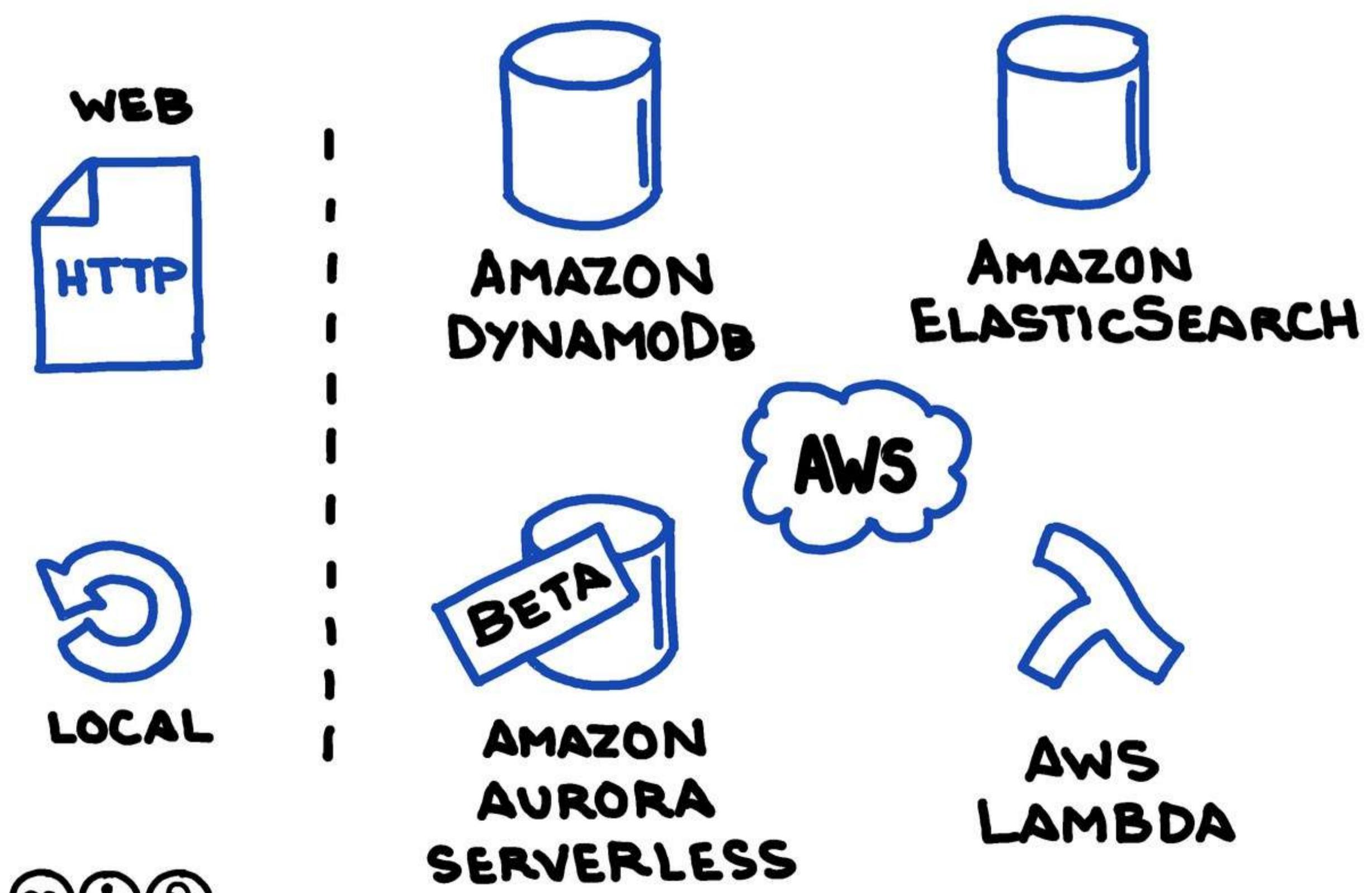








RESOLVERS



AWS — **APPSYNC**
MANAGED • GRAPHQL

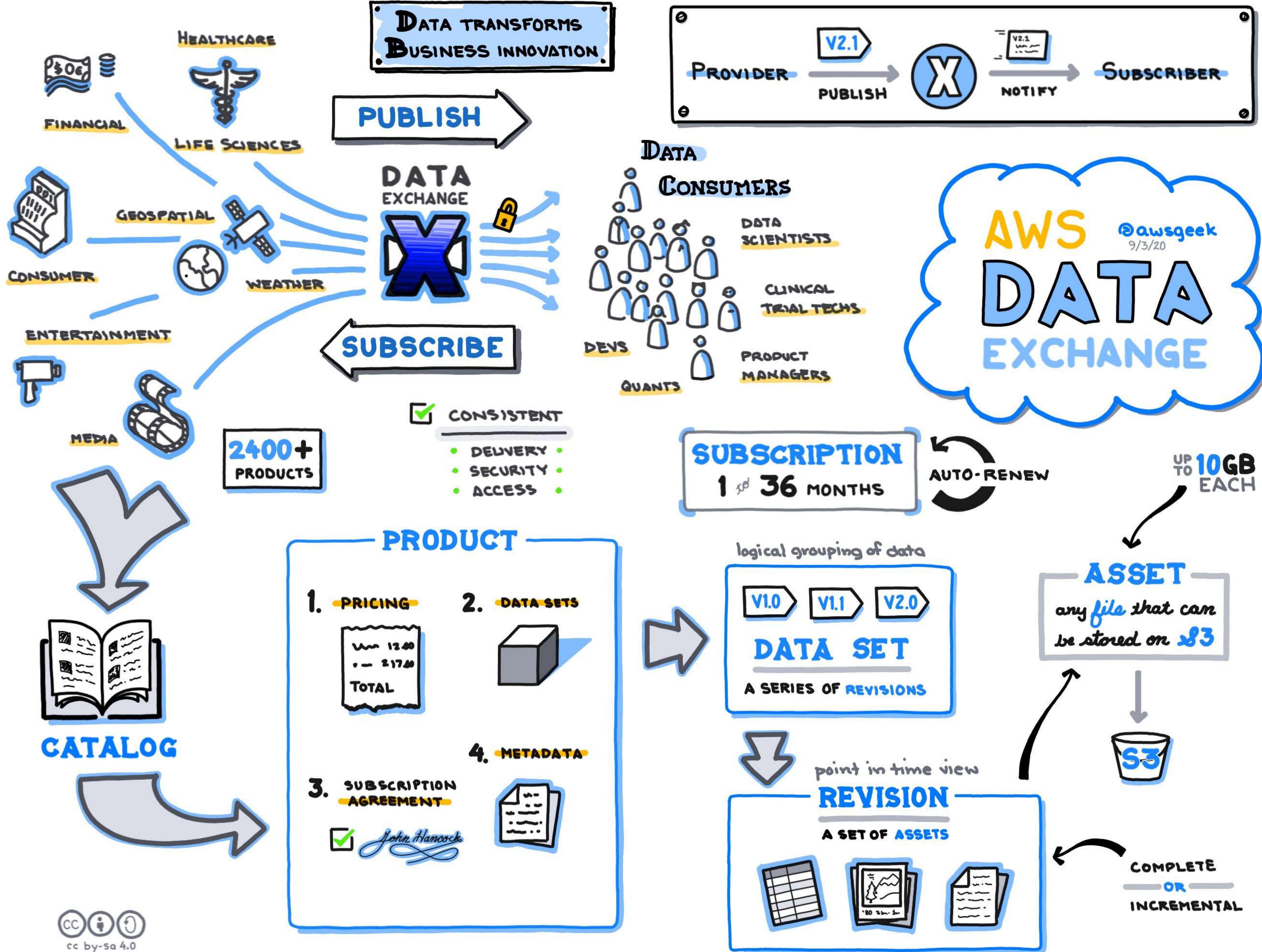
1/23/19

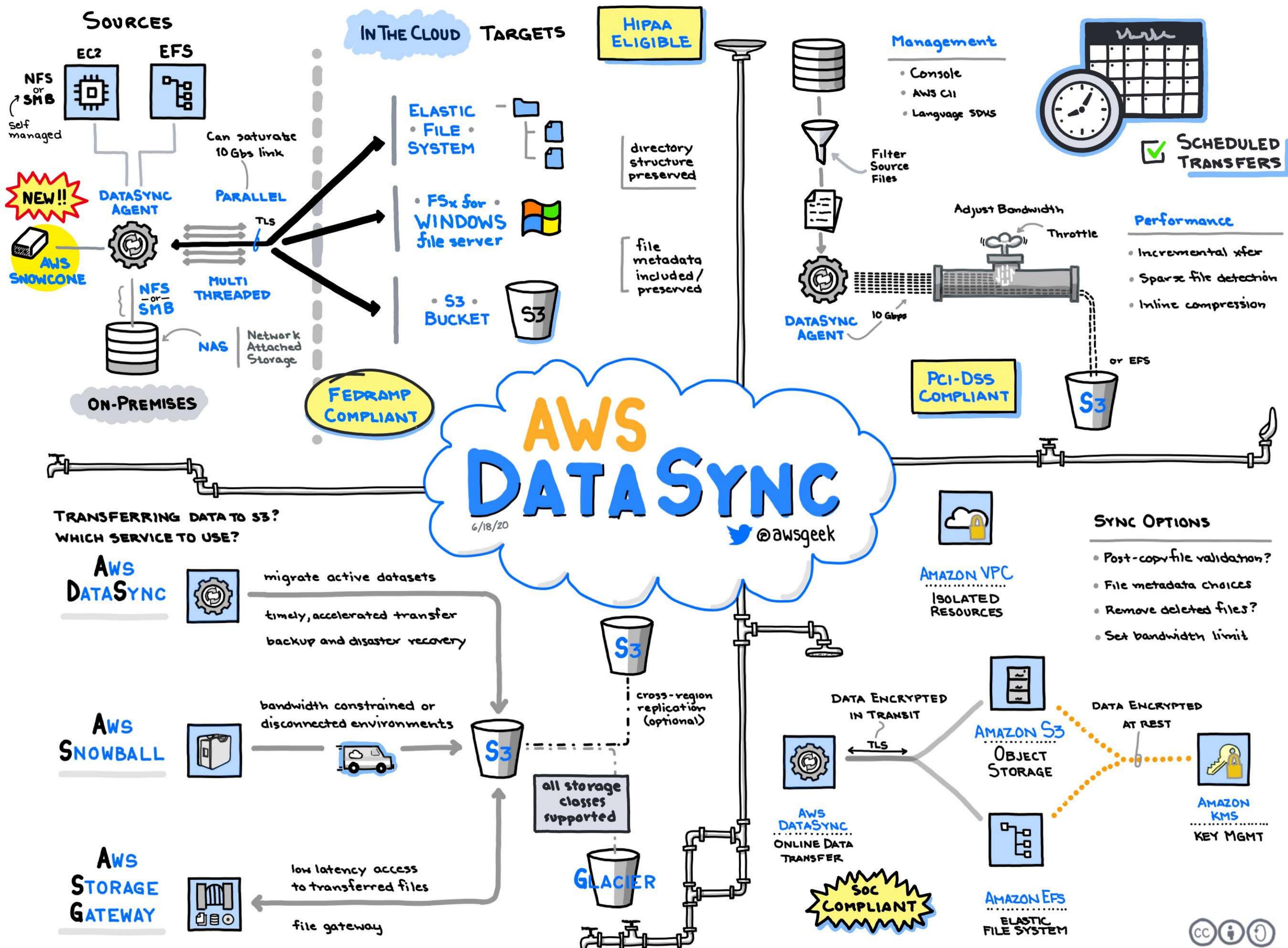
@awsgeek

OFFLINE DATA ACCESS

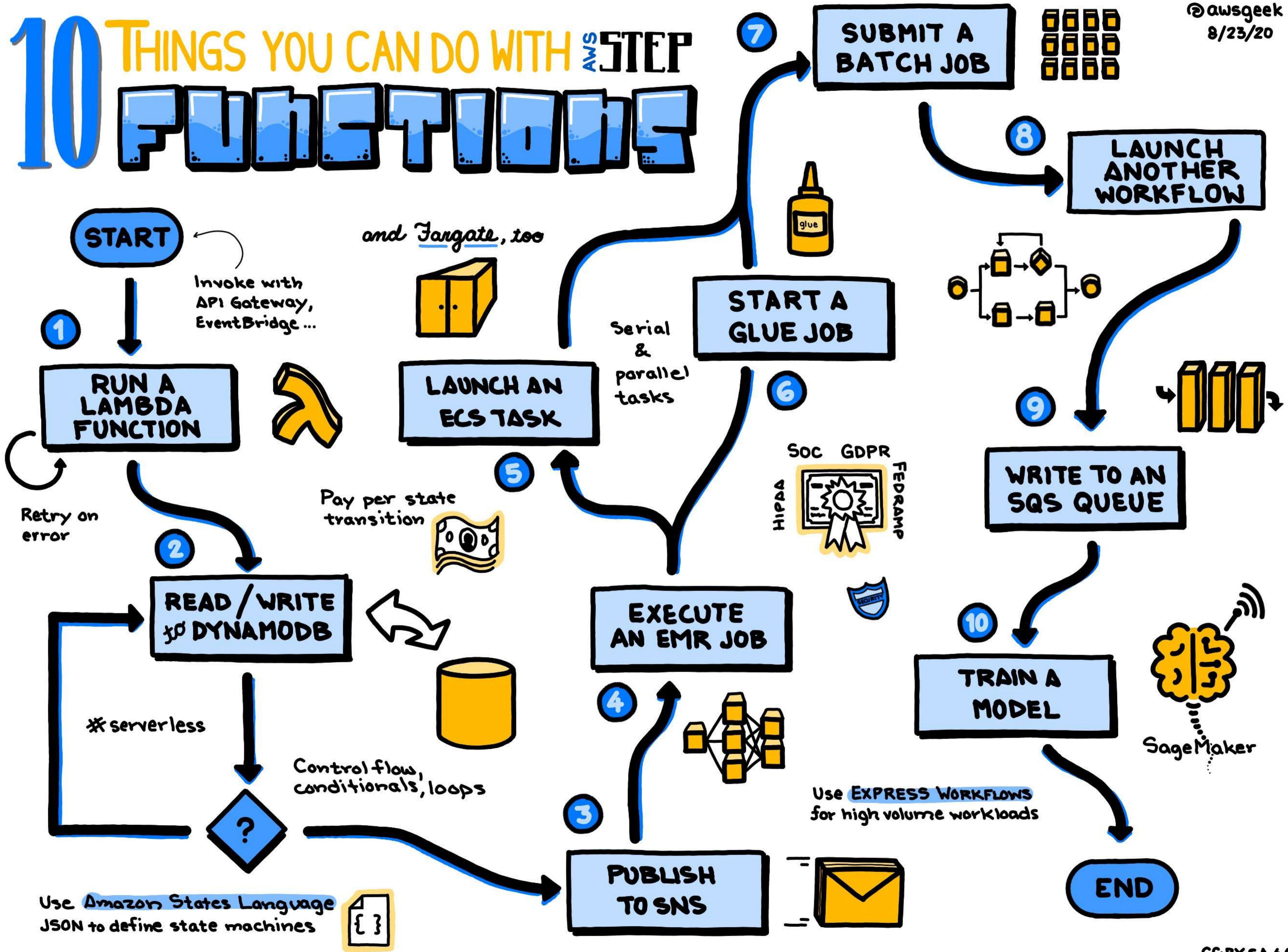
- ① MUTATE OFFLINE
 - ② UPLOAD CHANGES
 - ③ RESOLVE CONFLICTS
- APP SYNC

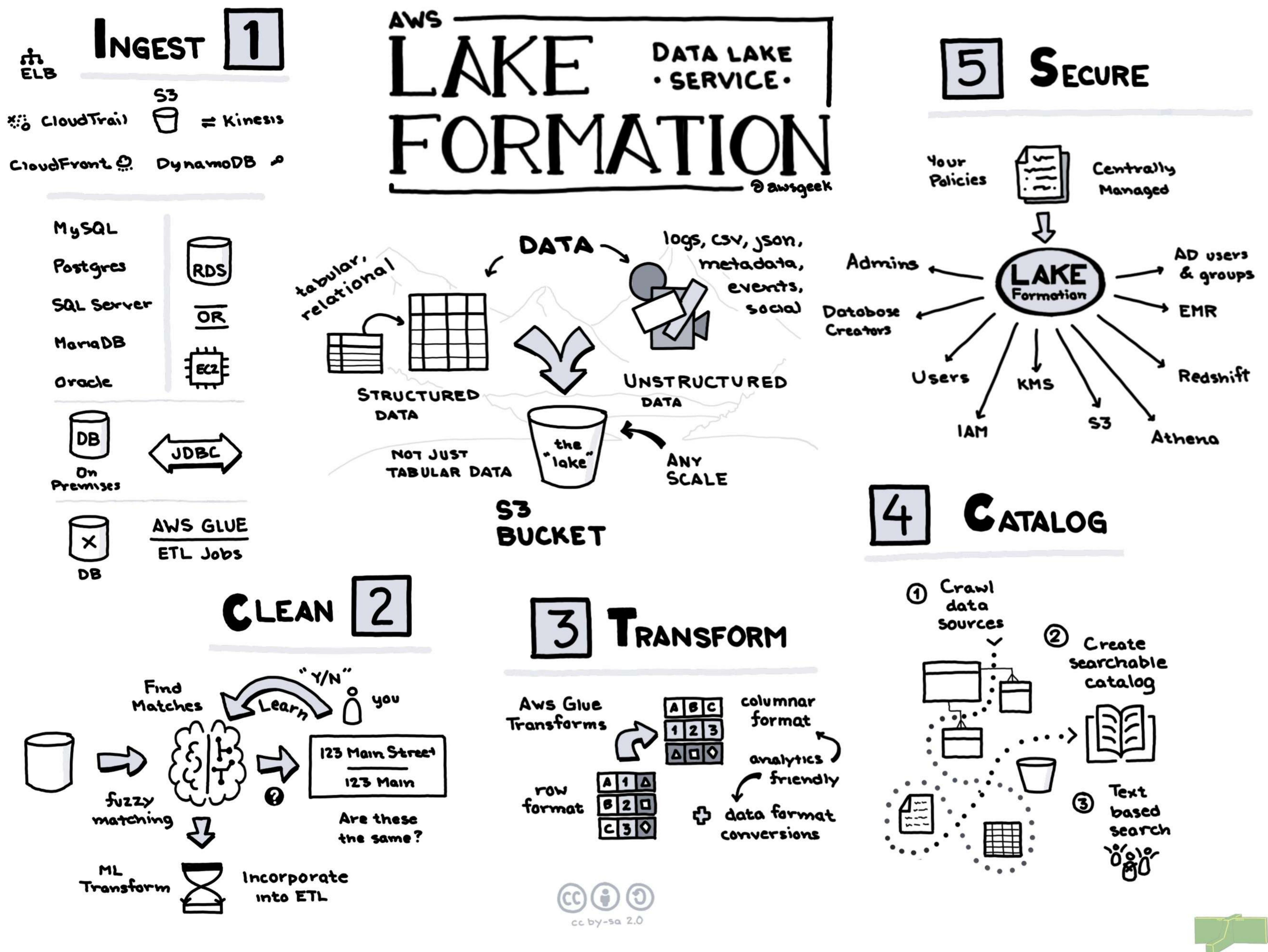


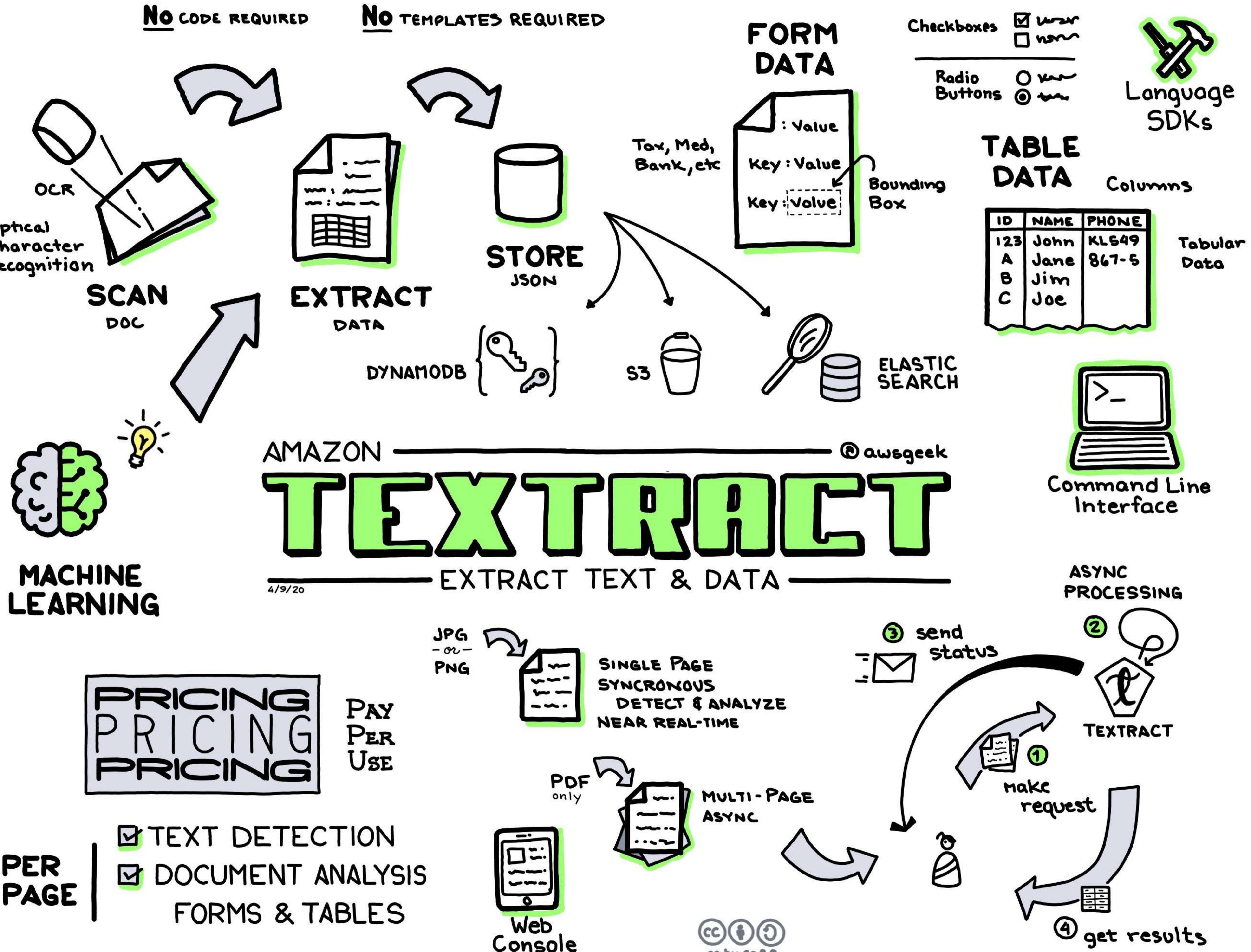




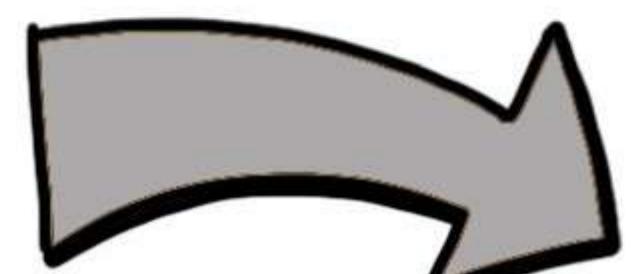
10 THINGS YOU CAN DO WITH AWS STEP FUNCTIONS





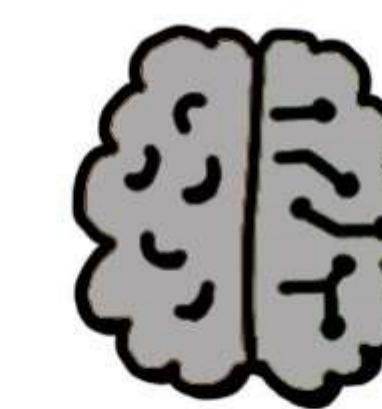
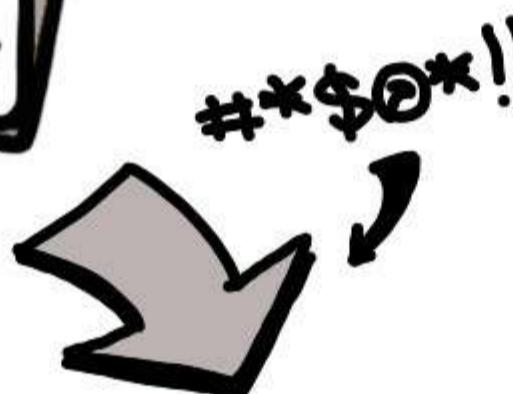


AUTOMATIC SPEECH RECOGNITION



SPEECH →
← TO TEXT

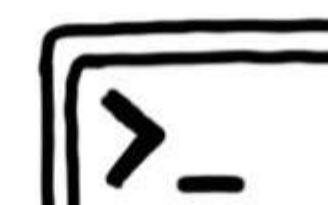
VOCABULARY
FILTERING



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

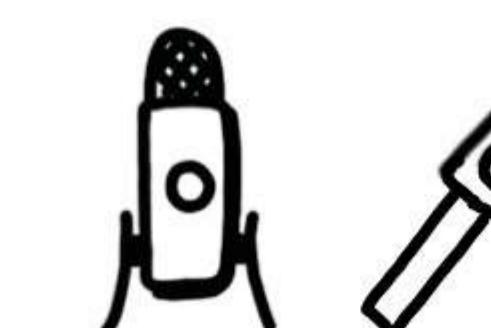


MULTIPLE SPEAKER • IDENTIFICATION •

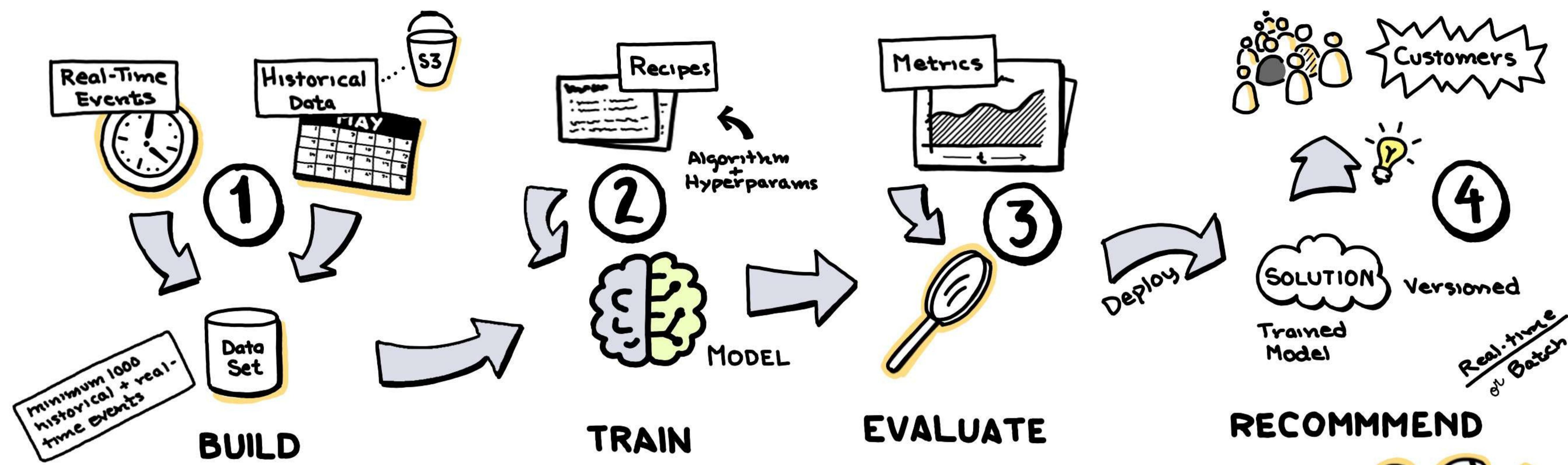
"DIARIZATION"



CHANNEL
ID



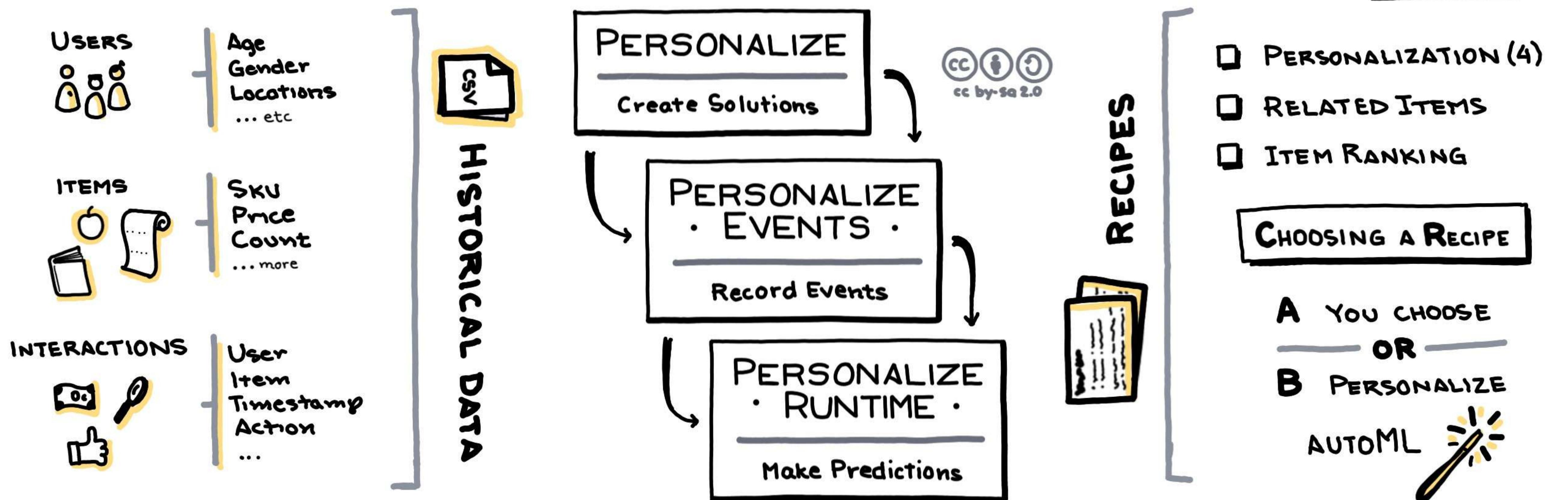
CC BY-SA 4.0

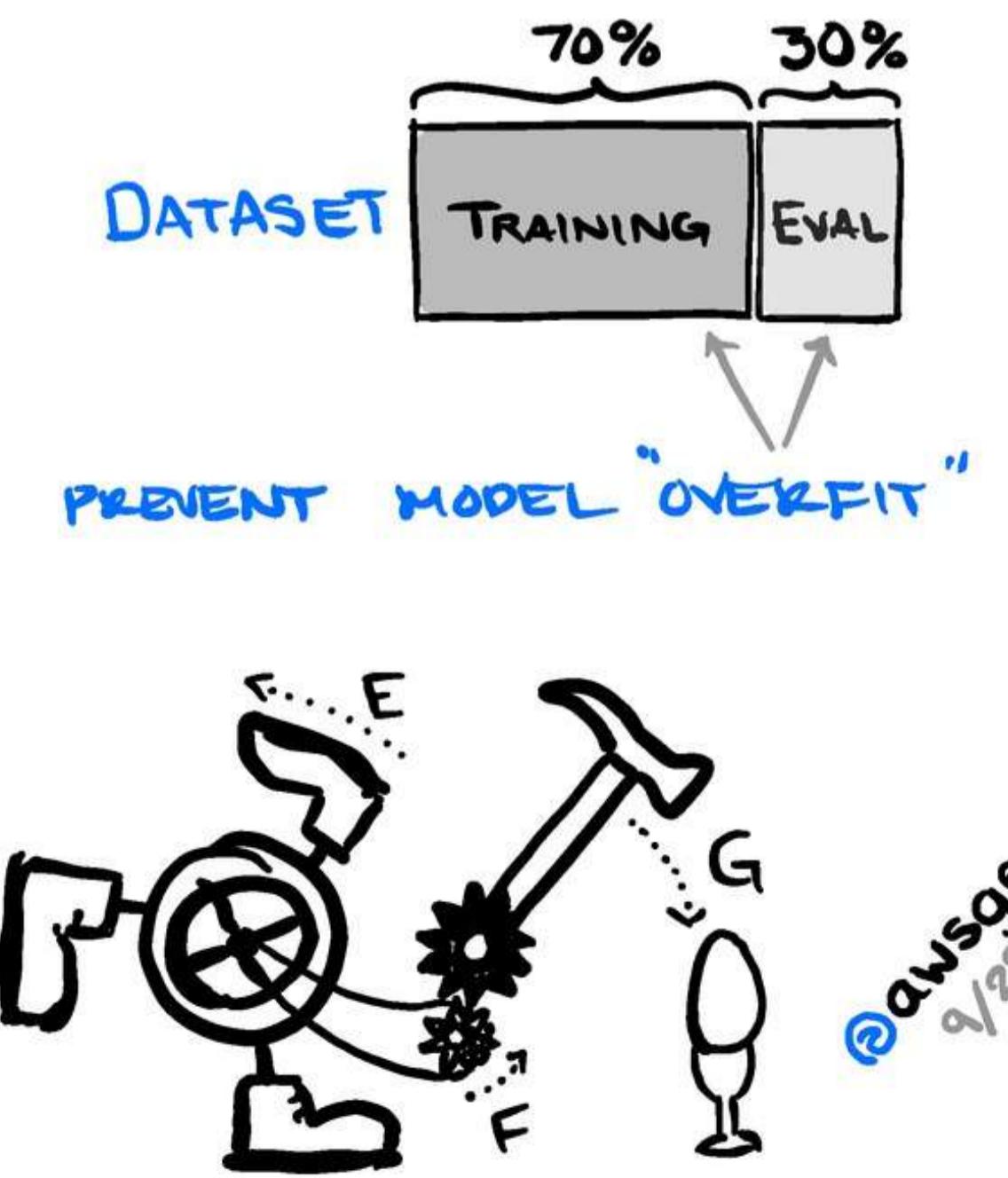
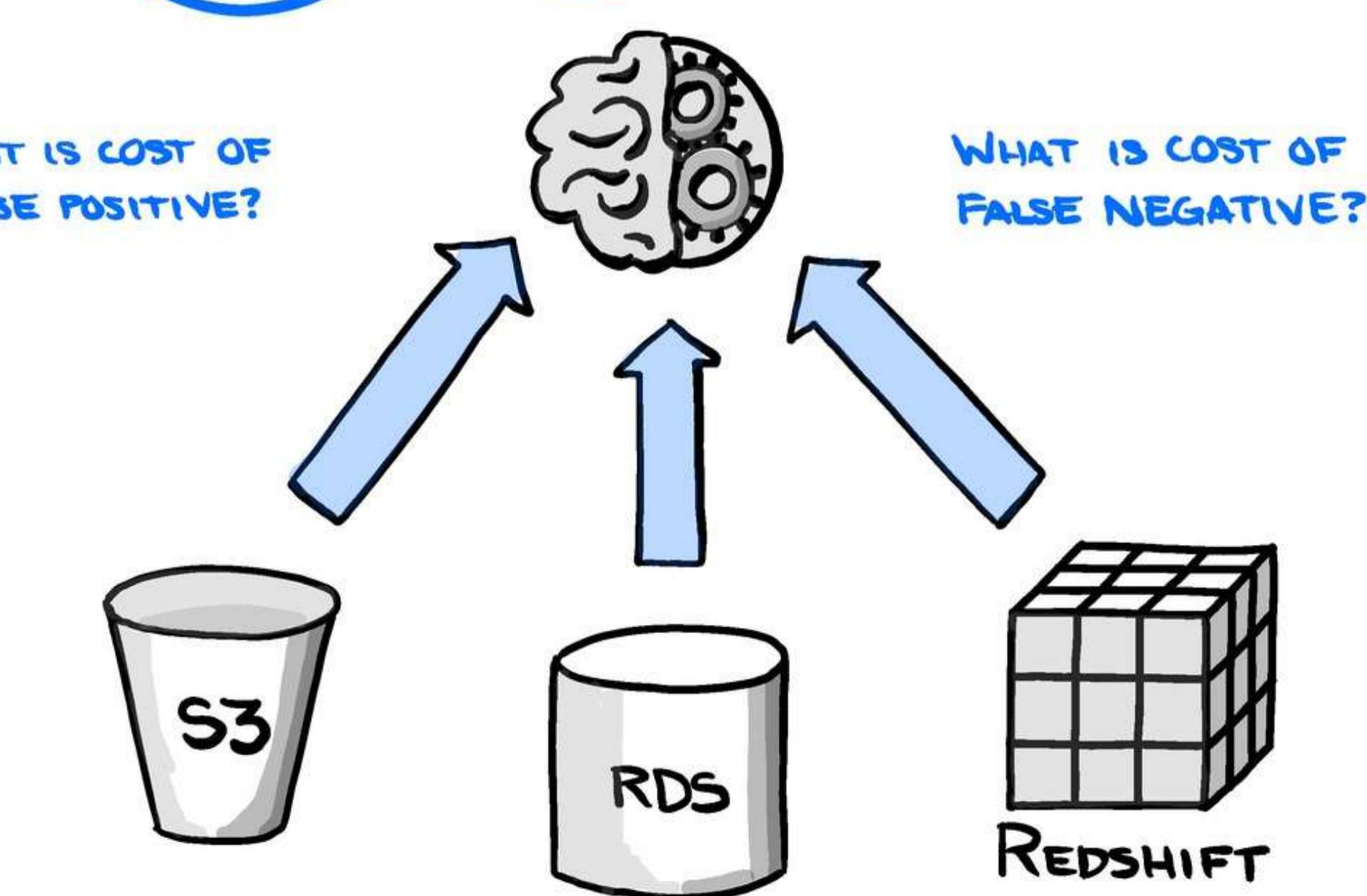
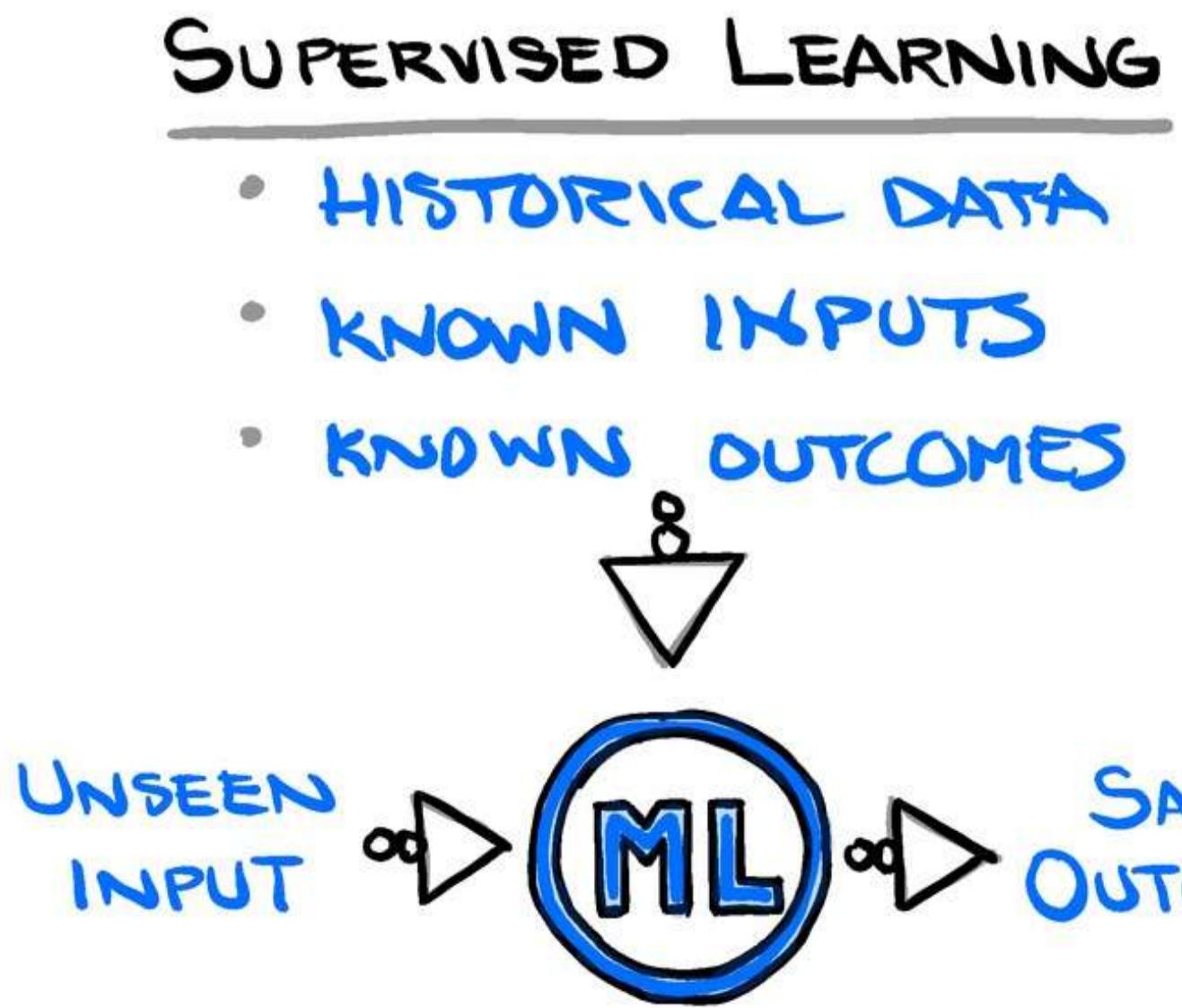
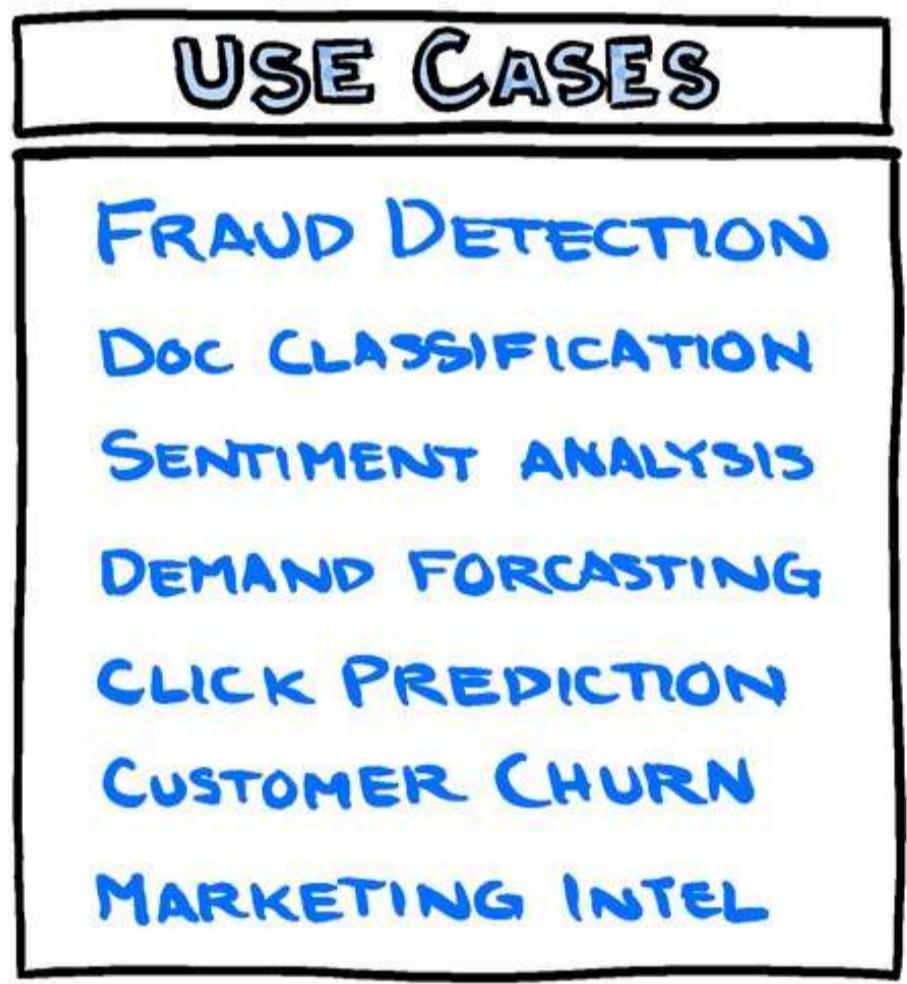
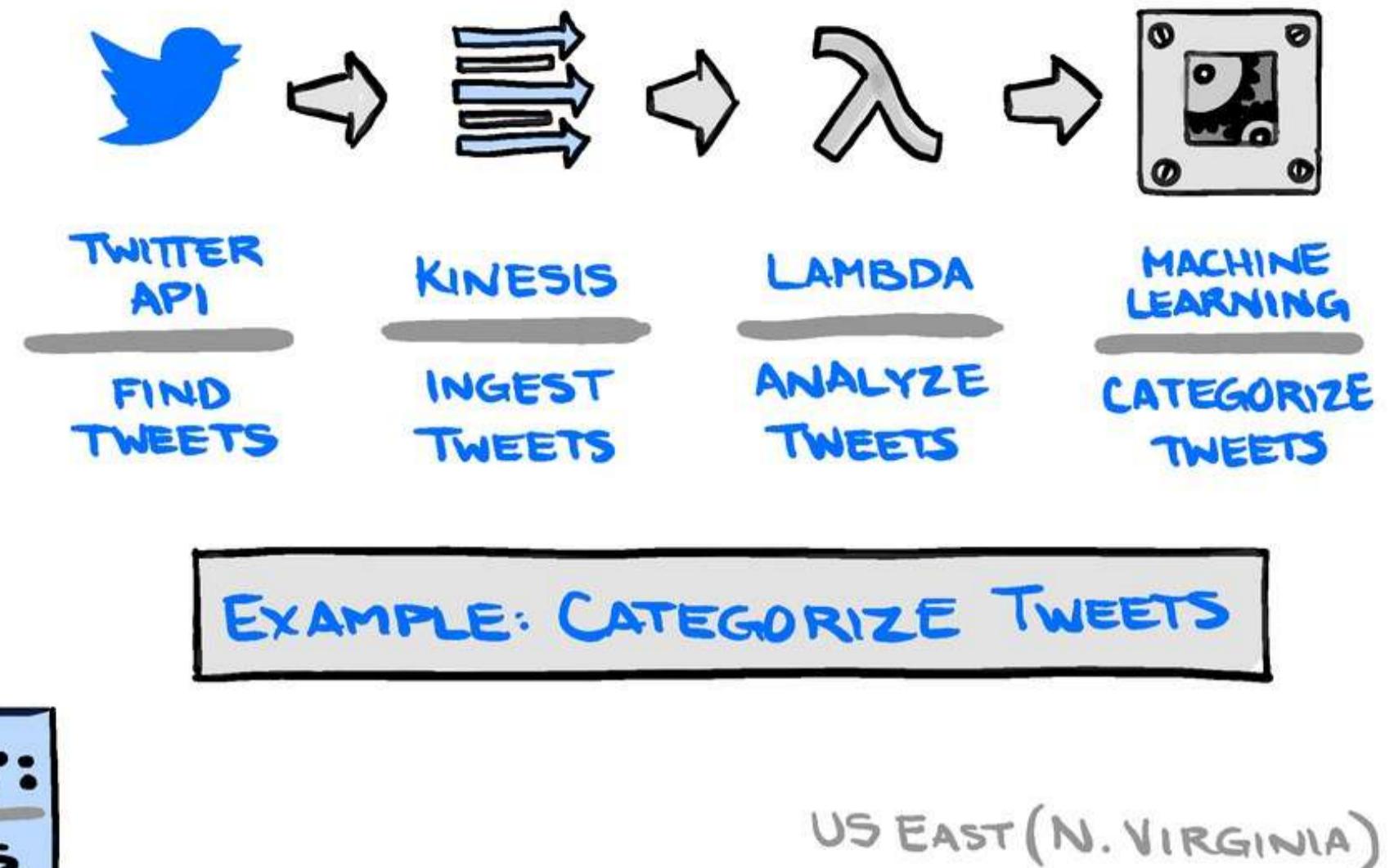
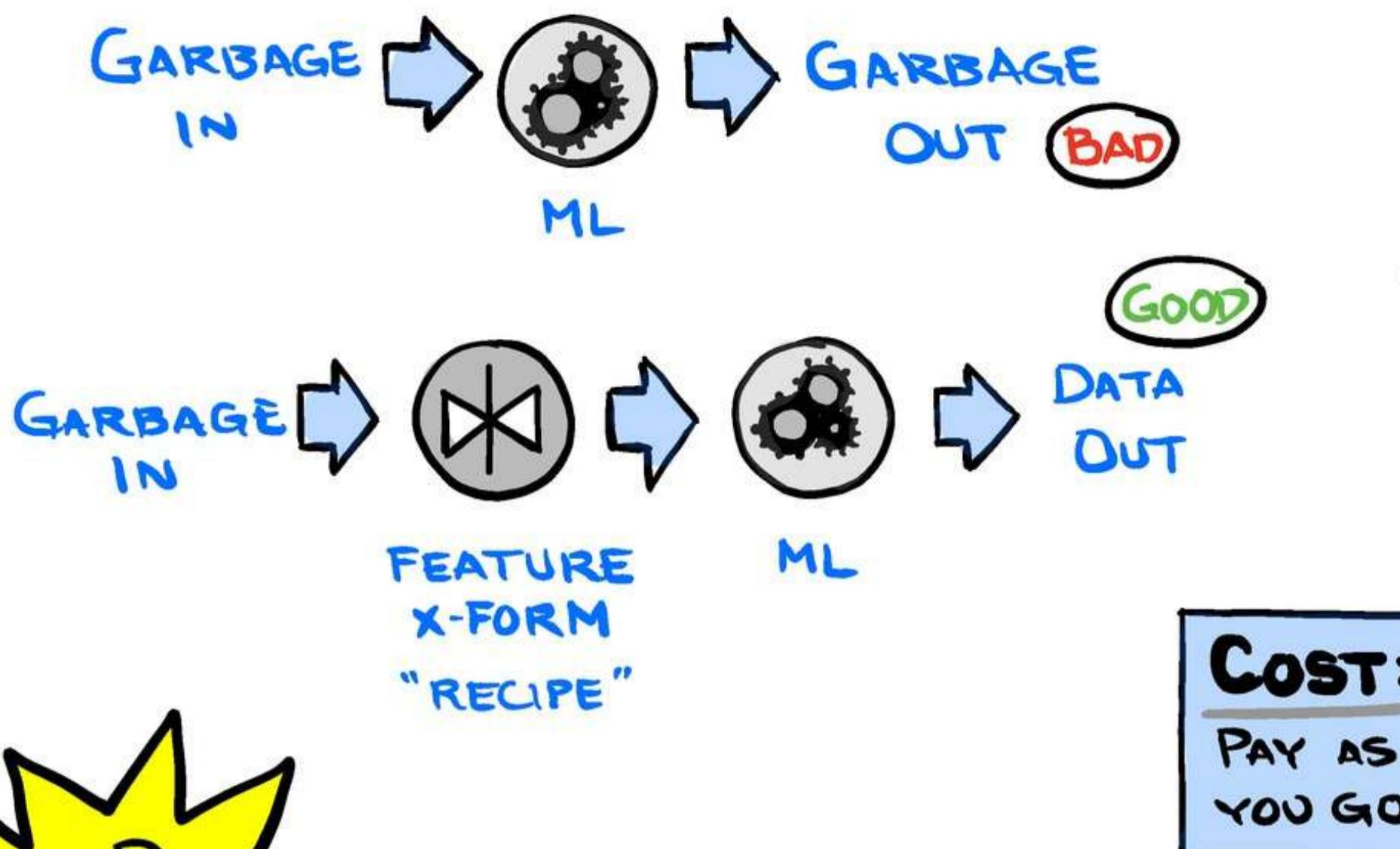
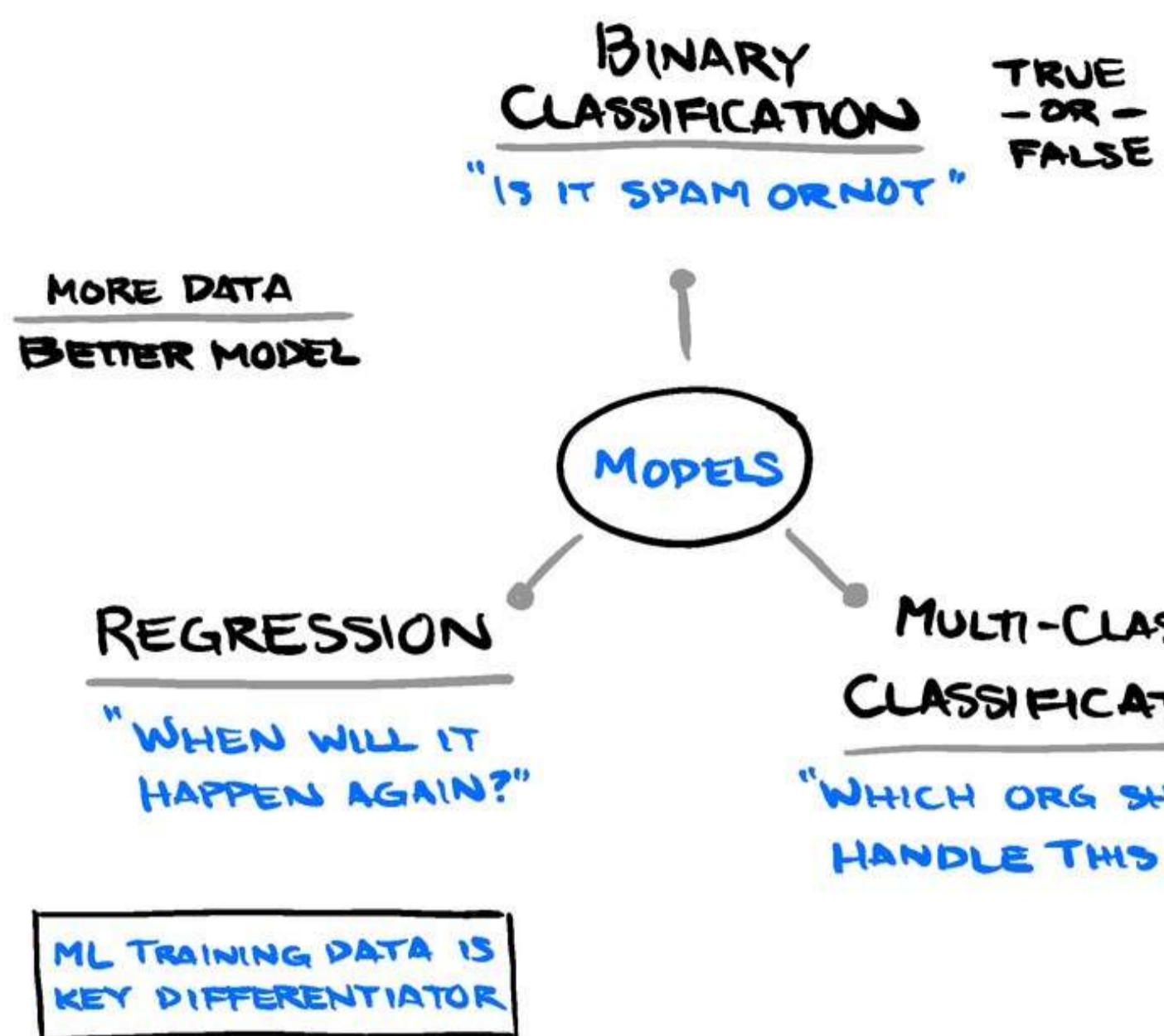


AMAZON PERSONALIZE

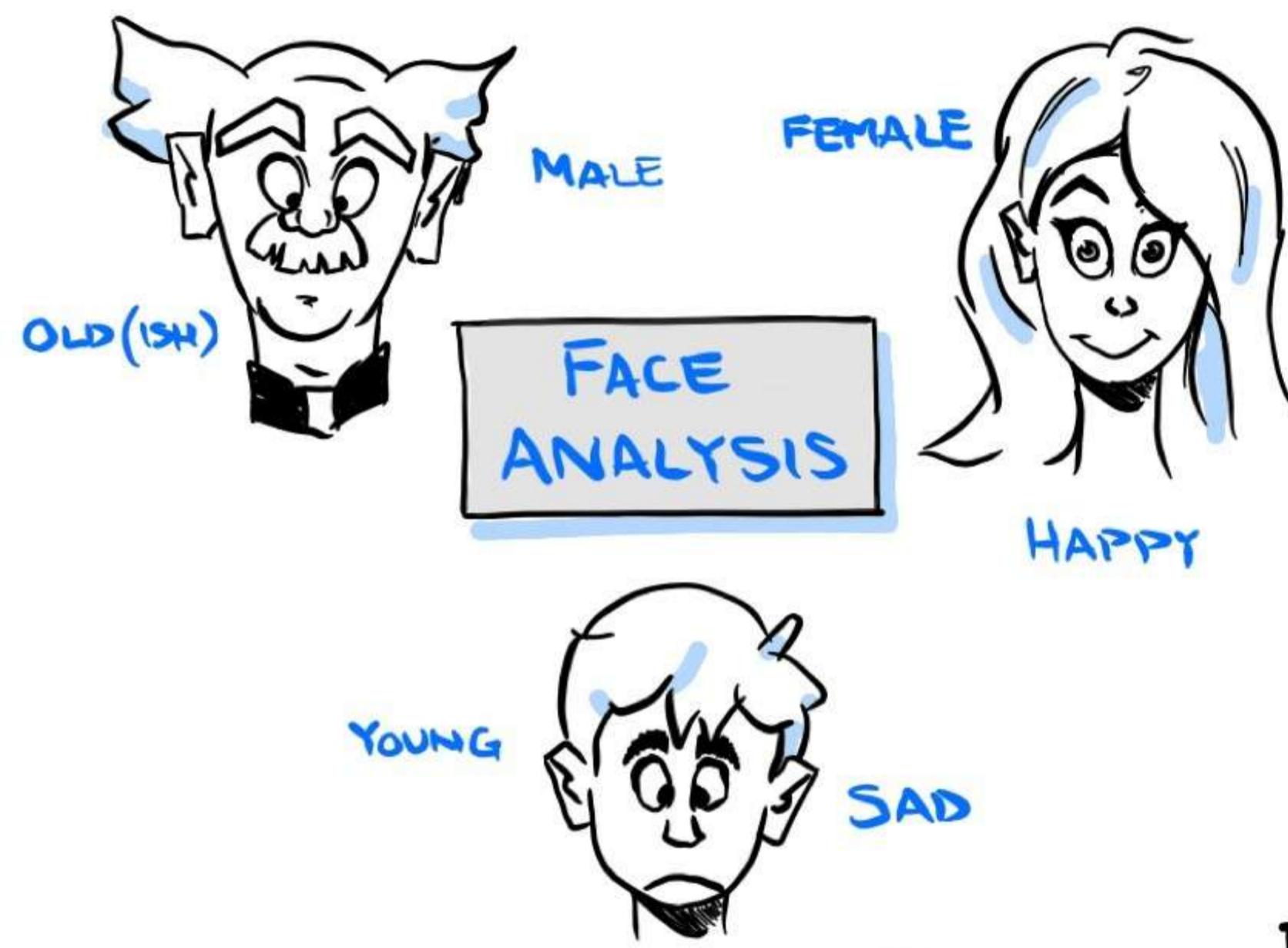
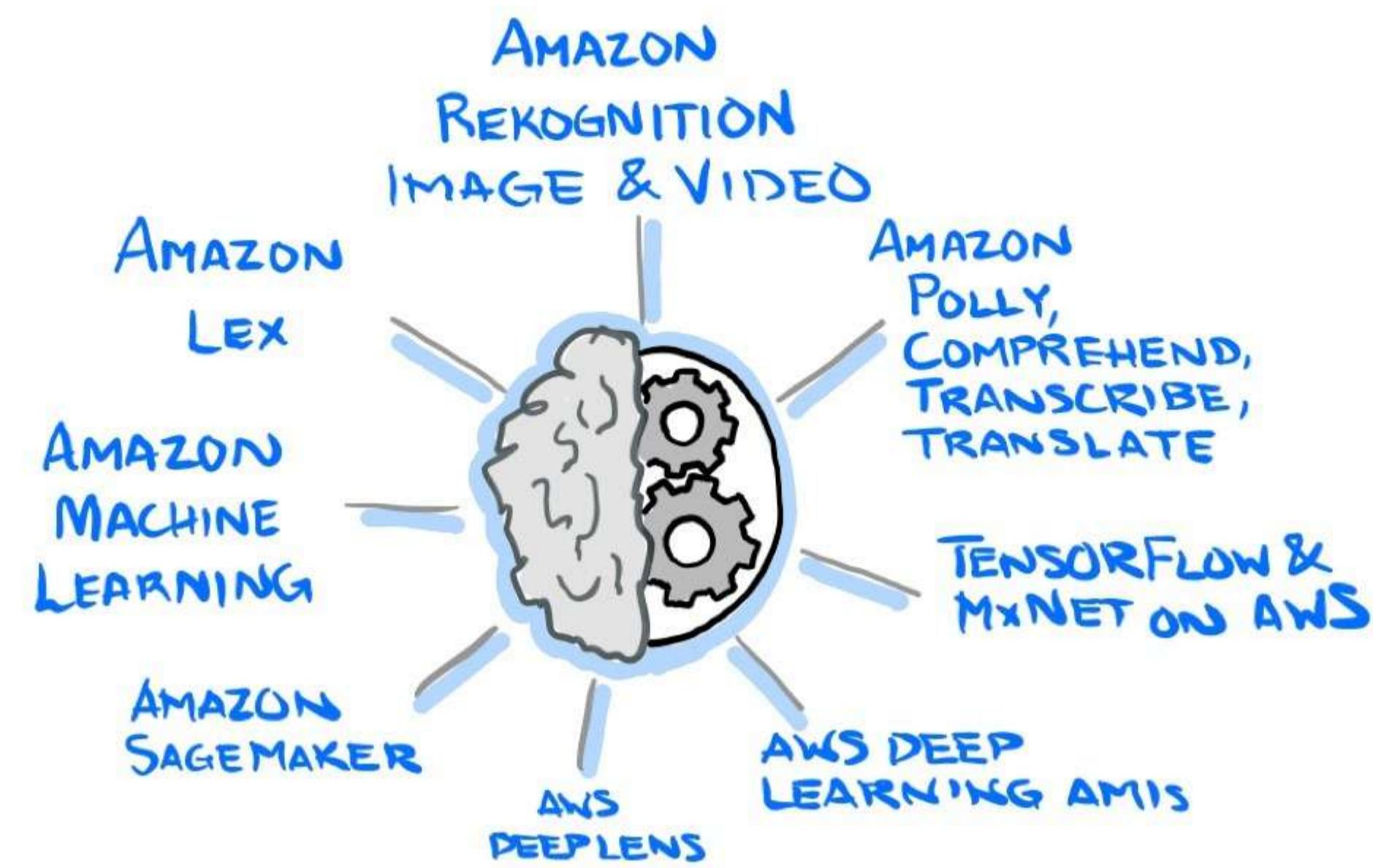
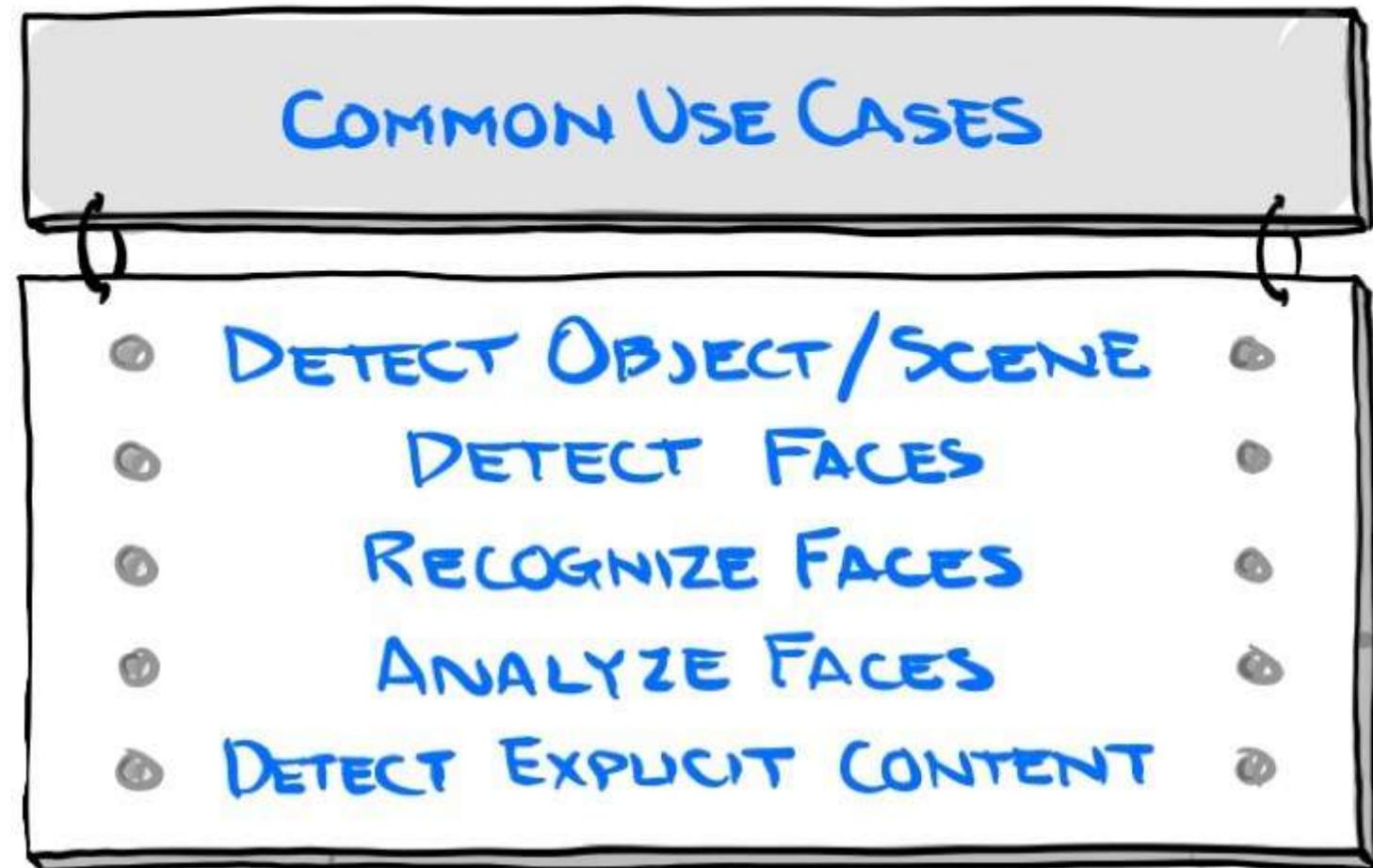
REAL-TIME RECOMMENDATIONS

3/30/20 @awsgeek





@awsgeek
9/22/17



AMAZON AI FAMILY

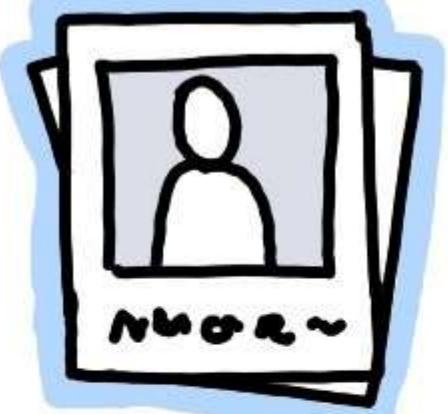


REKOGNITION FACE ANALYSIS

- NO HATS
- NO SUNGLASSES
- NO ...

PRICING

① \$ PER IMAGE



\$ ②



VIDEO

③ \$ PER MINUTE

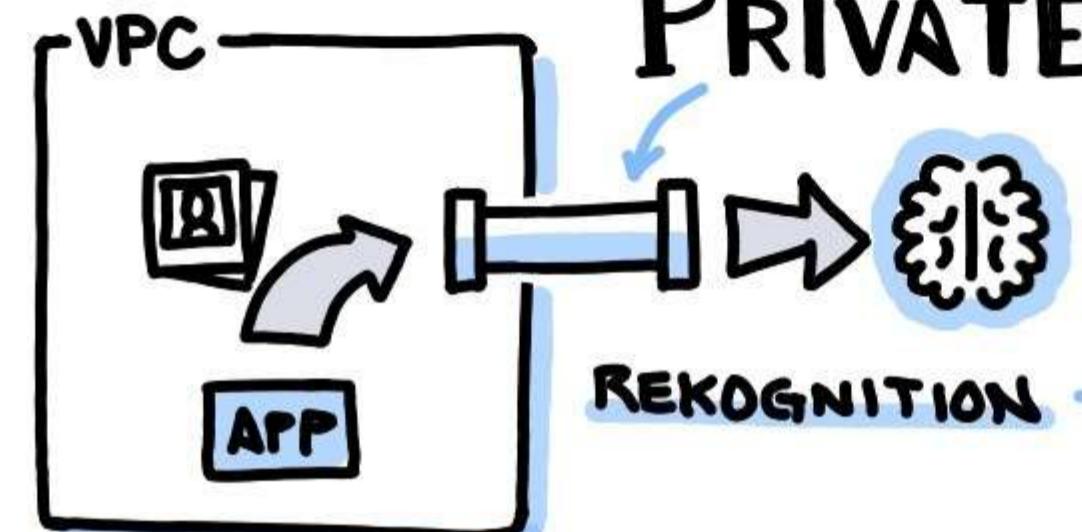


amazon REKOGNITION

11/2/19



PRIVATELINK



TREES /
HIERACHICAL
METADATA /
OUTDOORS

MOUNTAINS

BOUNDING BOXES !!

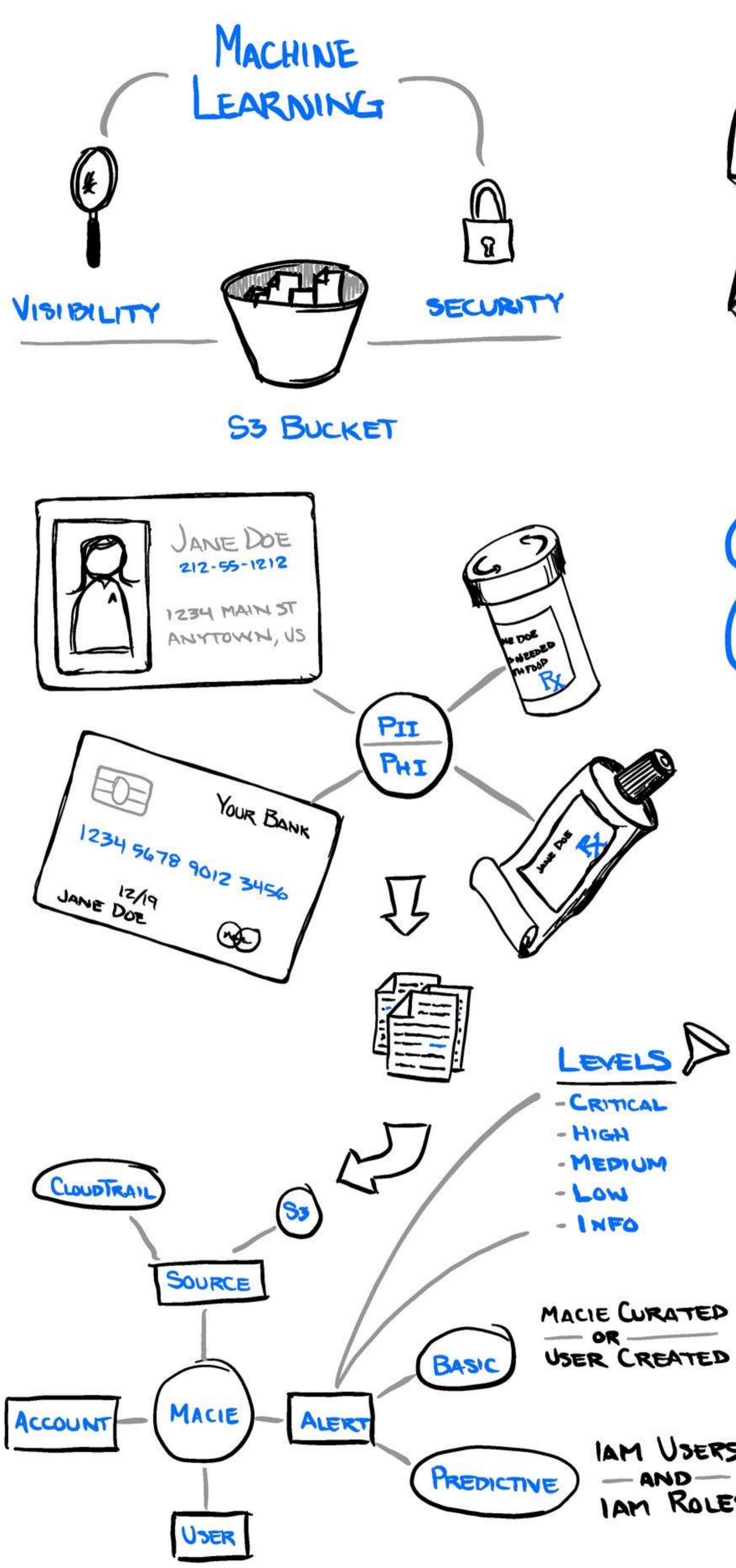
BIRDS

BOB

TEXT "BOB"

BOB IS NAKED

PERSON



AS EASY AS:

- 1 ENABLE MACIE
- 2 SELECT S3 BUCKETS
- 3 REVIEW ALERTS

ENCRYPTED S3 OBJECTS

SERVER SIDE ENCRYPTION

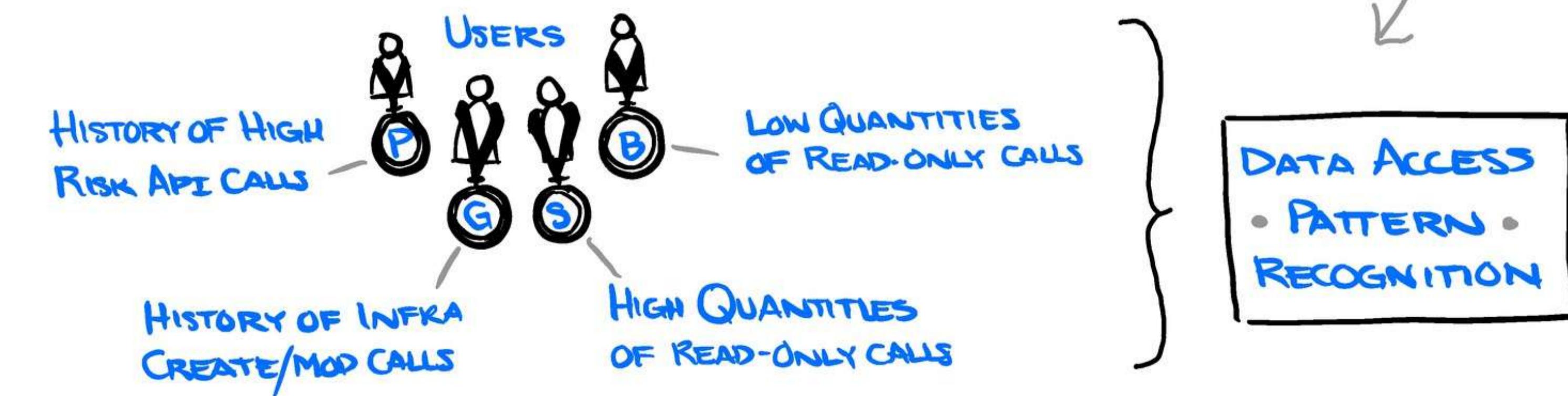
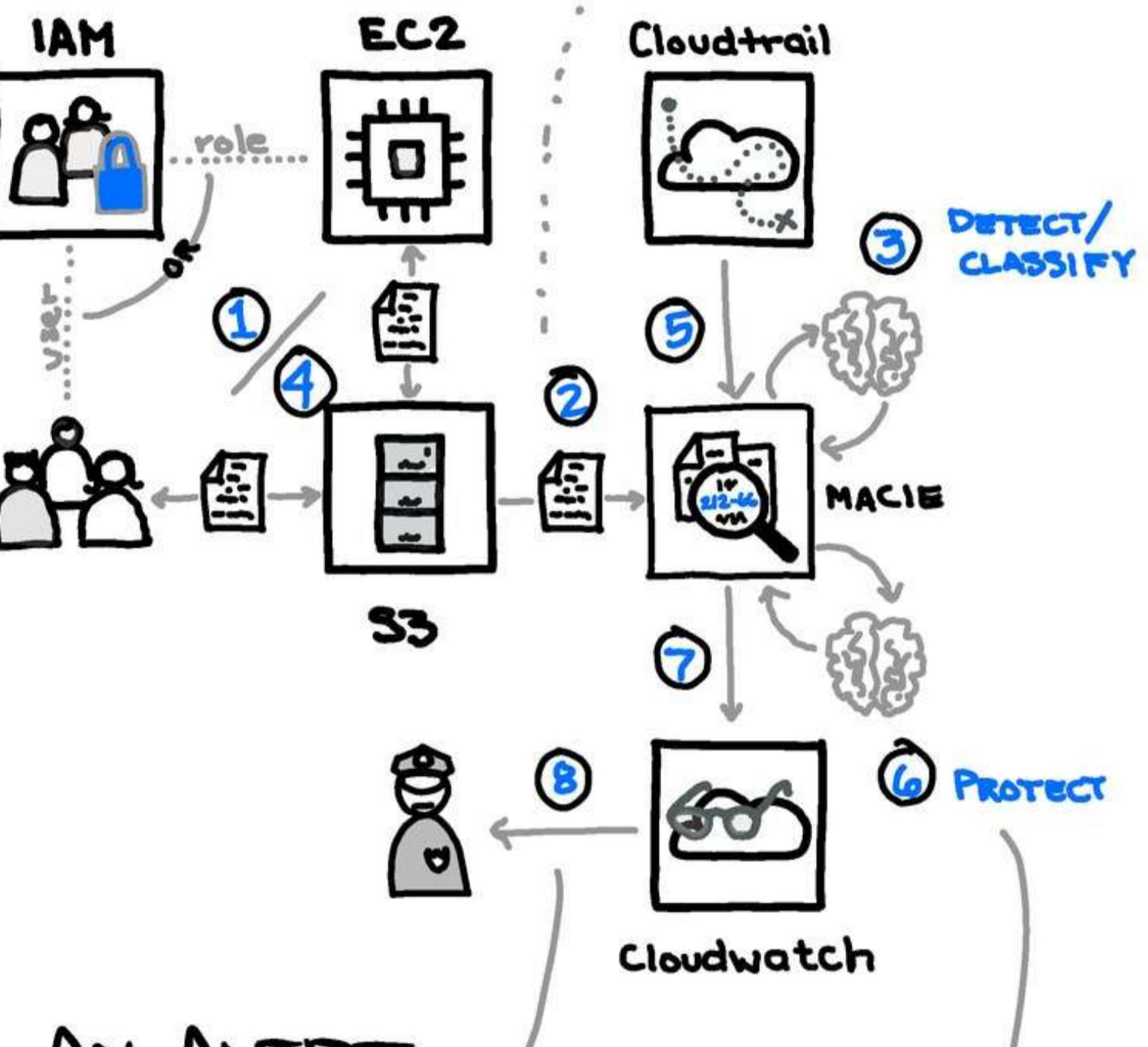
✓ WITH IAM PERMISSION

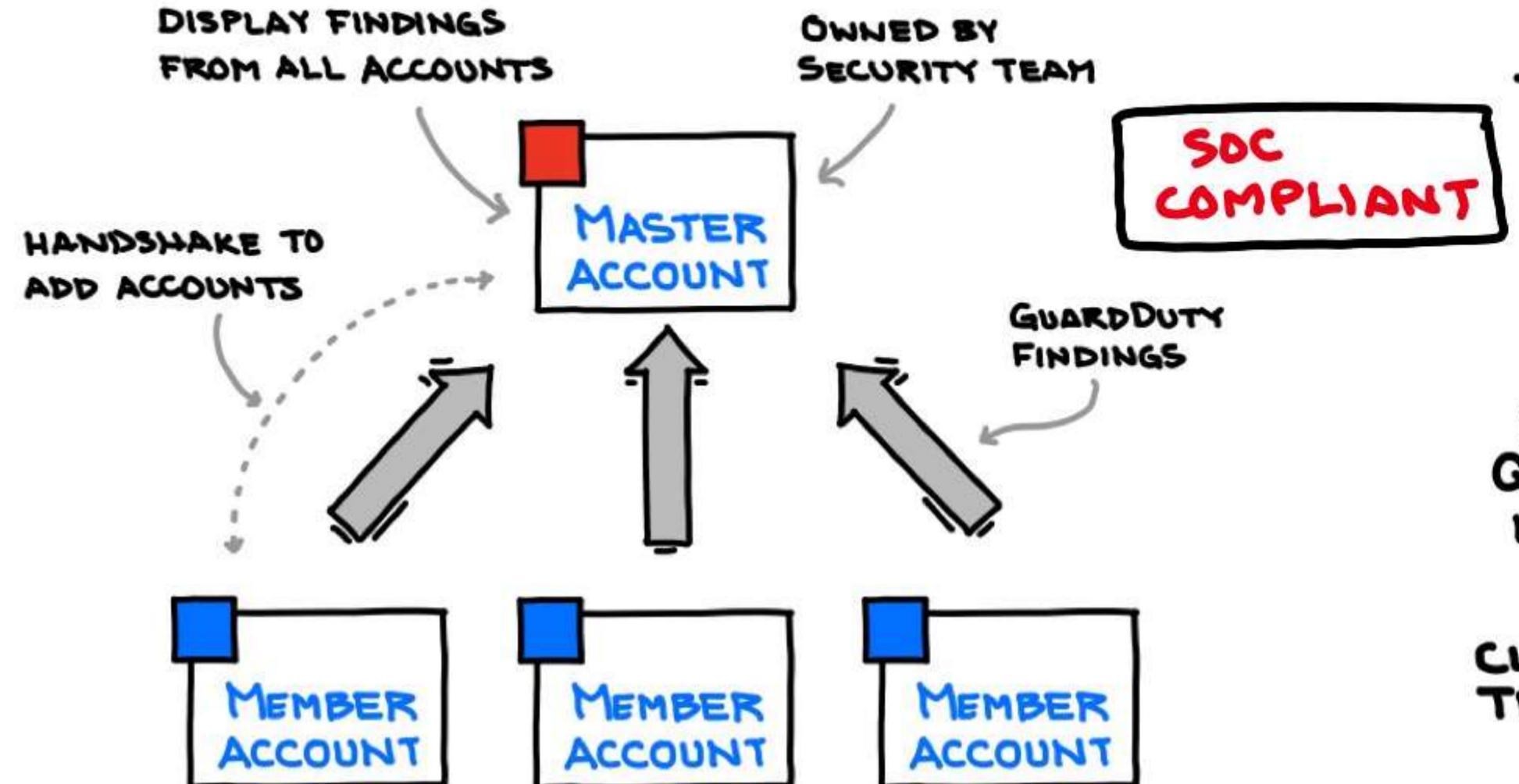
KMS KEYS

CLIENT ENCRYPTED

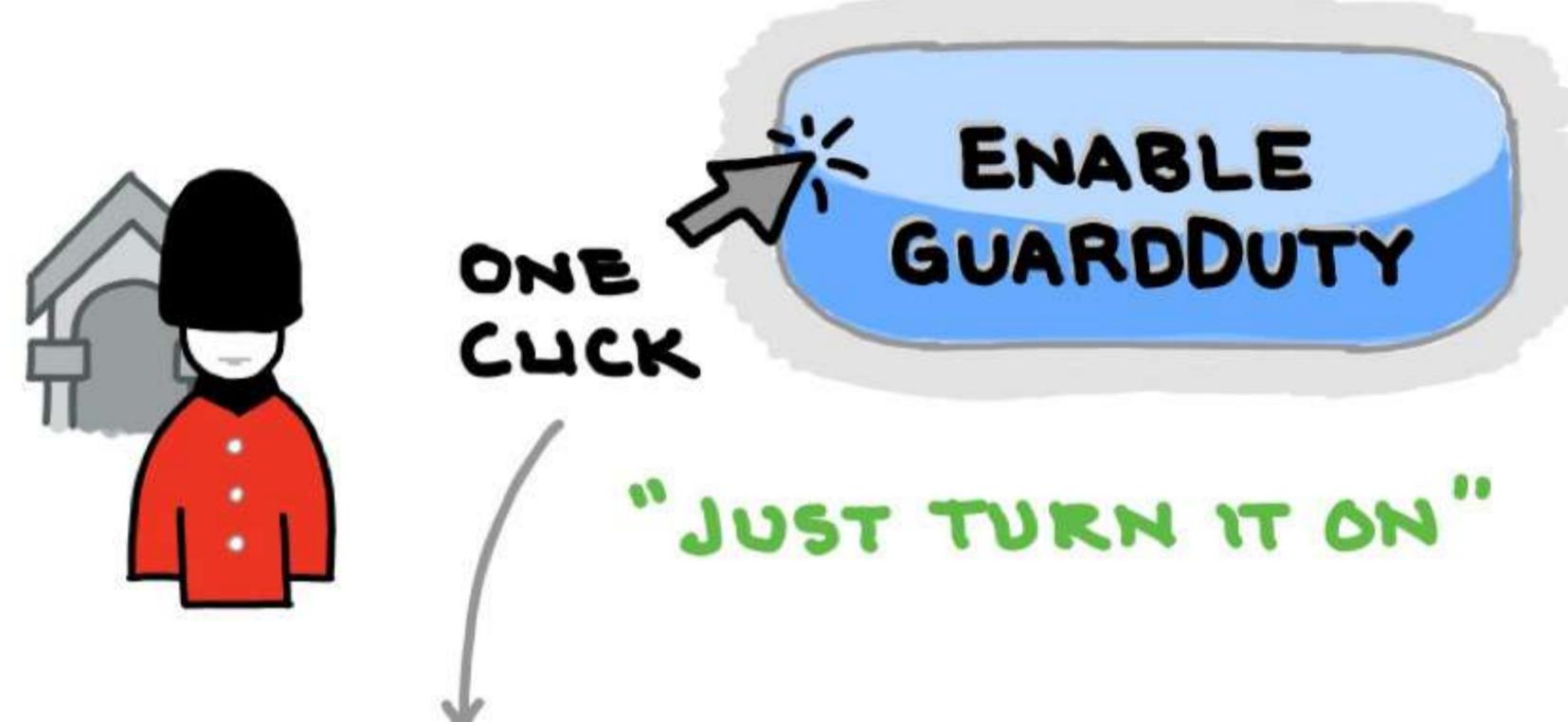


| | | |
|--|-------------------------|----------|
| | CONTENT CLASSIFICATION | \$5/GB |
| | EVENT PROCESSING | \$4/MM |
| | EXTENDED DATA RETENTION | 5¢/GB/Mo |
| + TRAIL EVENT COSTS + S3 GET/LIST COSTS | | |





CENTRALIZED THREAT DETECTION



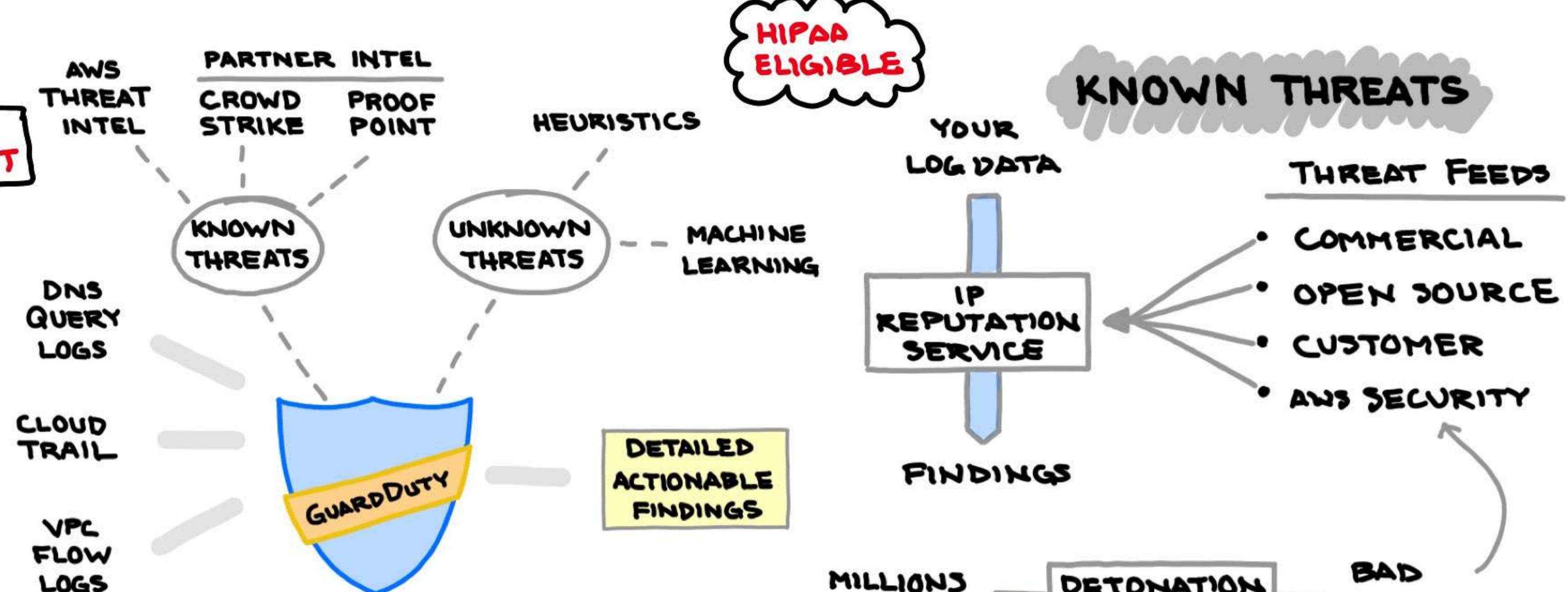
GIVES AWS ACCESS TO
YOUR CLOUDTRAIL, VPC
FLOW, & DNS QUERY LOGS

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

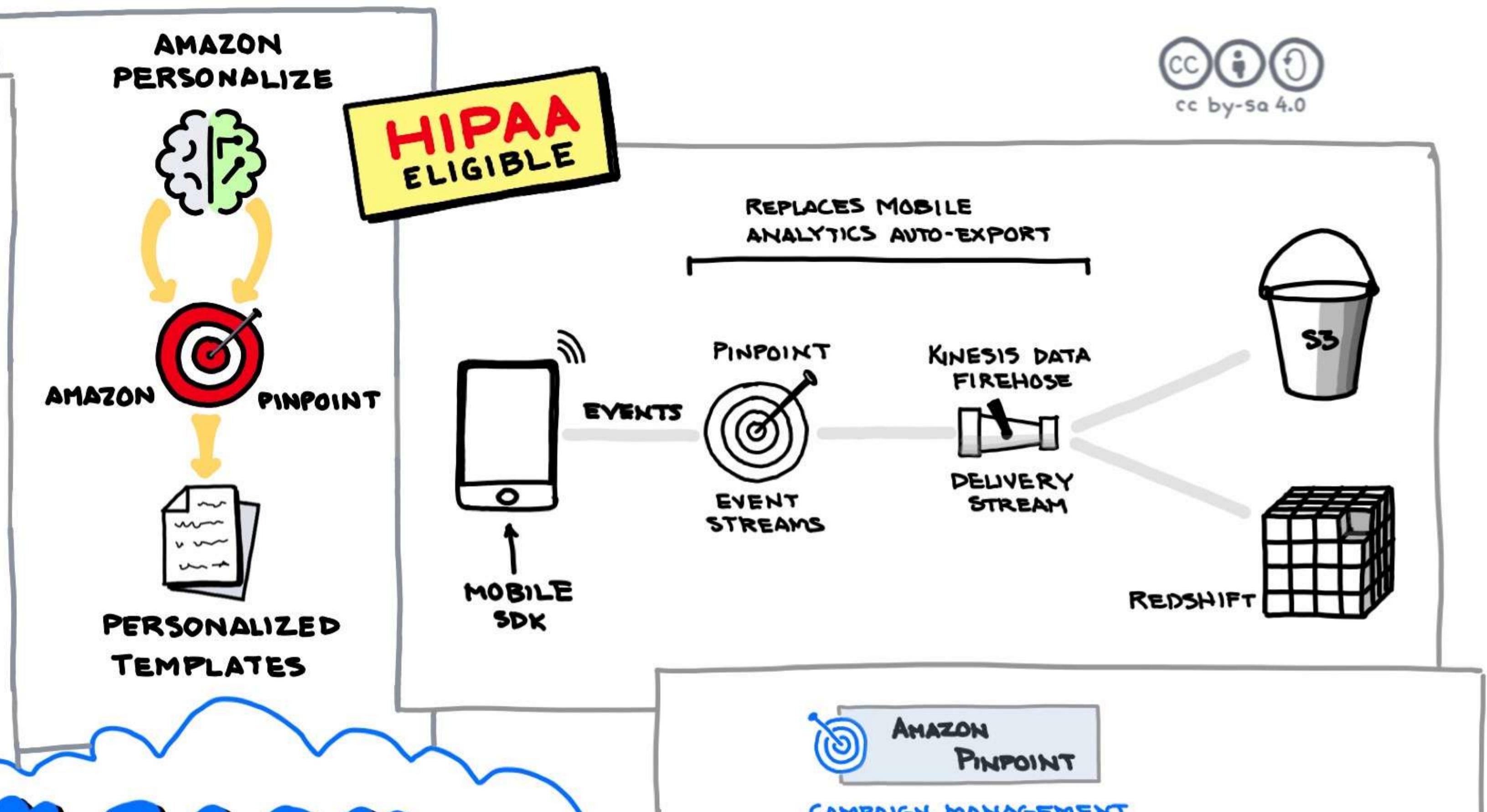
DETECTION CATEGORIES

- 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



1 CUSTOMER ANALYTICS

- DEMOGRAPHIC DATA
- INTEREST DATA
- ENGAGEMENT DATA

| | | |
|-----------|------------|---|
| METRICS | ACTIVATION | DAILY USERS CHURN RATE RETENTION RATE AVG REVENUE LIFETIME VALUE ... |
| RETENTION | CONVERSION | |

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

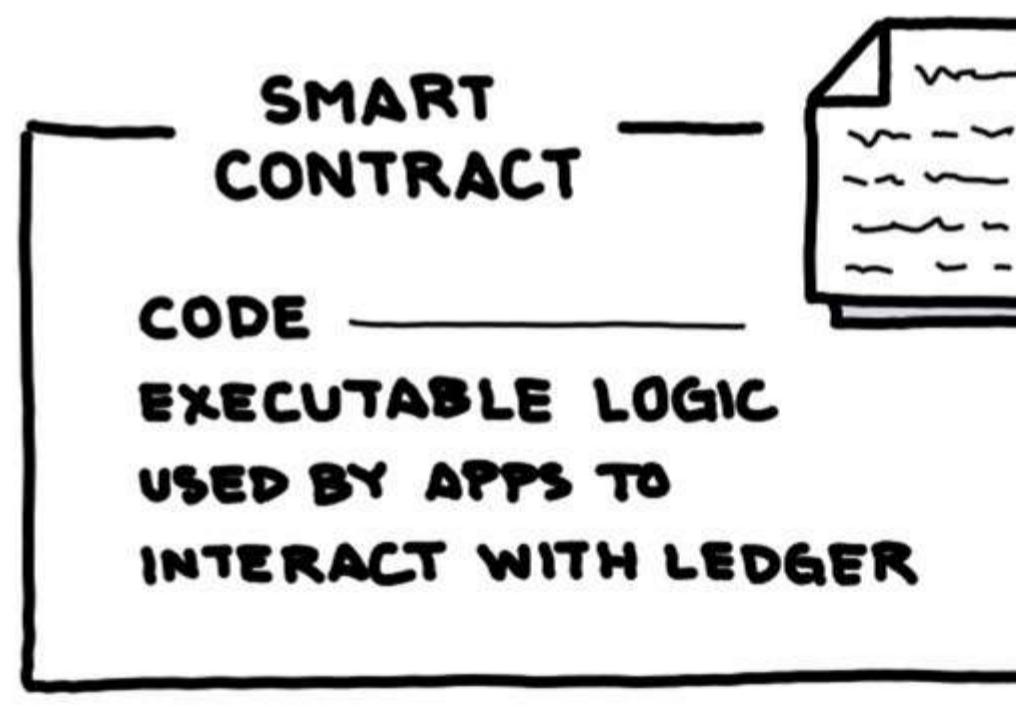
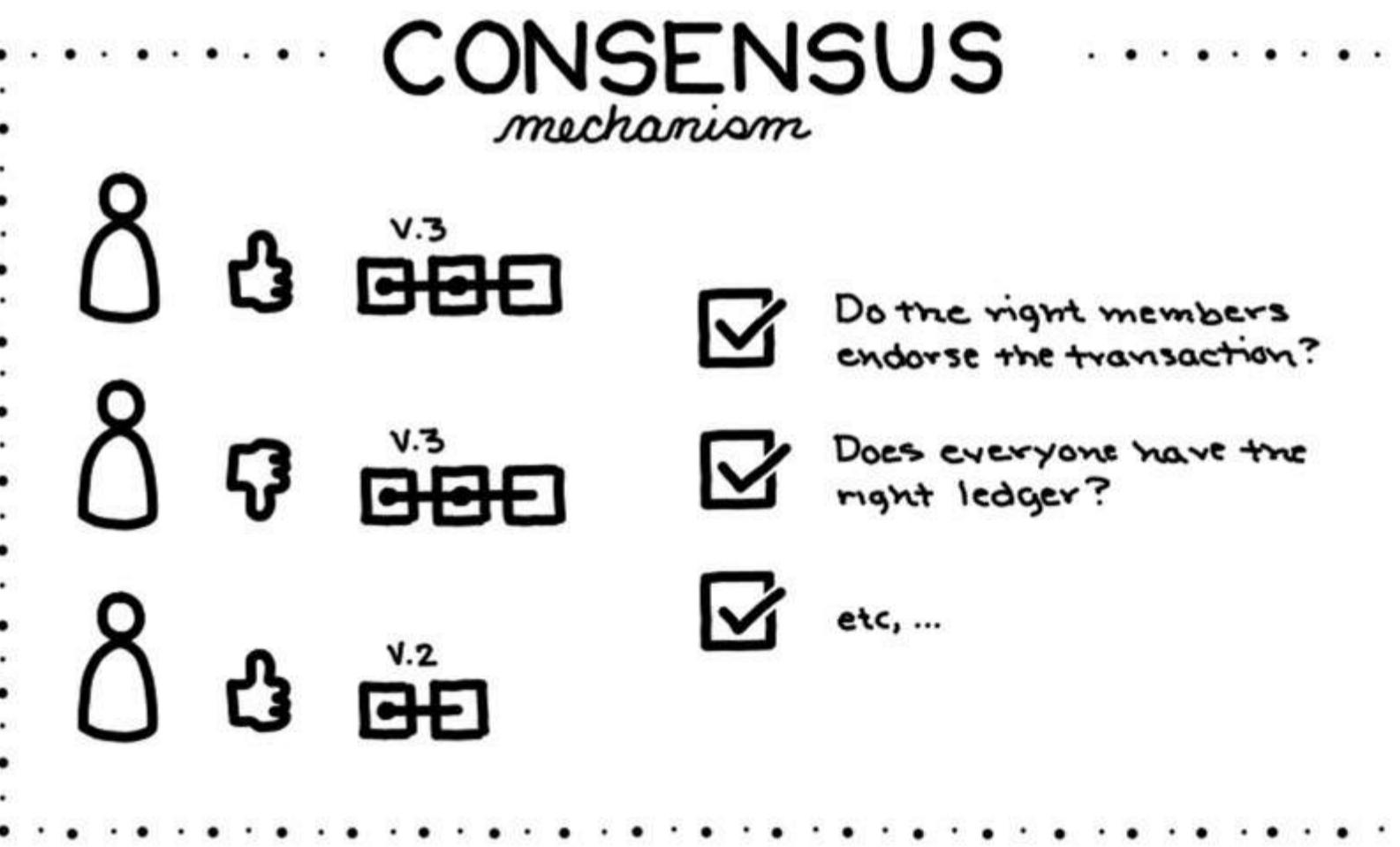
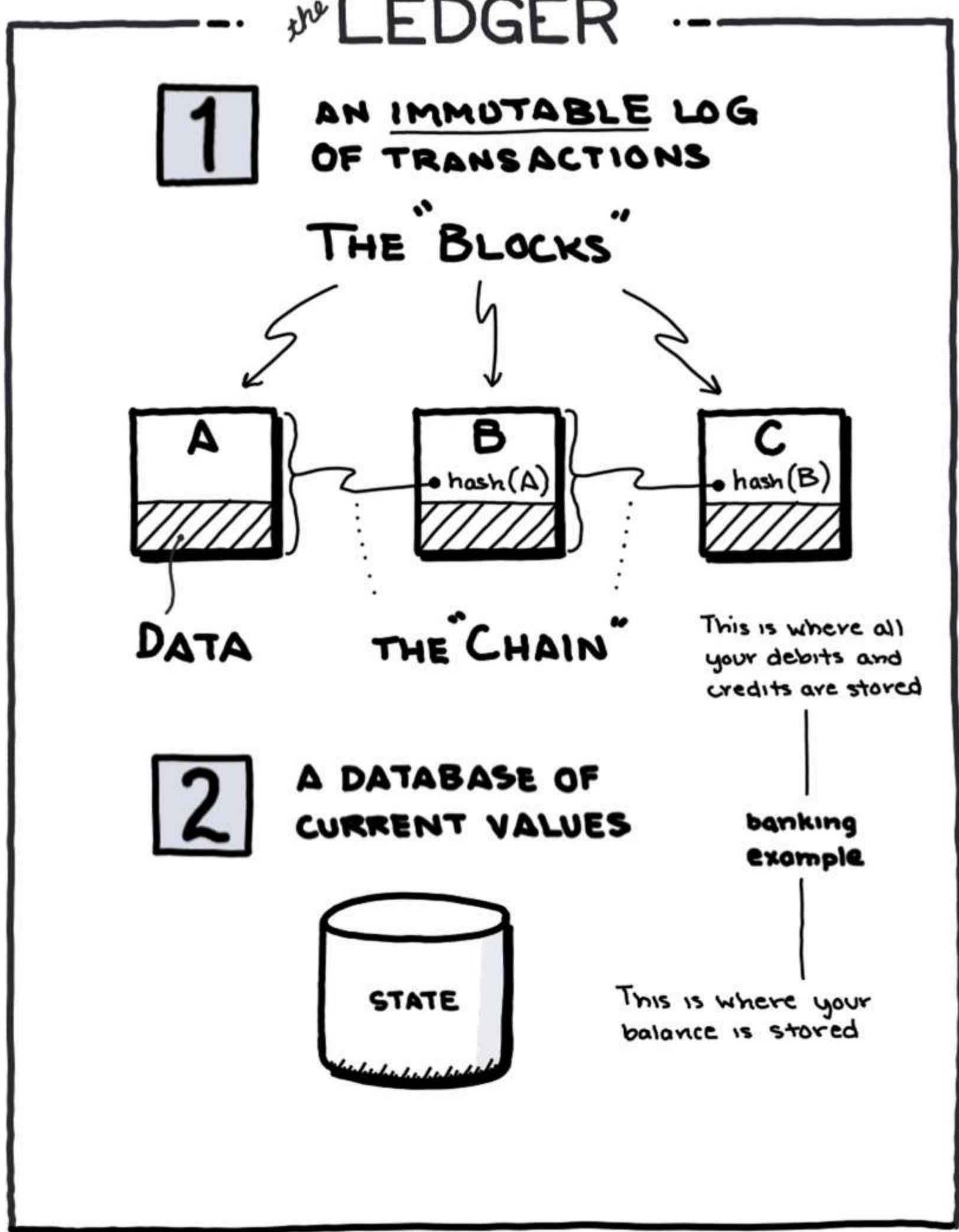
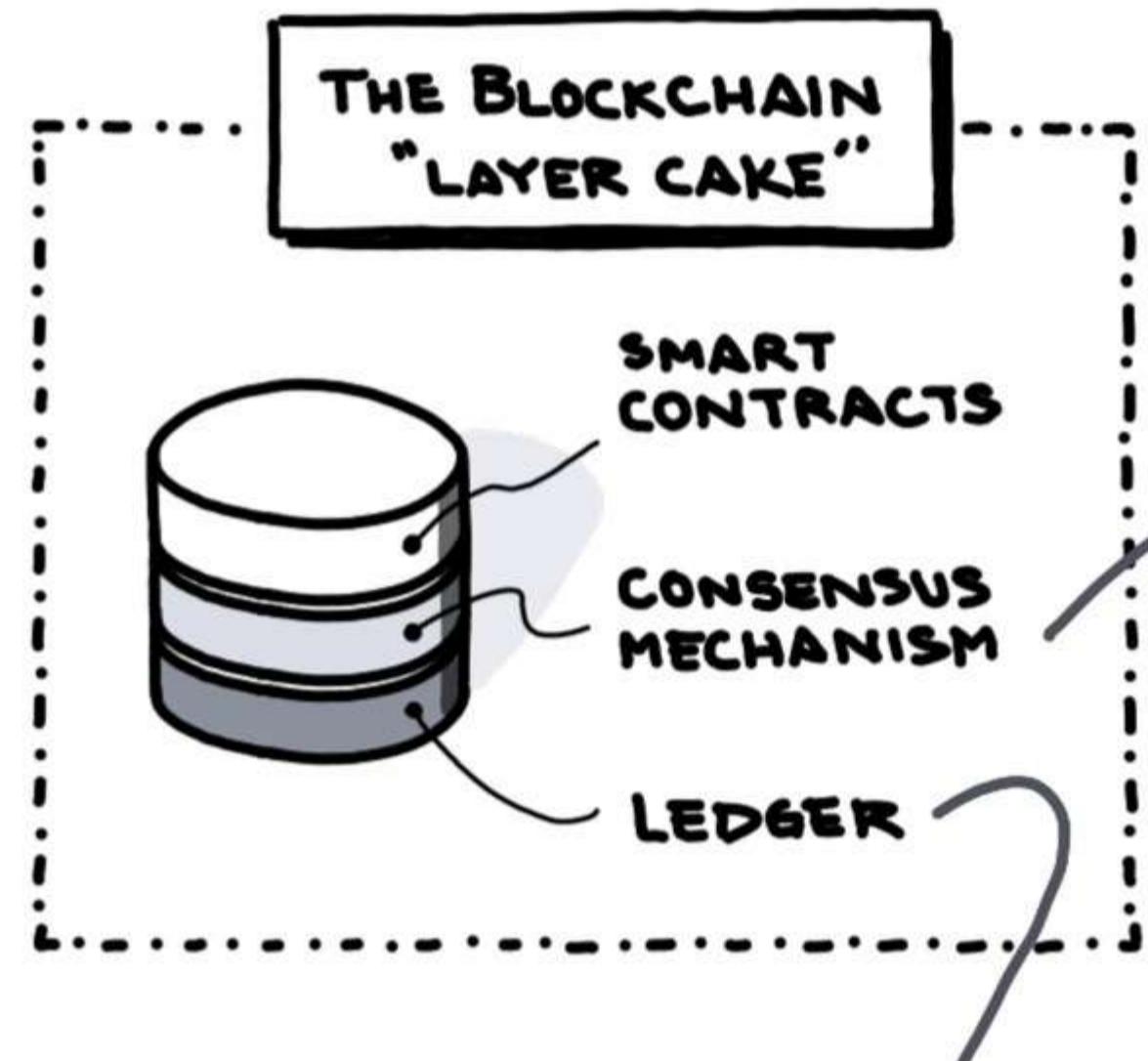
AMAZON MANAGED

BLOCKCHAIN

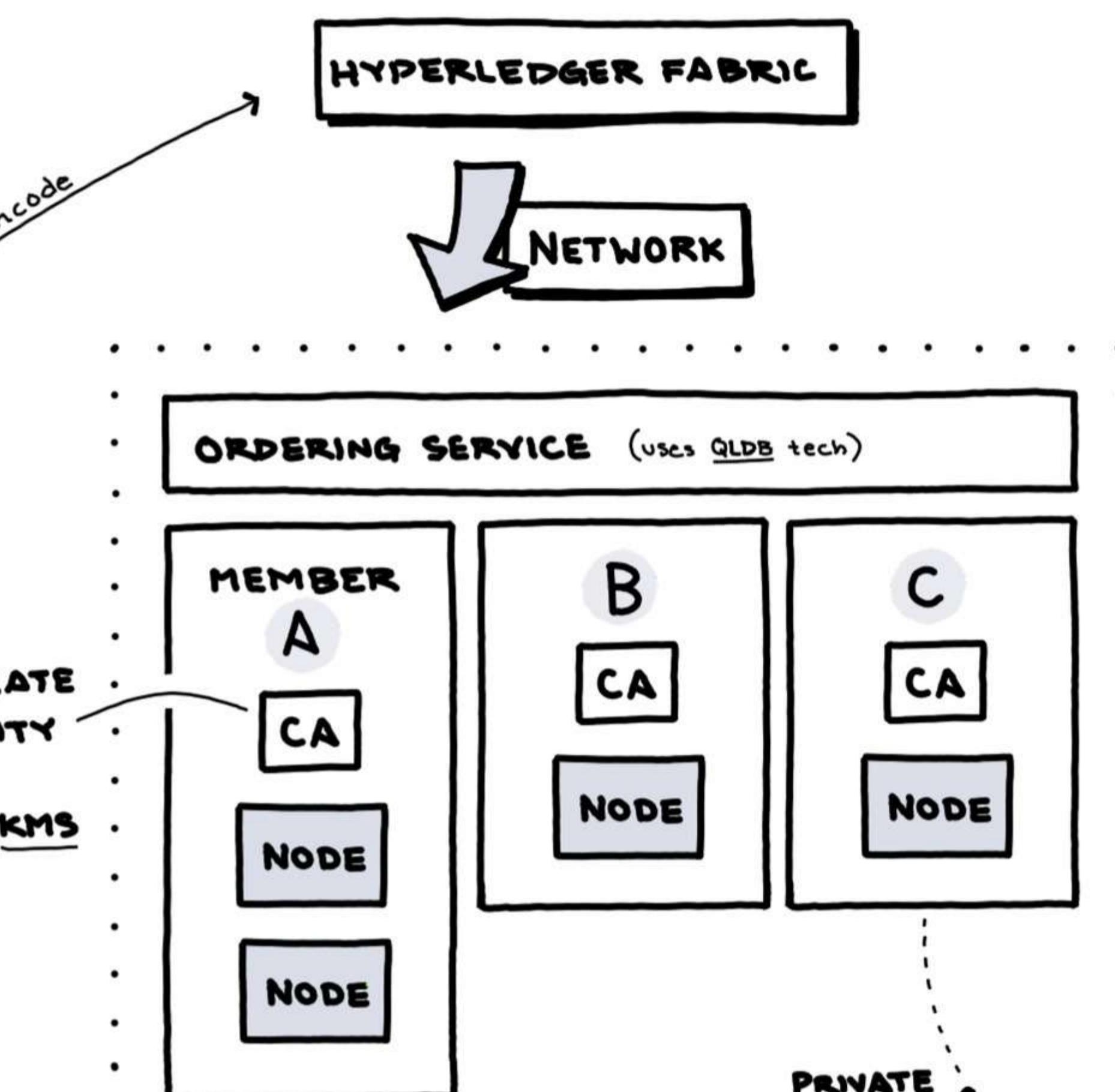
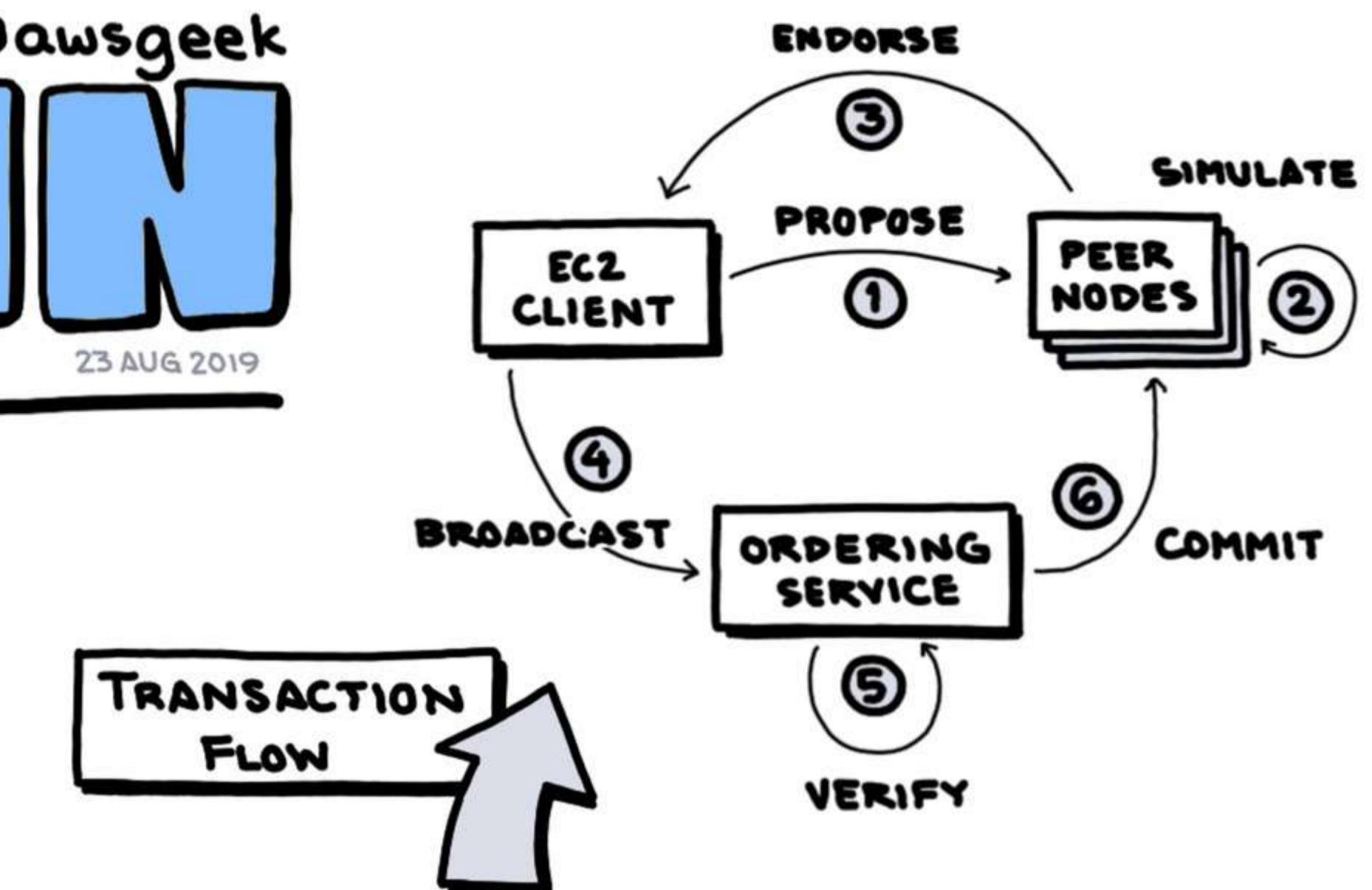
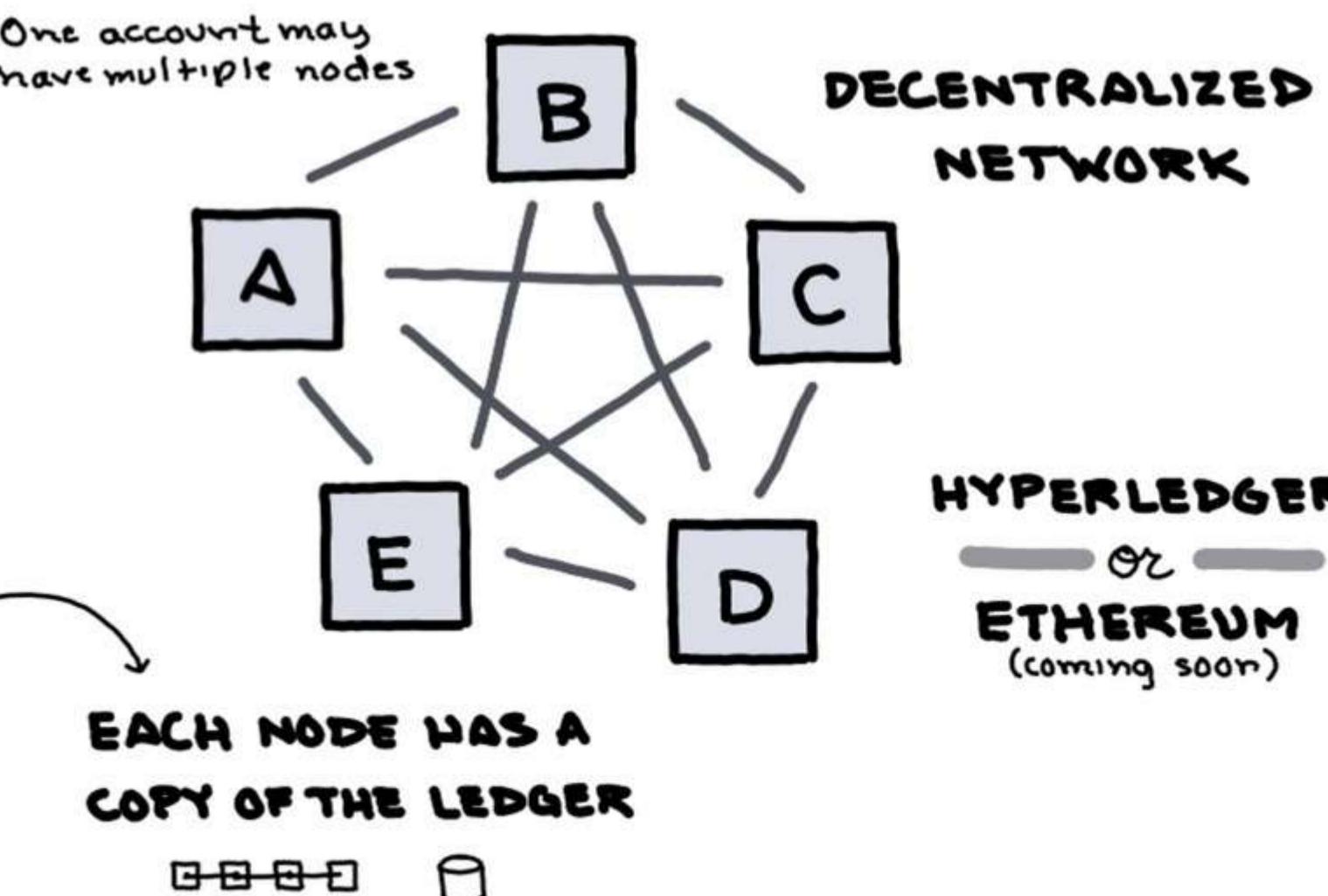
@awsgeek

23 AUG 2019

SCALABLE BLOCKCHAIN NETWORKS



AMAZON MANAGED BLOCKCHAIN



A CREATES BUT
DOESN'T OWN NETWORK



CC BY SA

Account C