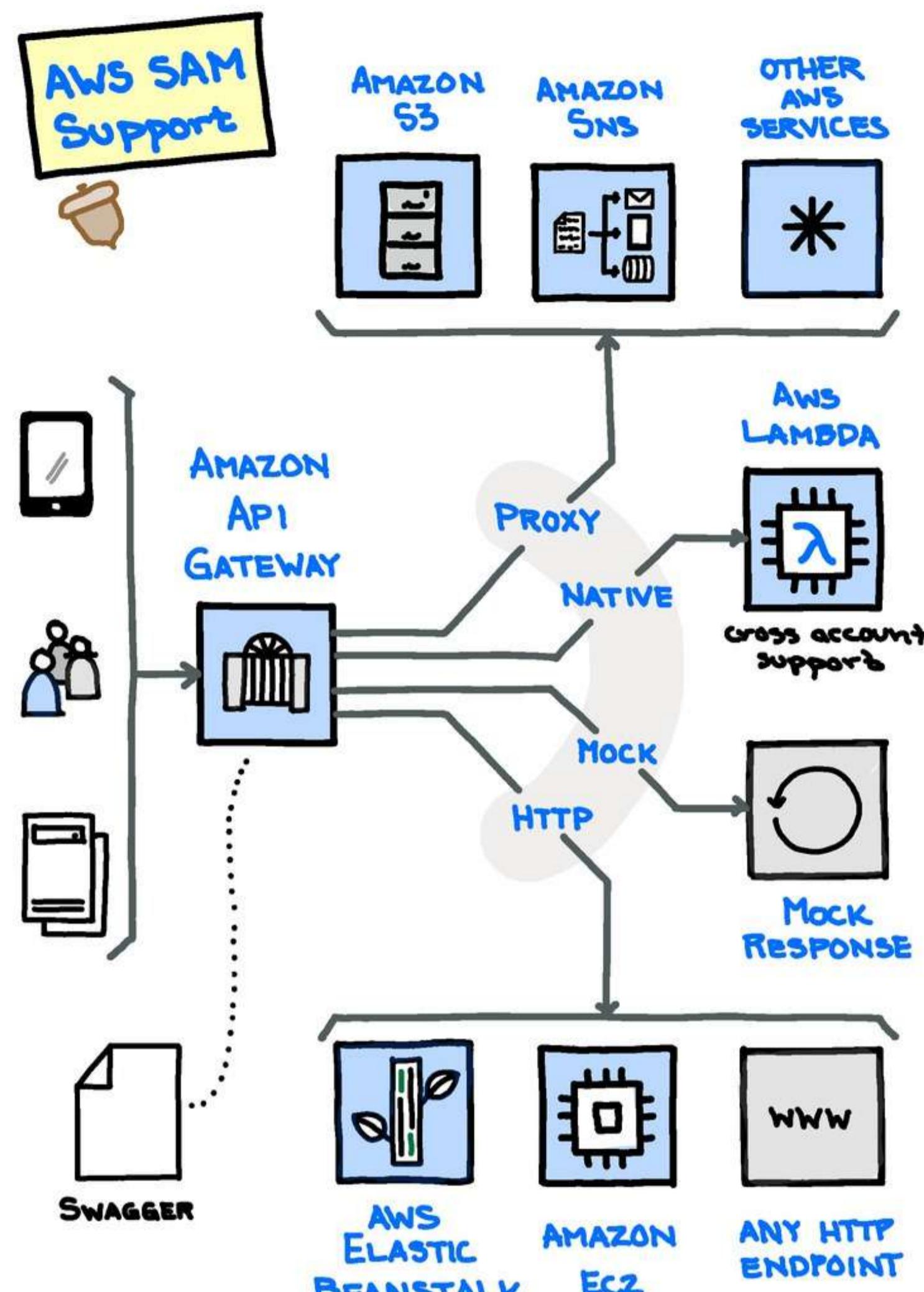


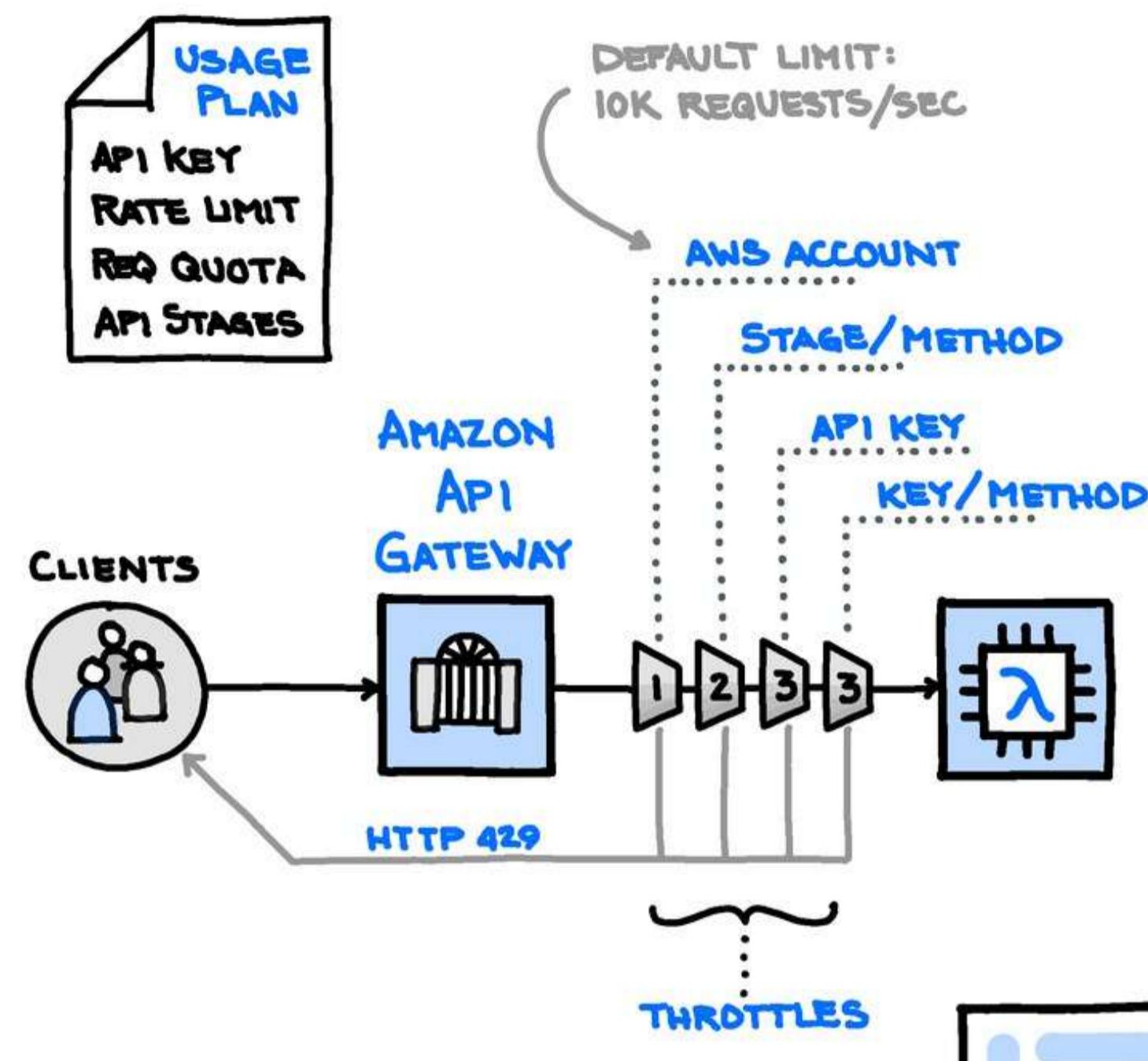
AWS Sketchbook



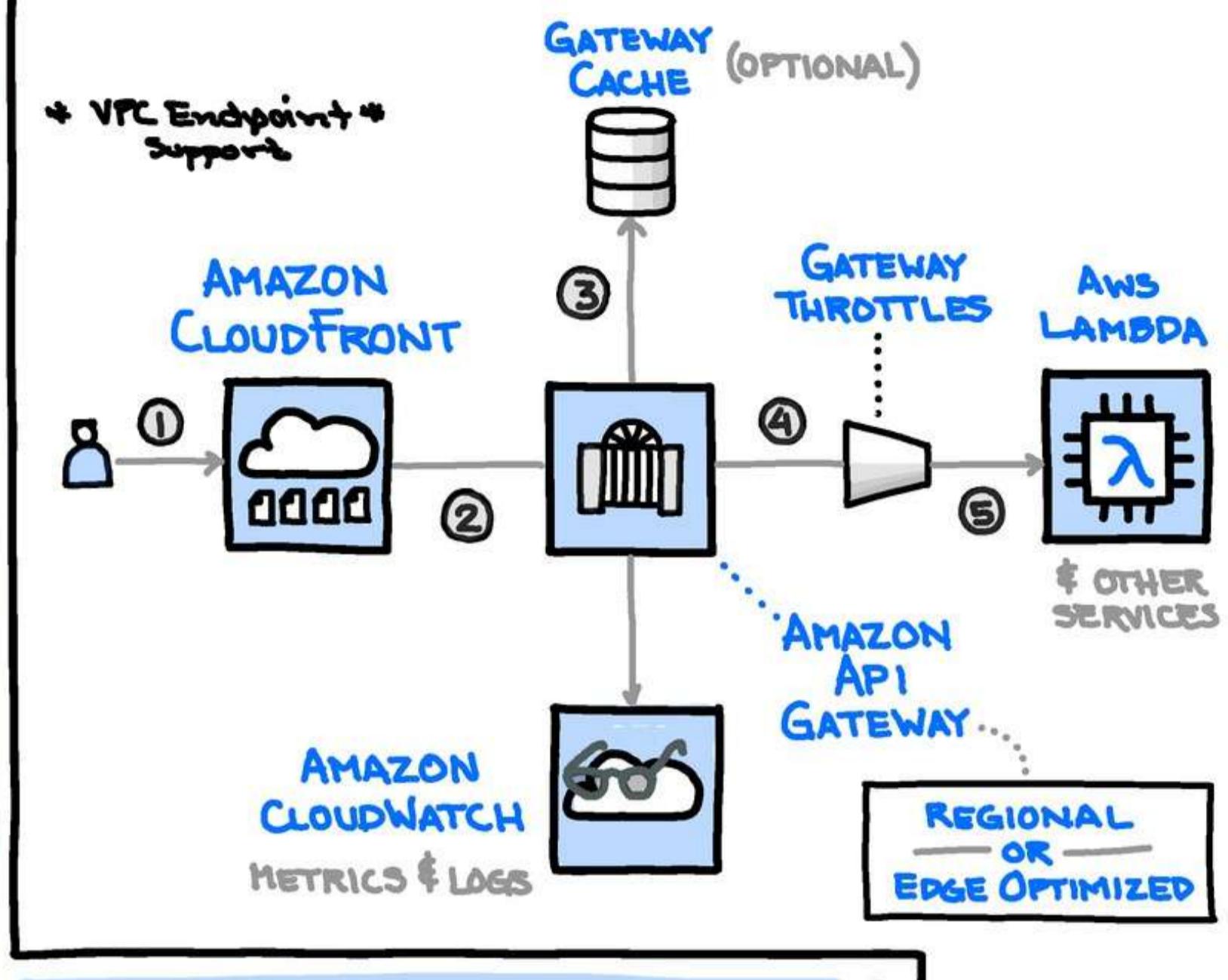
THE INTEGRATIONS



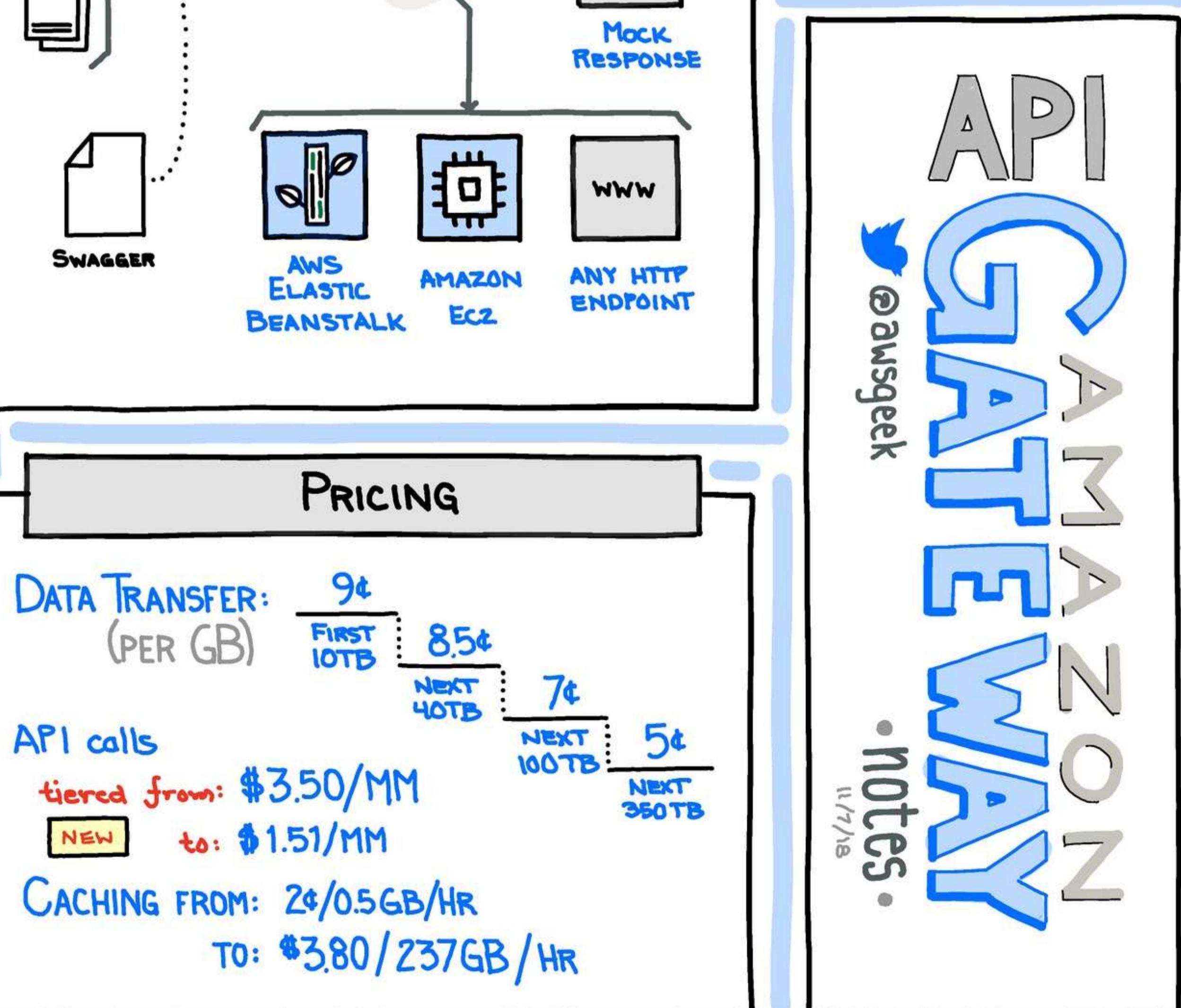
THROTTLING

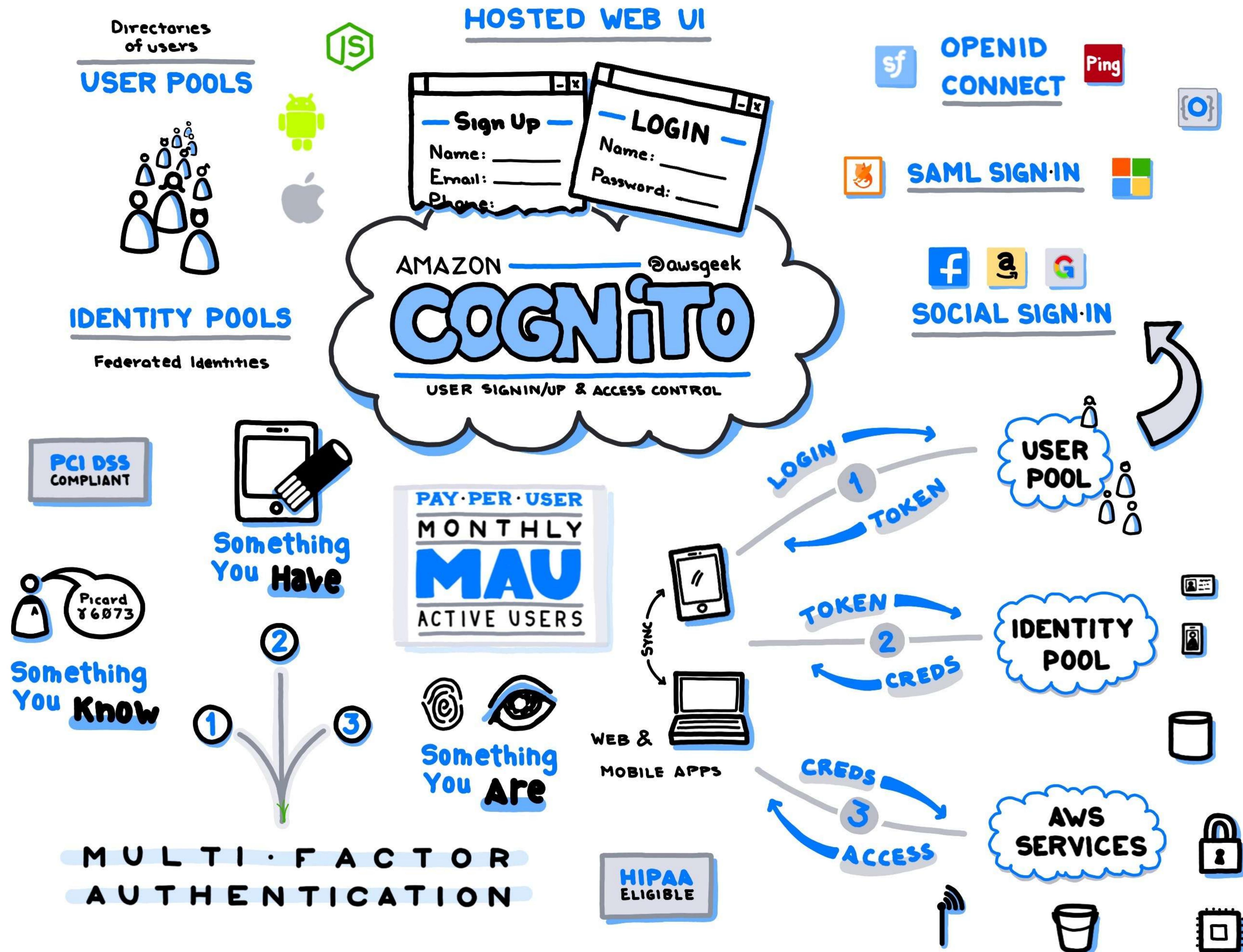


UNDER THE HOOD



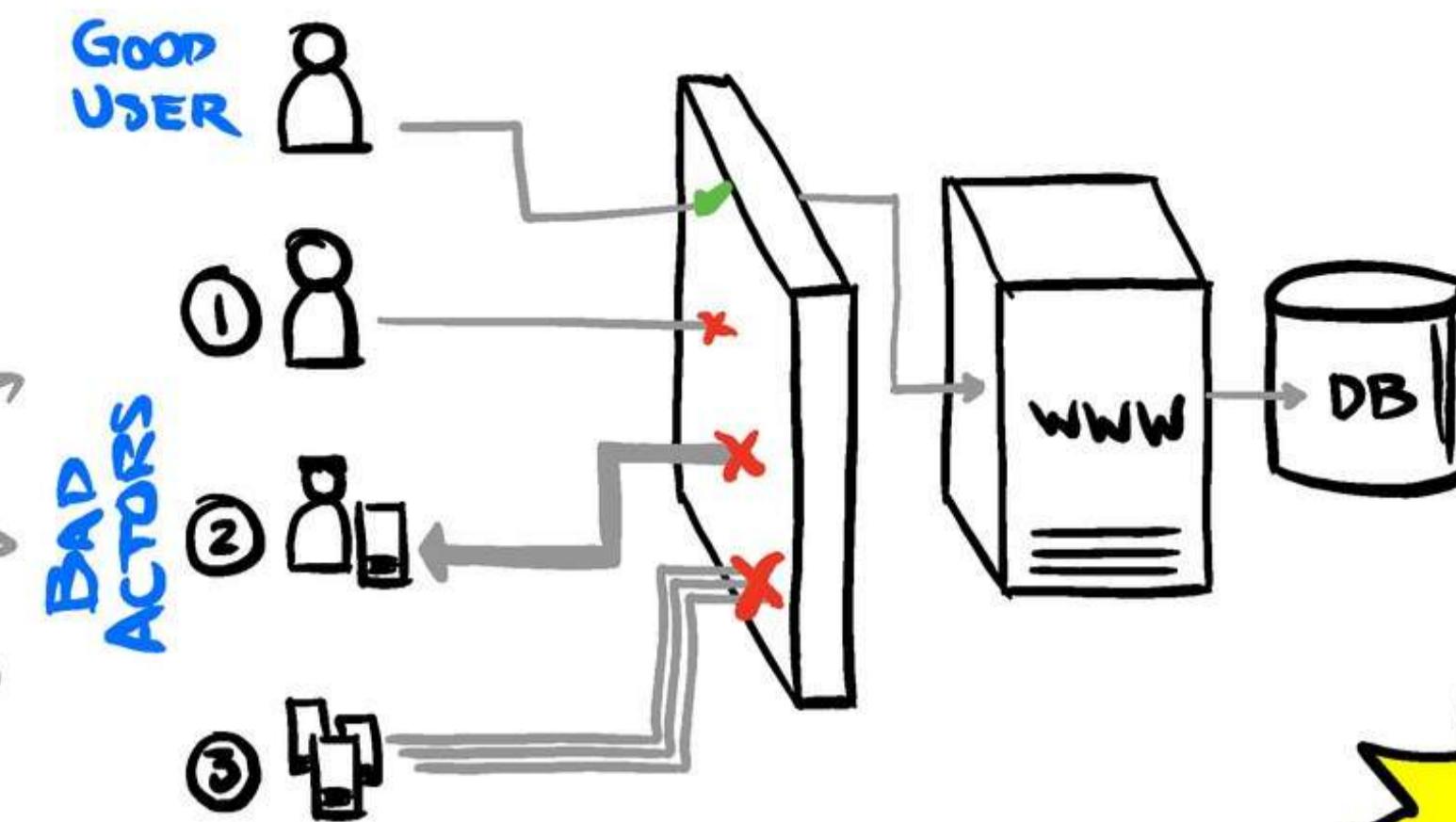
EVOLUTION OF AN API



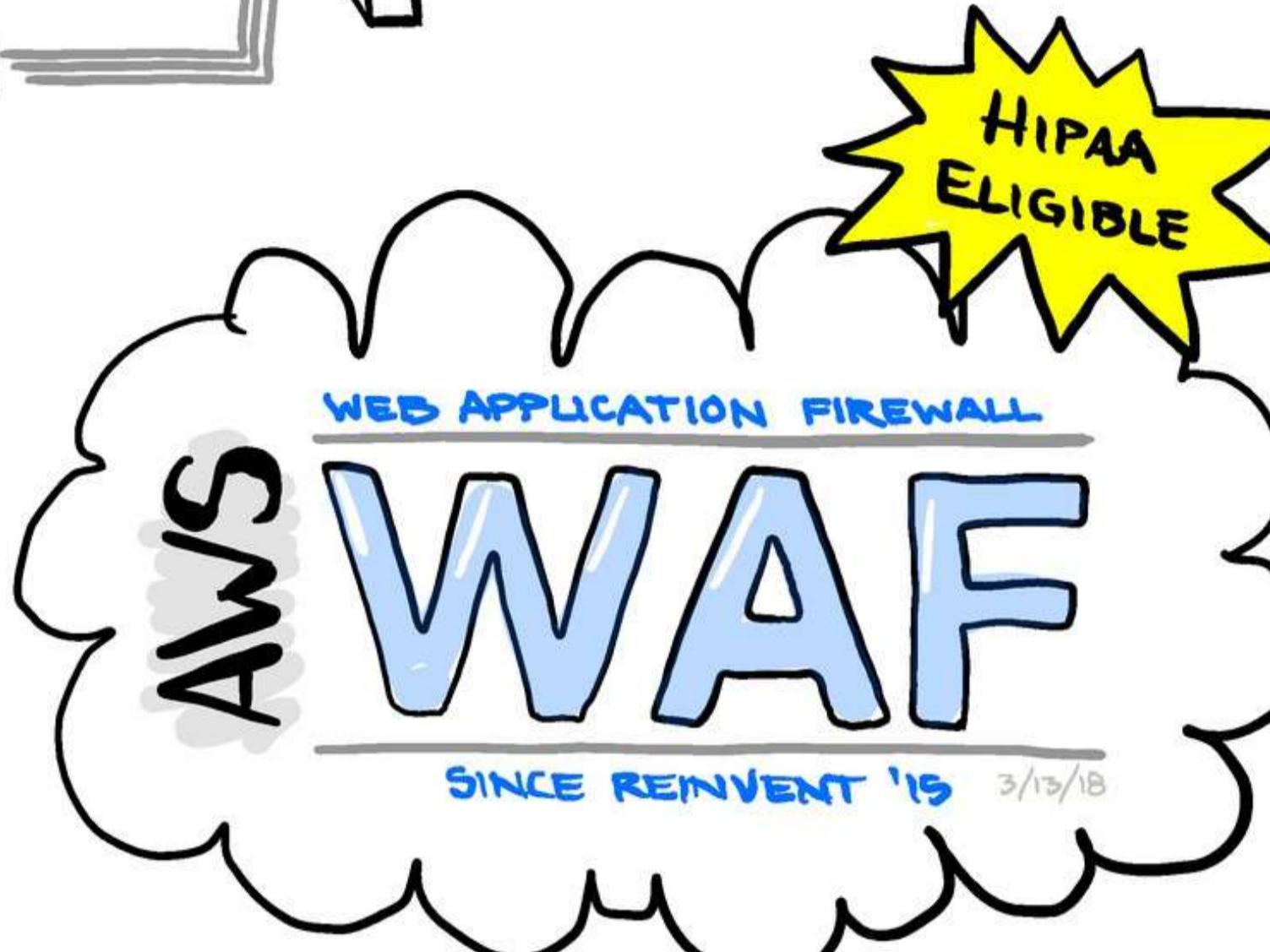
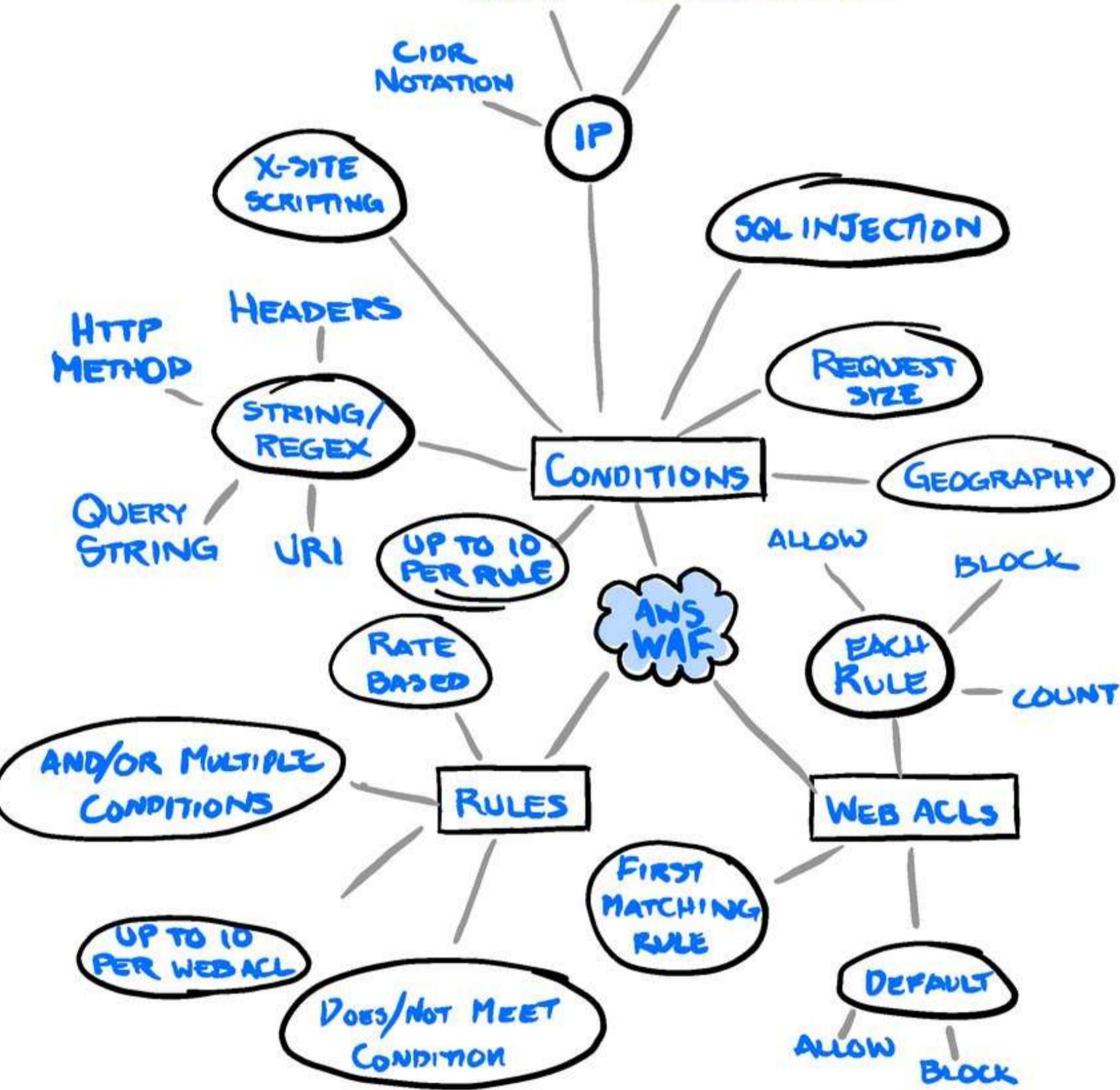


COMMON WAF USE CASES

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

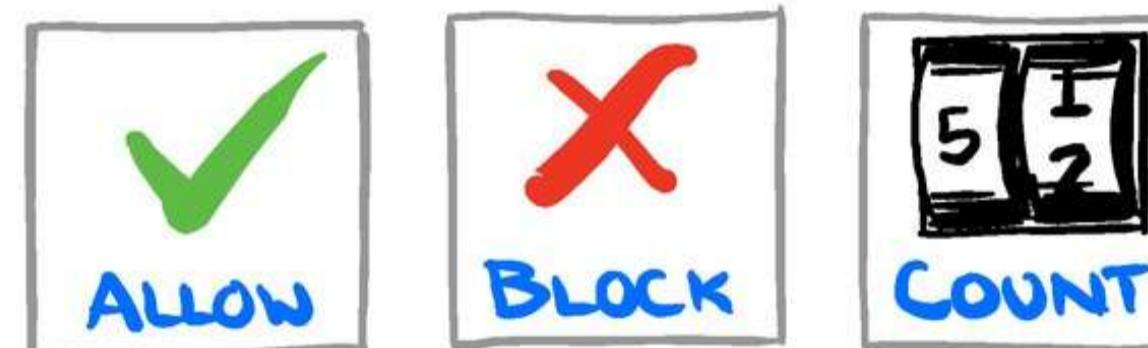


18,16,24,32 ONLY UPTO 10K PER CONDITION



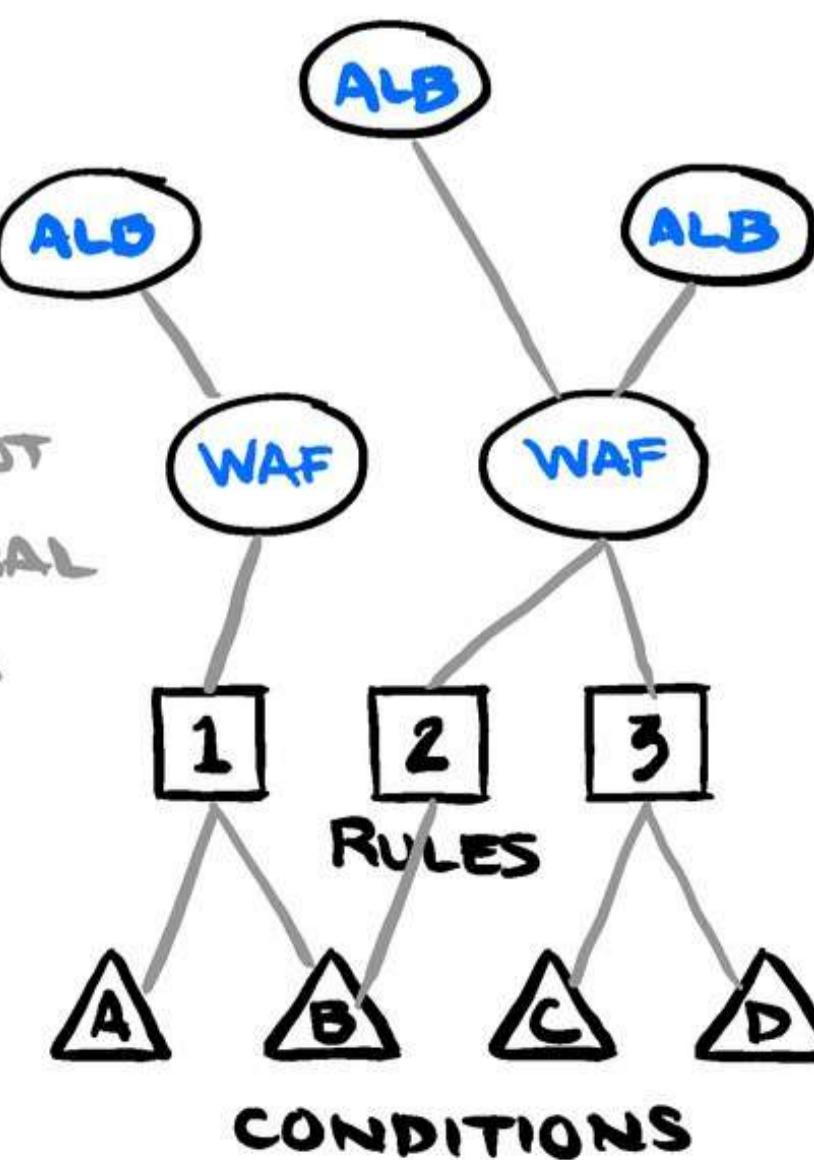
@awsgeek

jerry.hargrove@



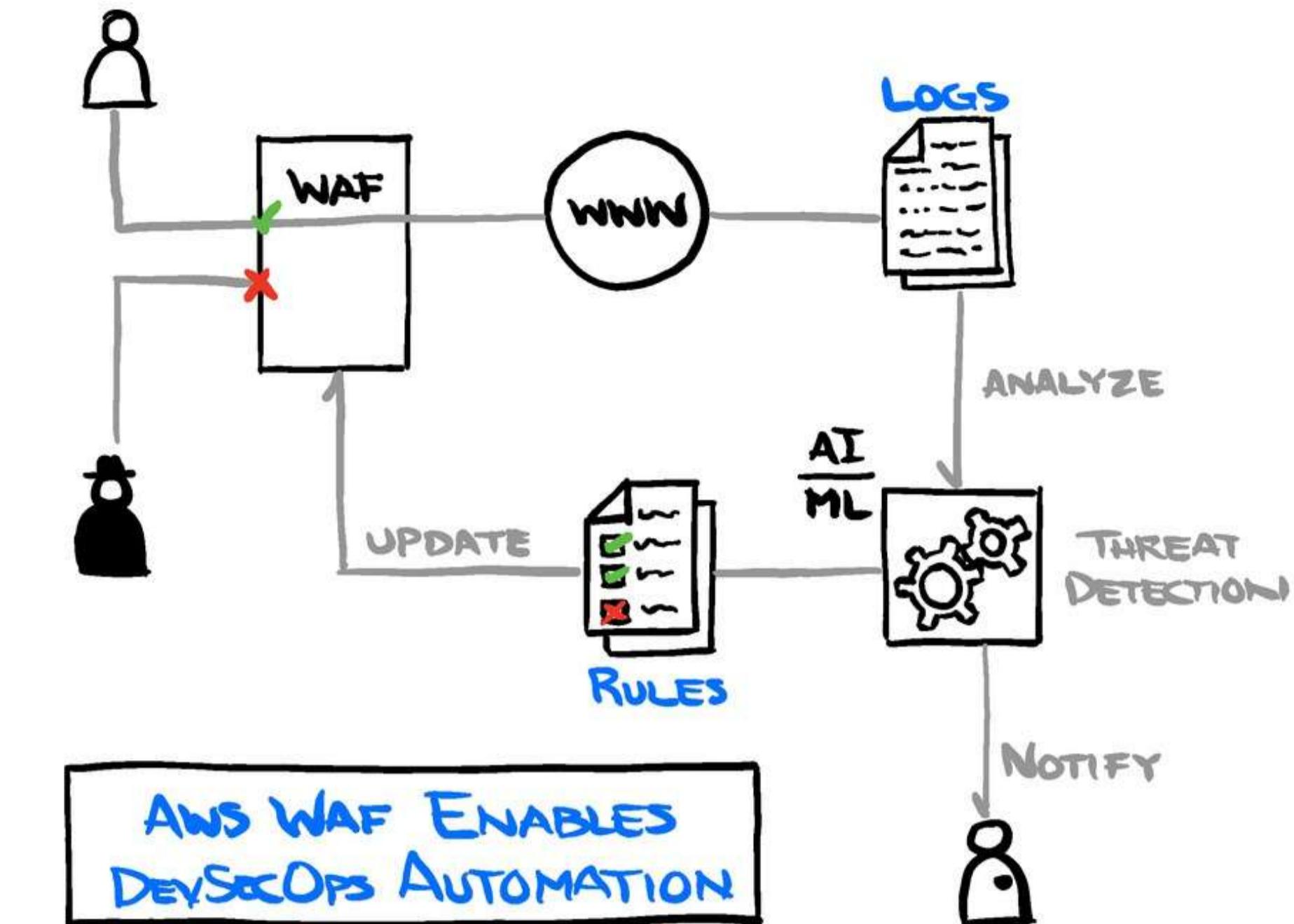
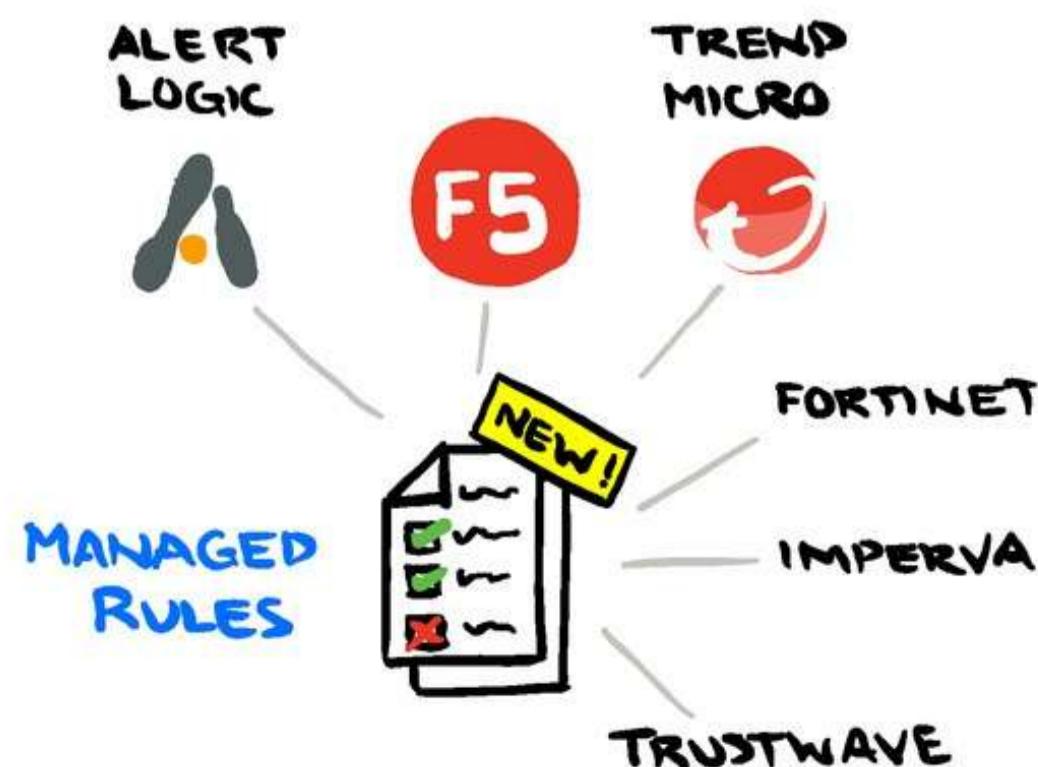
* ACL, RULE, CONDITION ARE EITHER GLOBAL OR REGION SPECIFIC

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

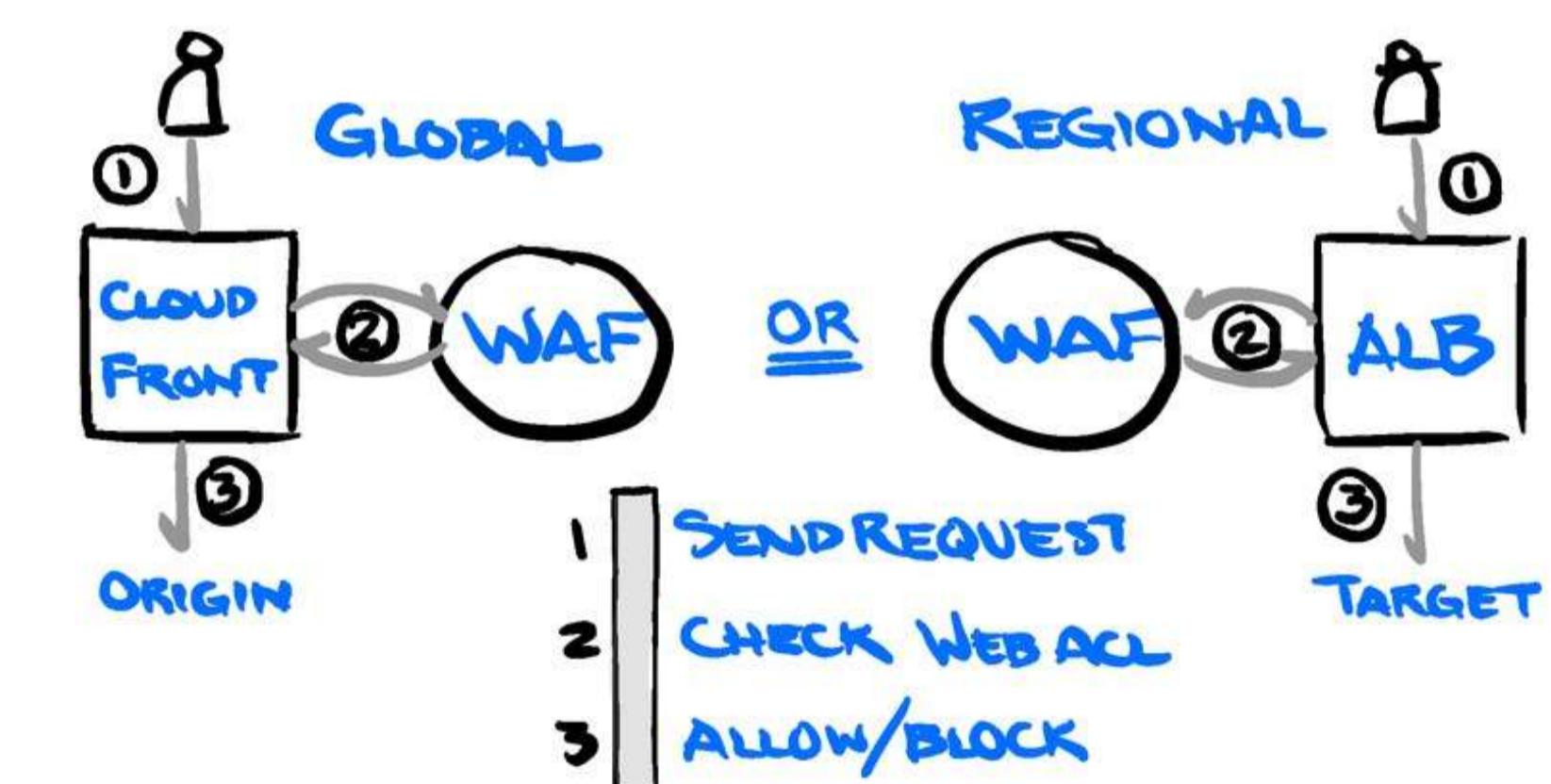


\$5/WEB ACL/Mo
\$1/RULE/WEBACL/Mo
60¢/MM REQUESTS

FOLLOW:
Aws SECURITY BLOG

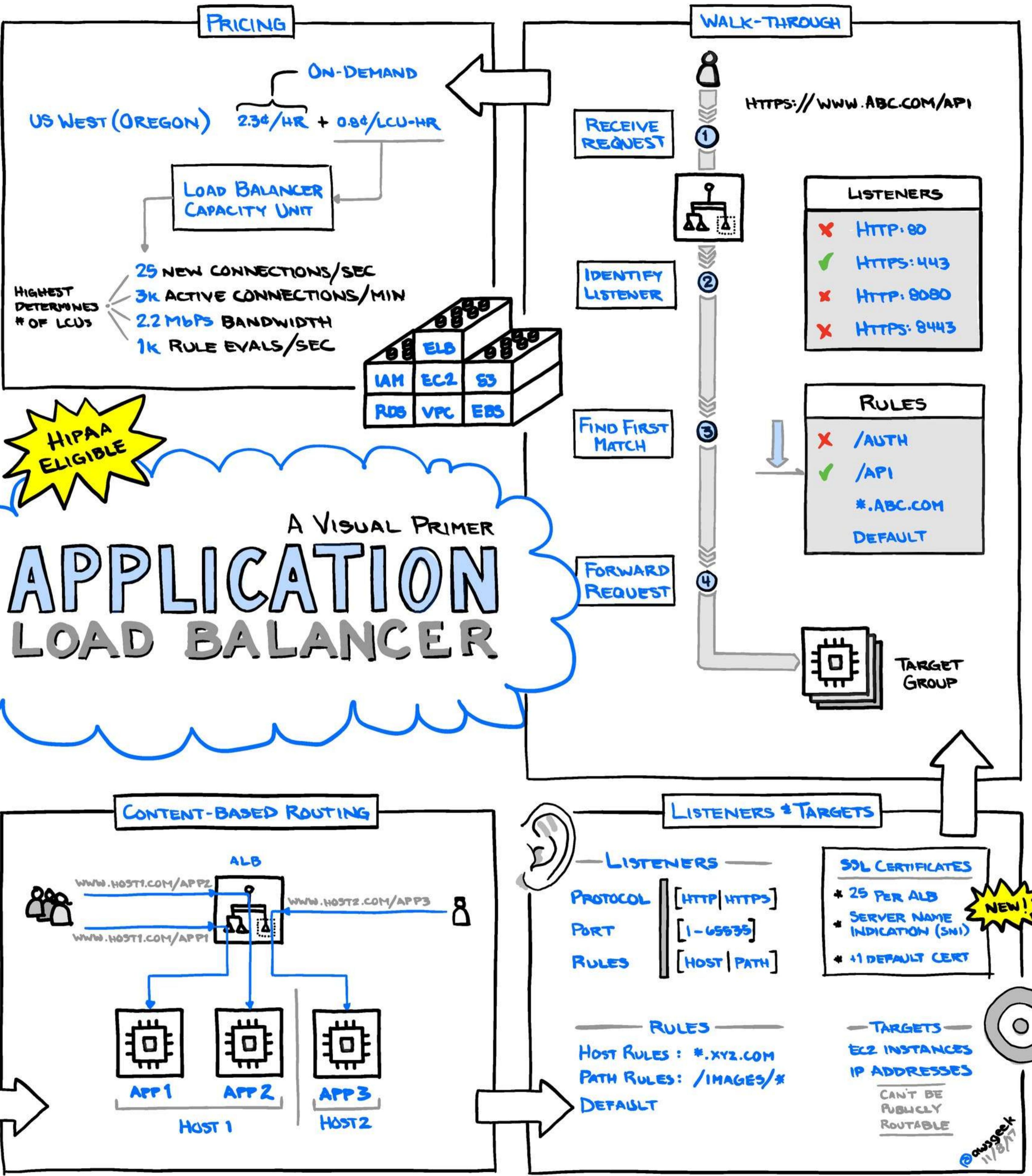
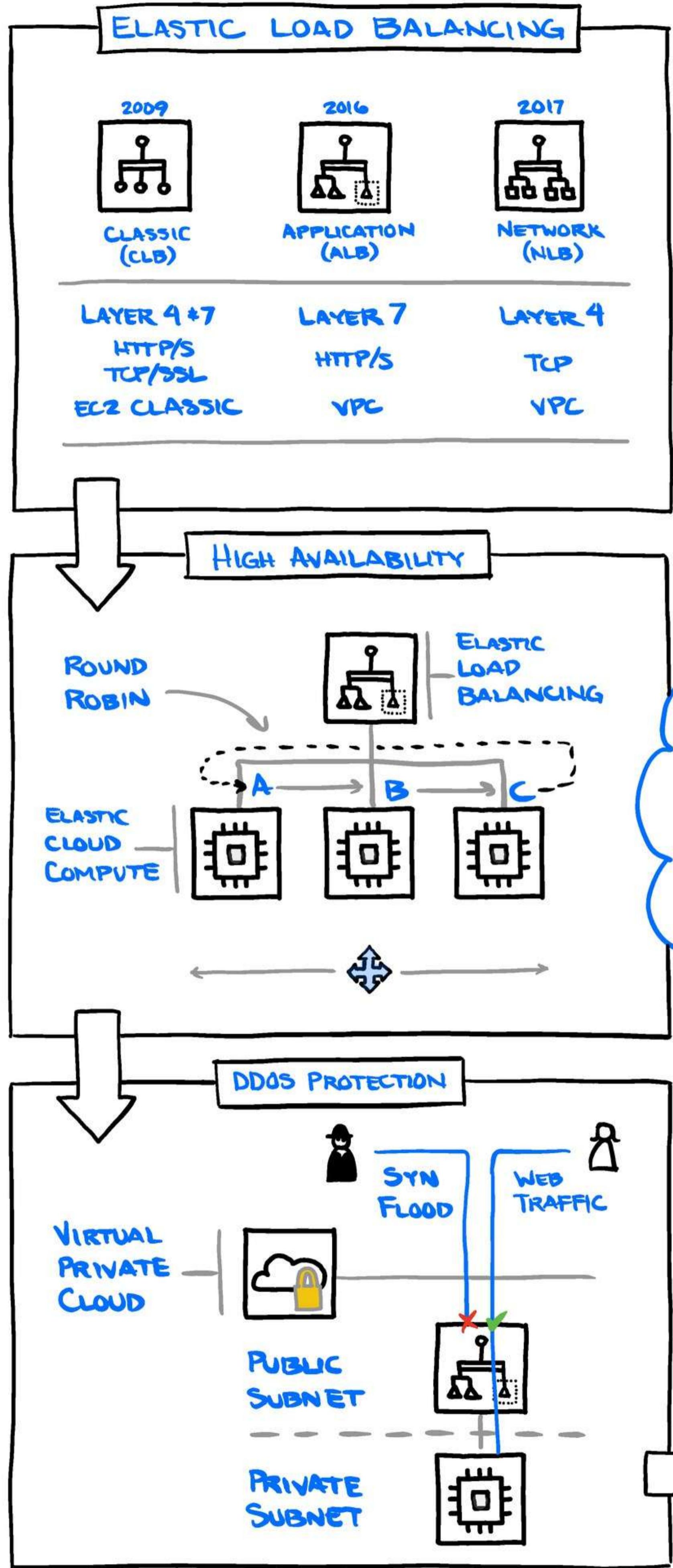


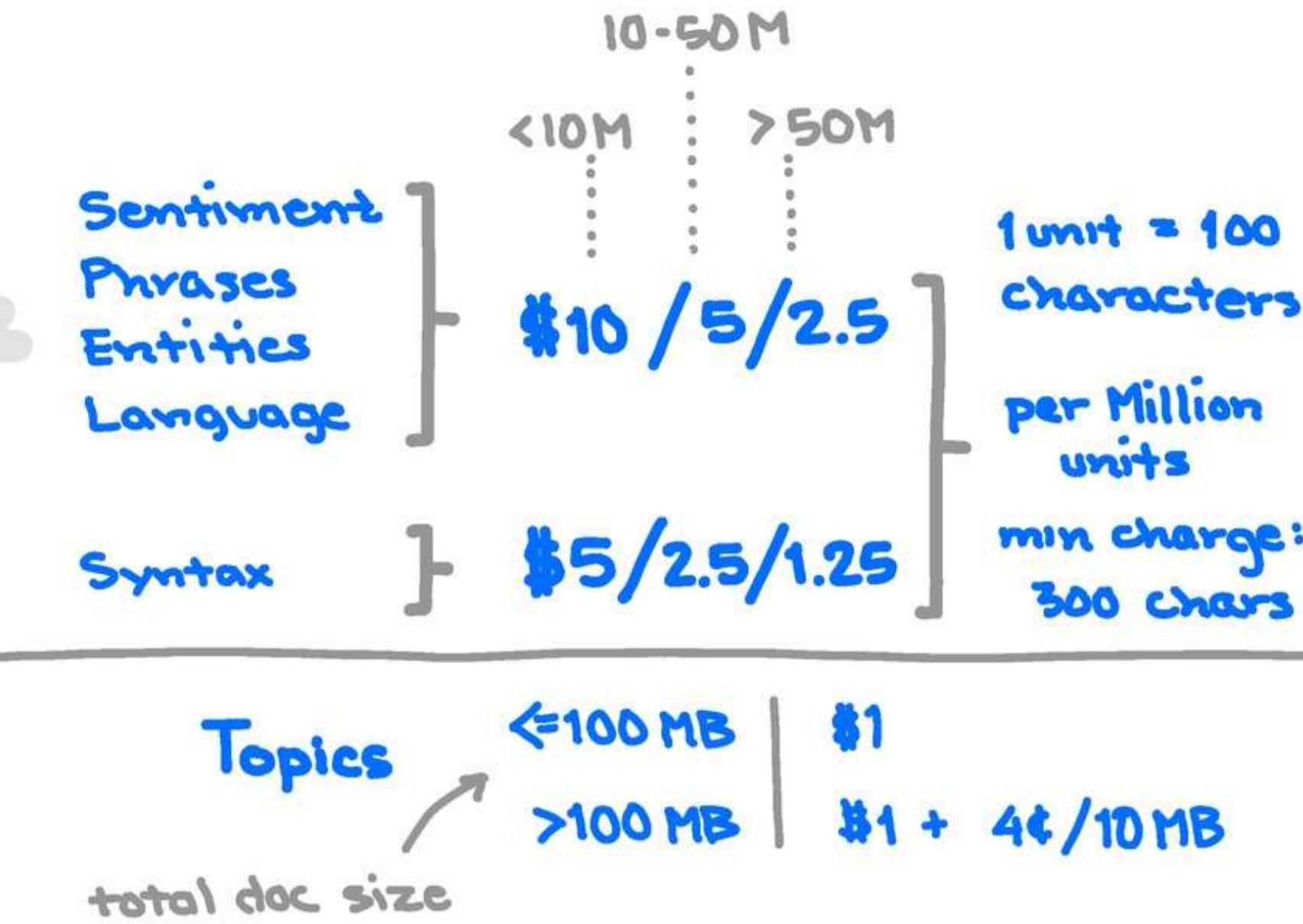
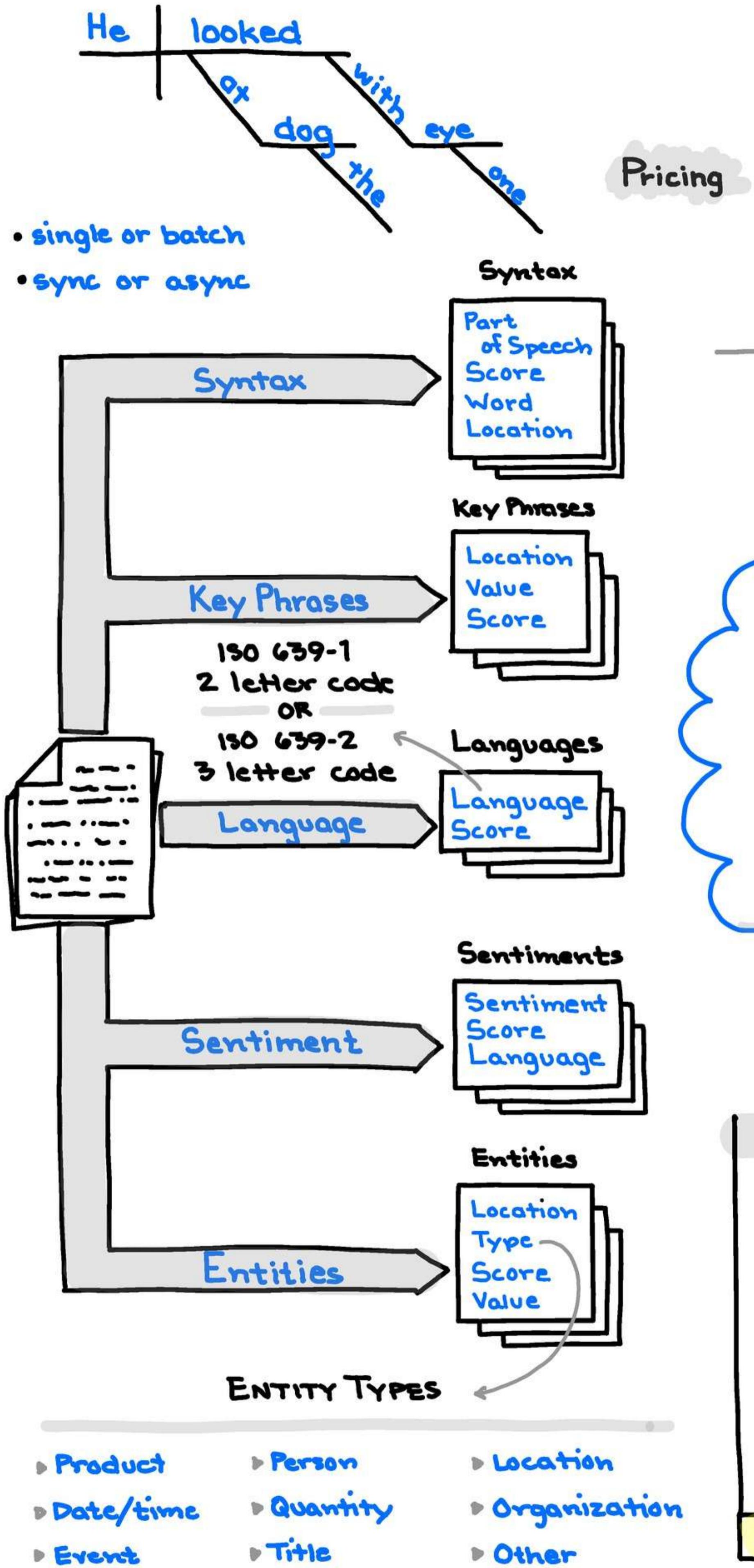
AWS WAF ENABLES DEVSECOPS AUTOMATION



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



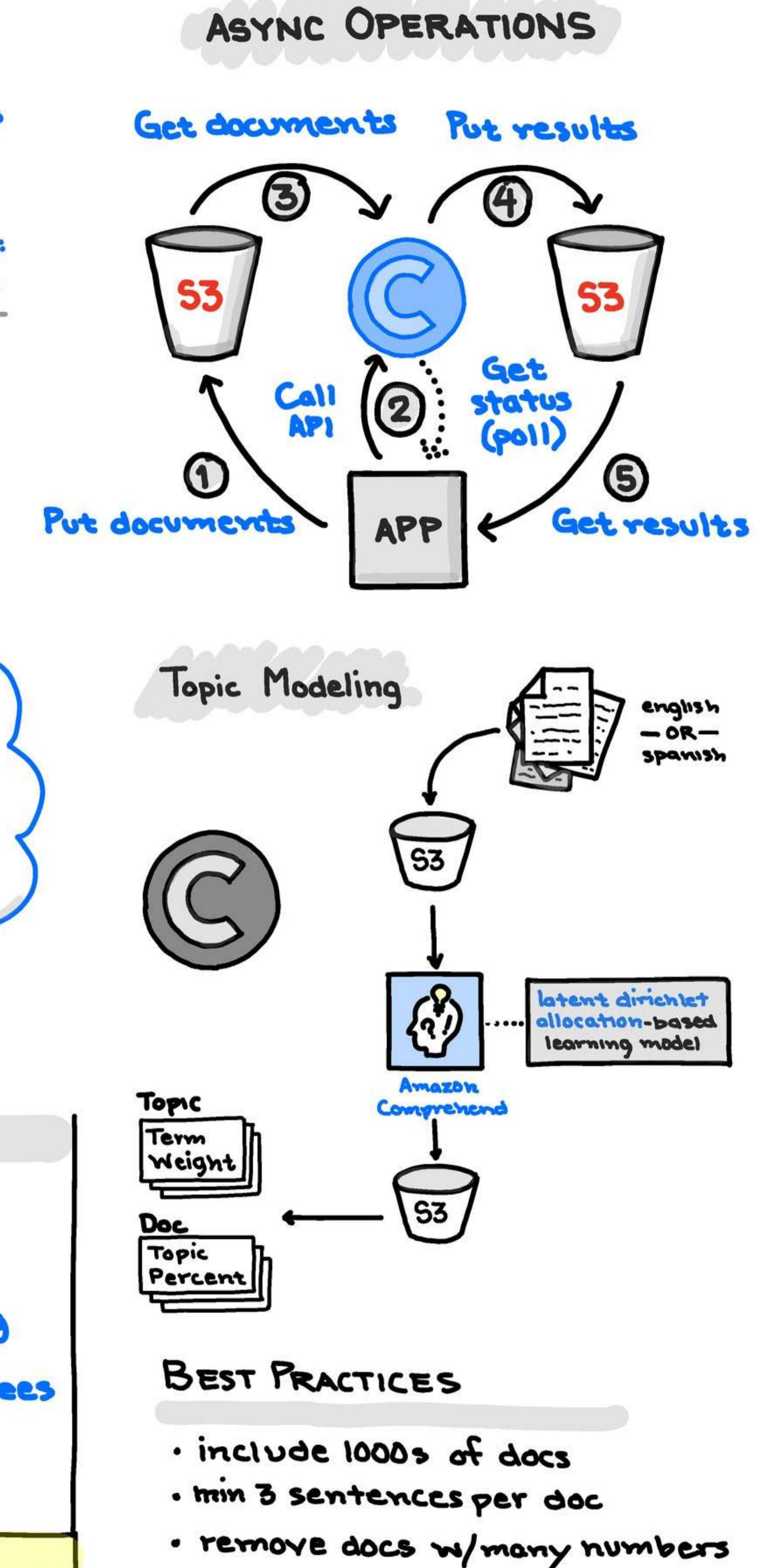


DATA PRIVACY

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



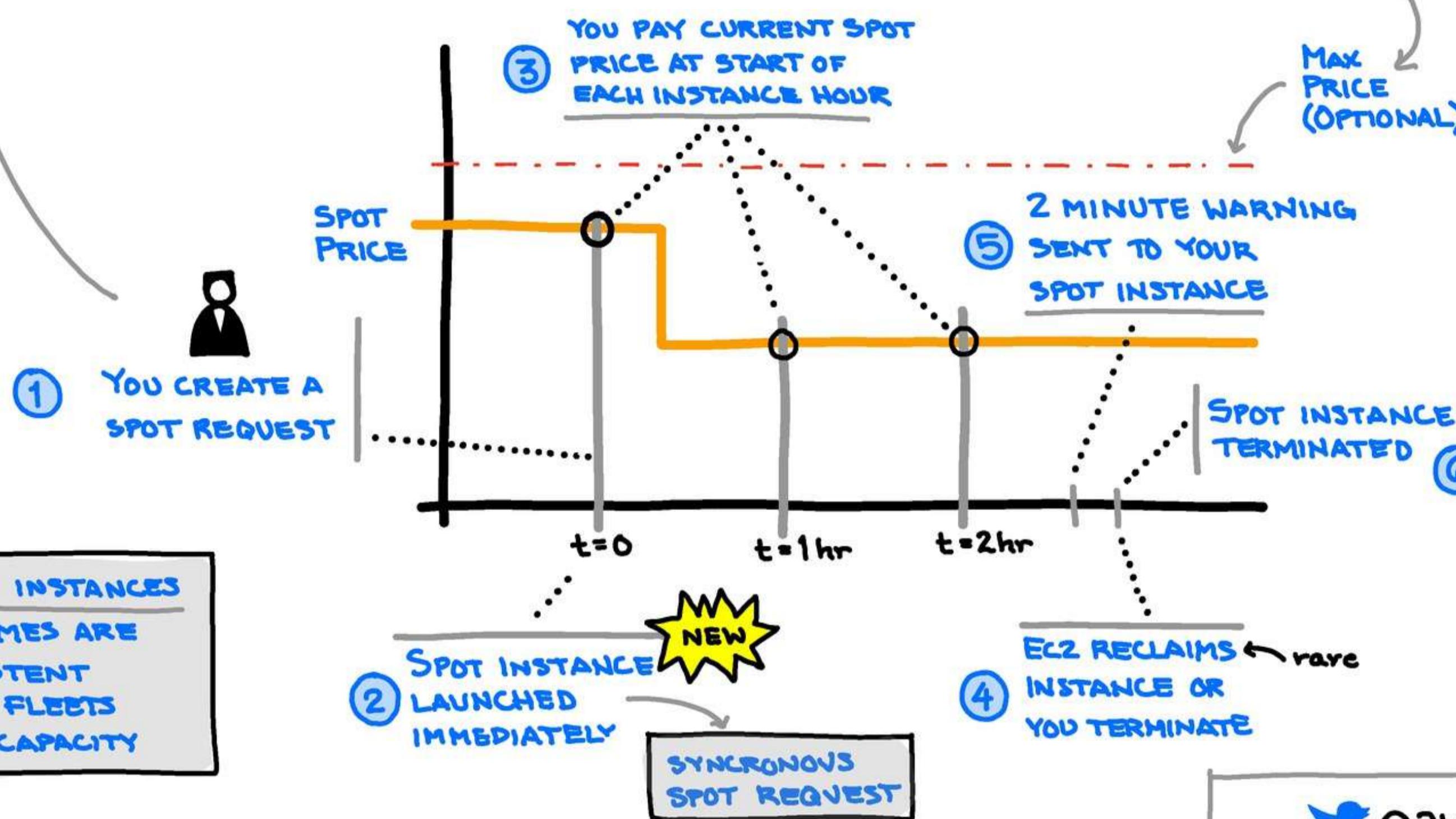
SPOT REQUEST

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

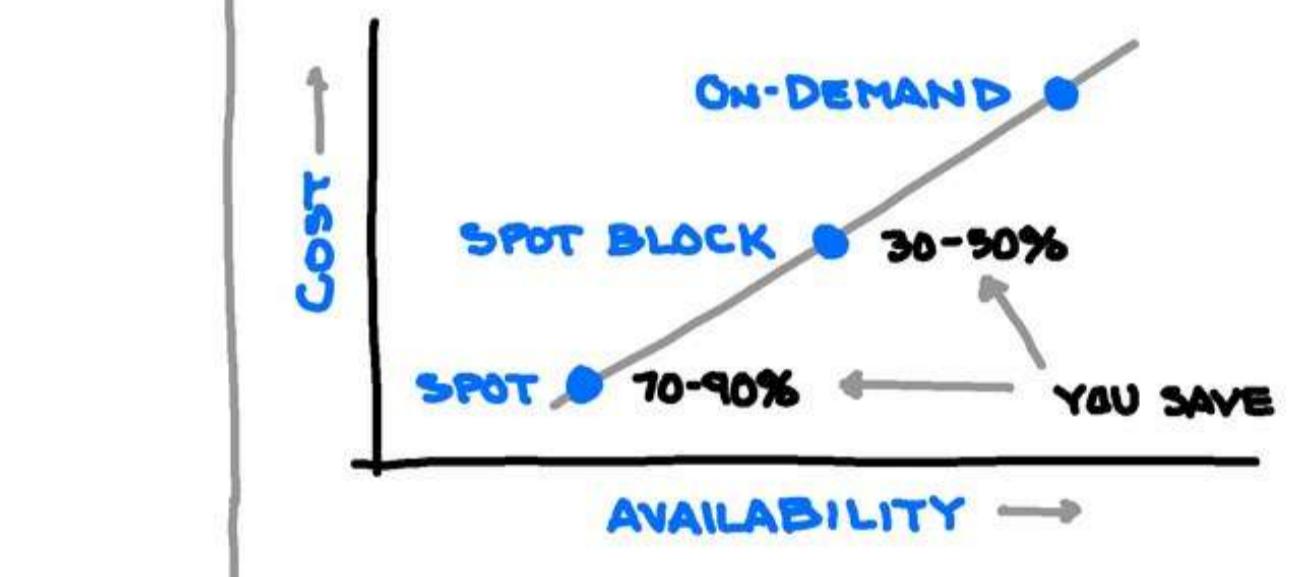
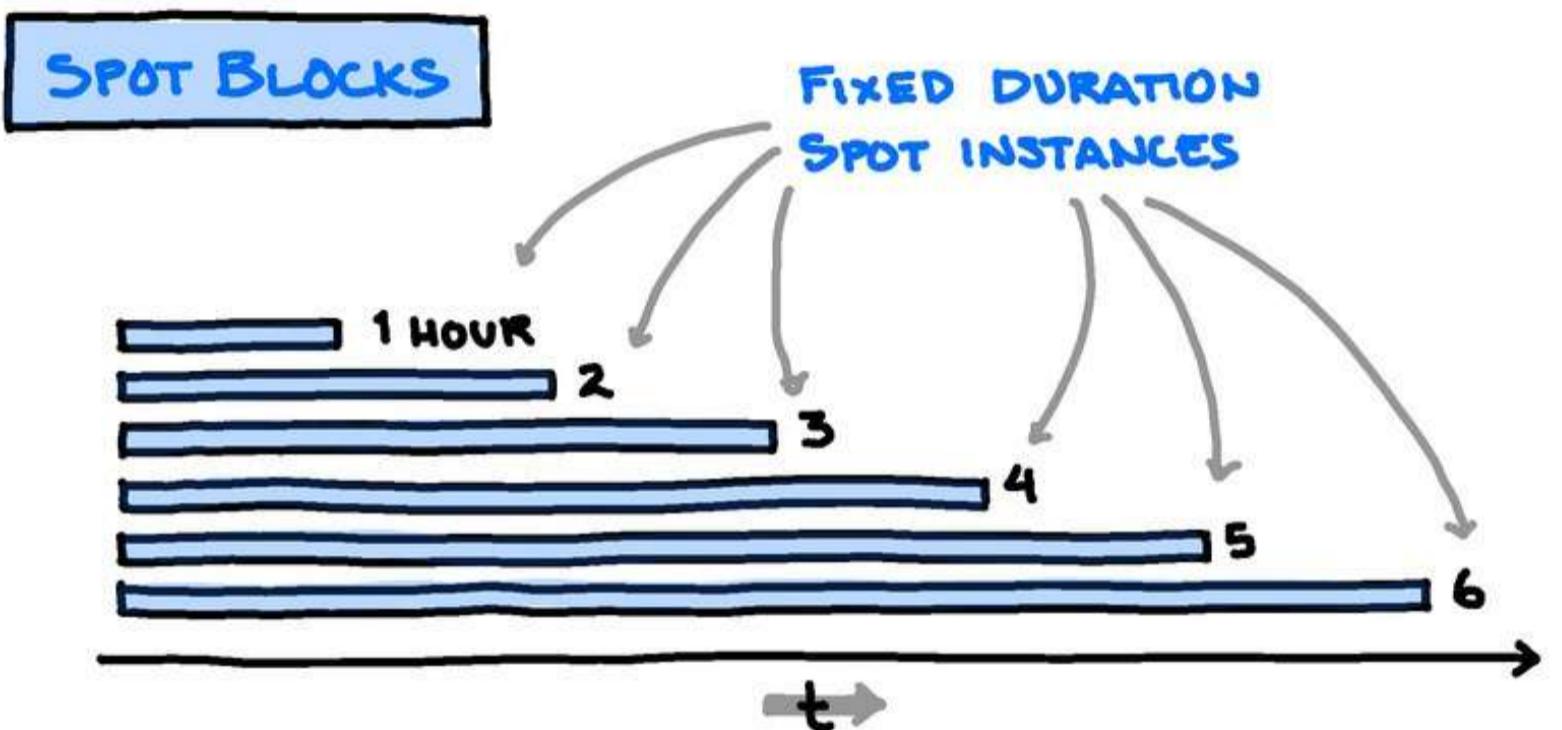
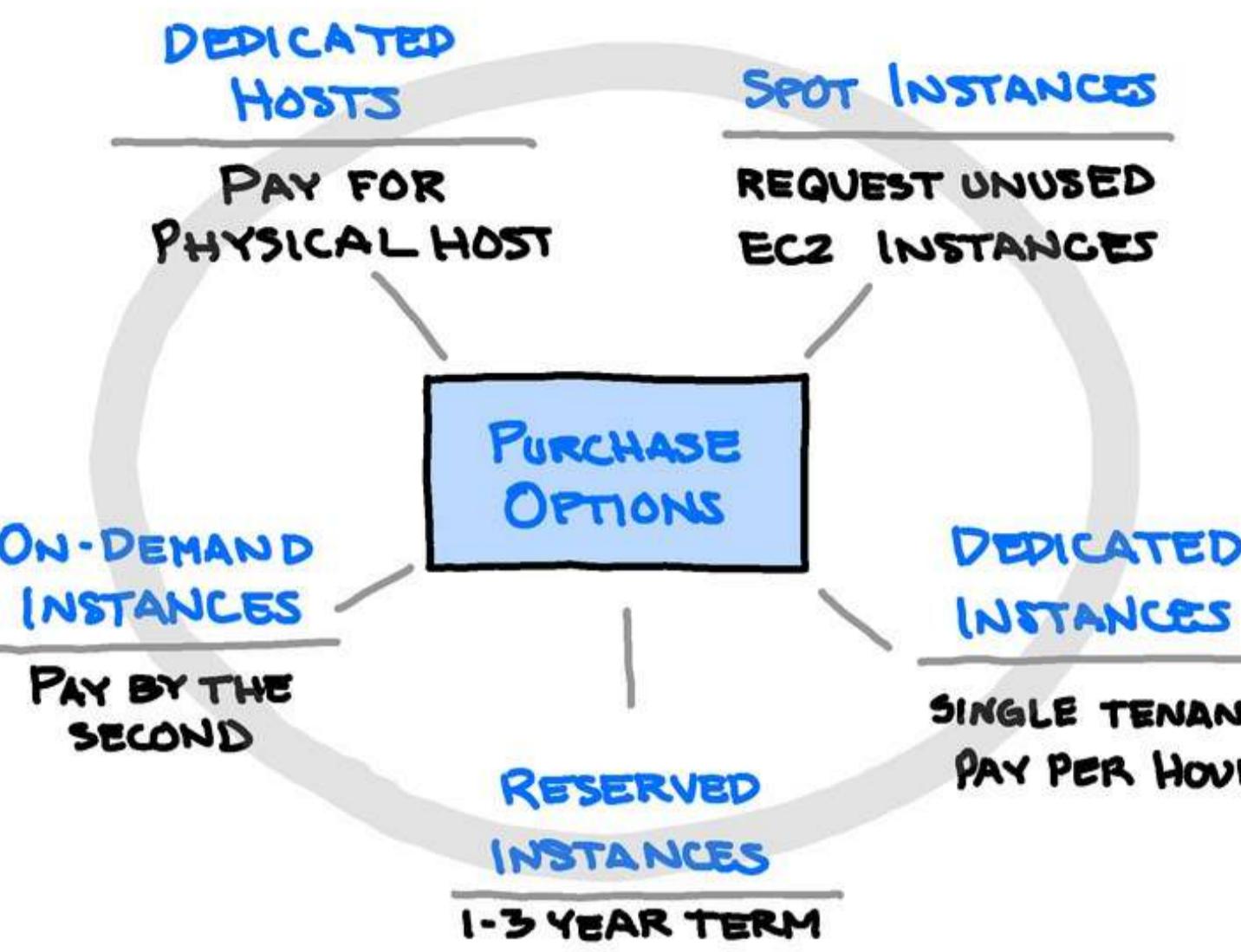
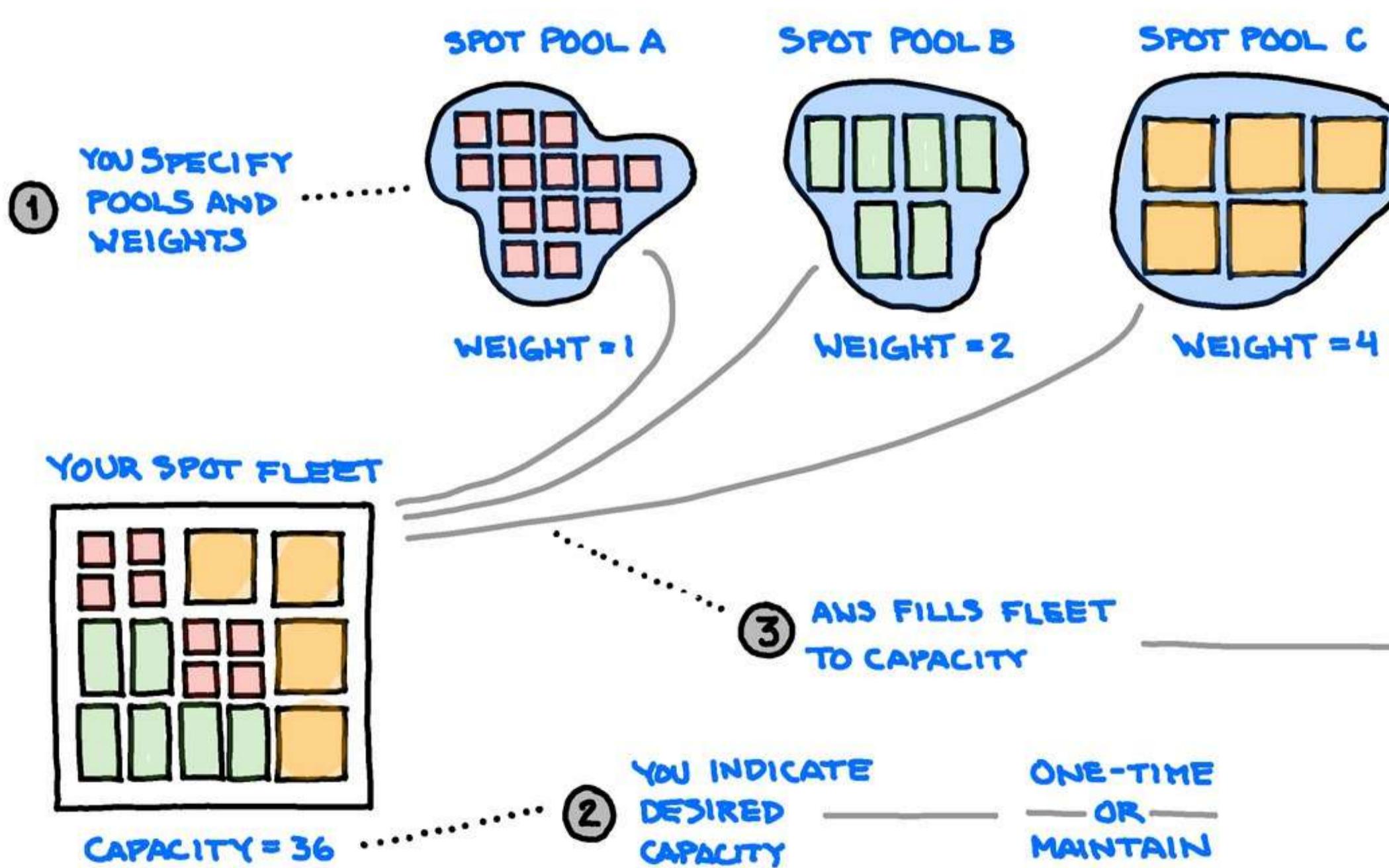
SPOT POOL

SAME INSTANCE TYPE
SAME AVAILABILITY ZONE
SAME OPERATING SYSTEM

BEHAVES LIKE
OLD 'BID PRICE'

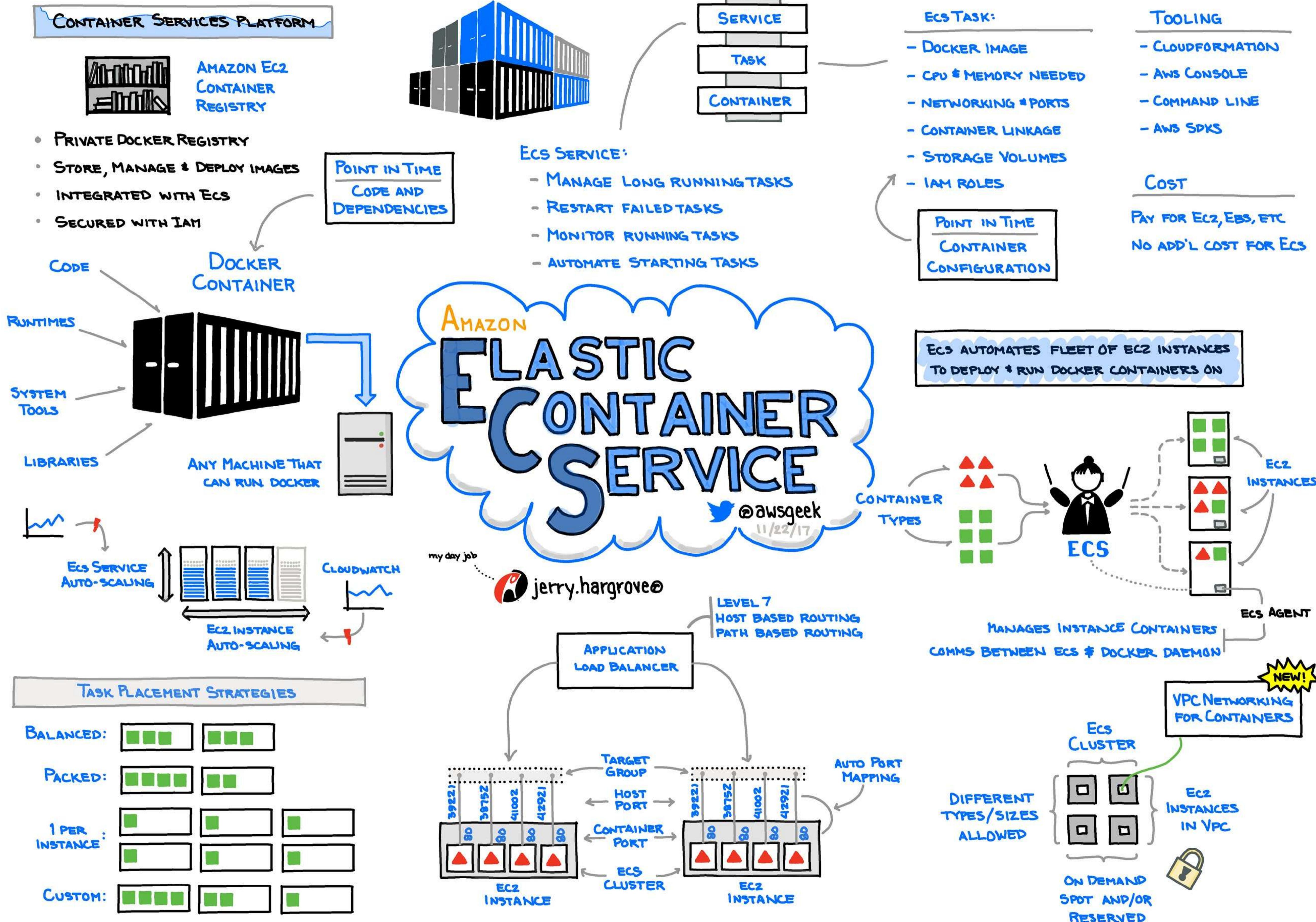


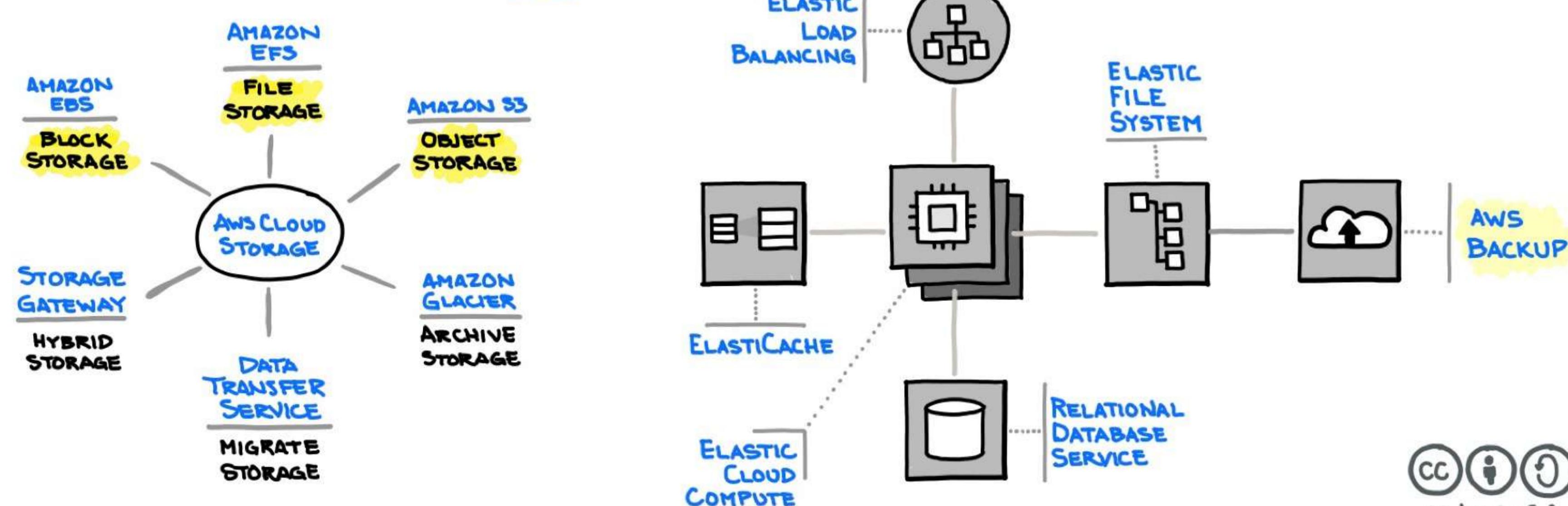
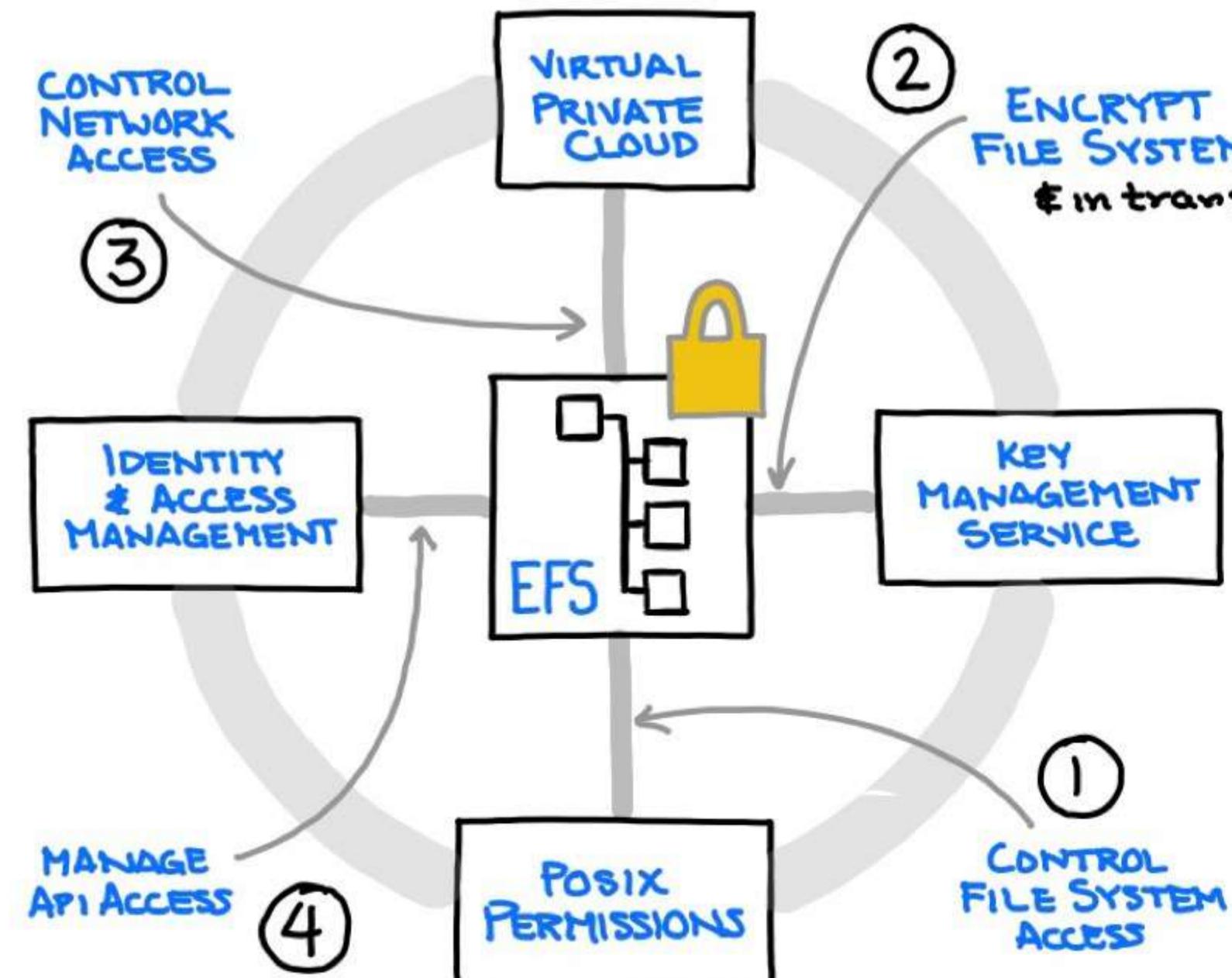
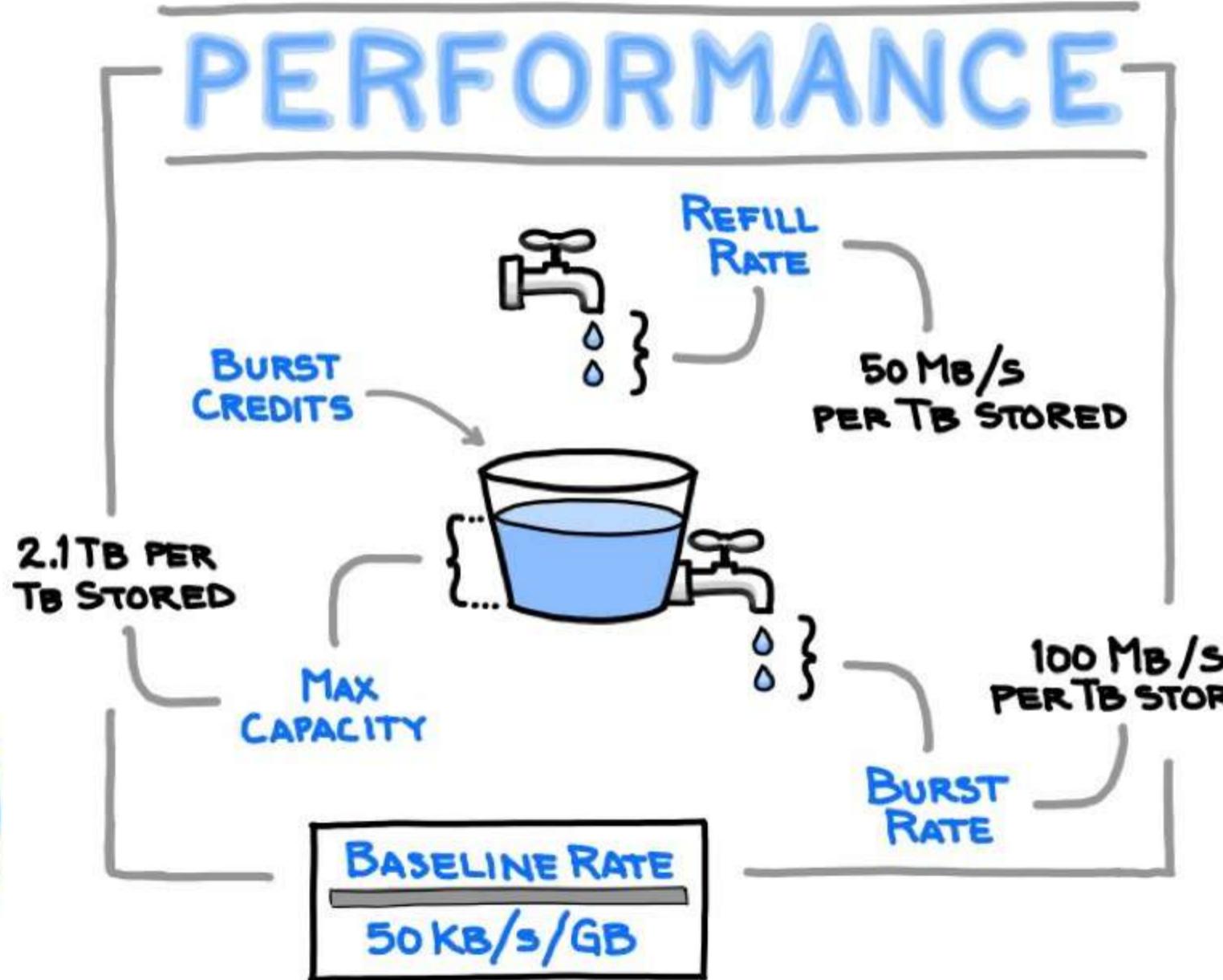
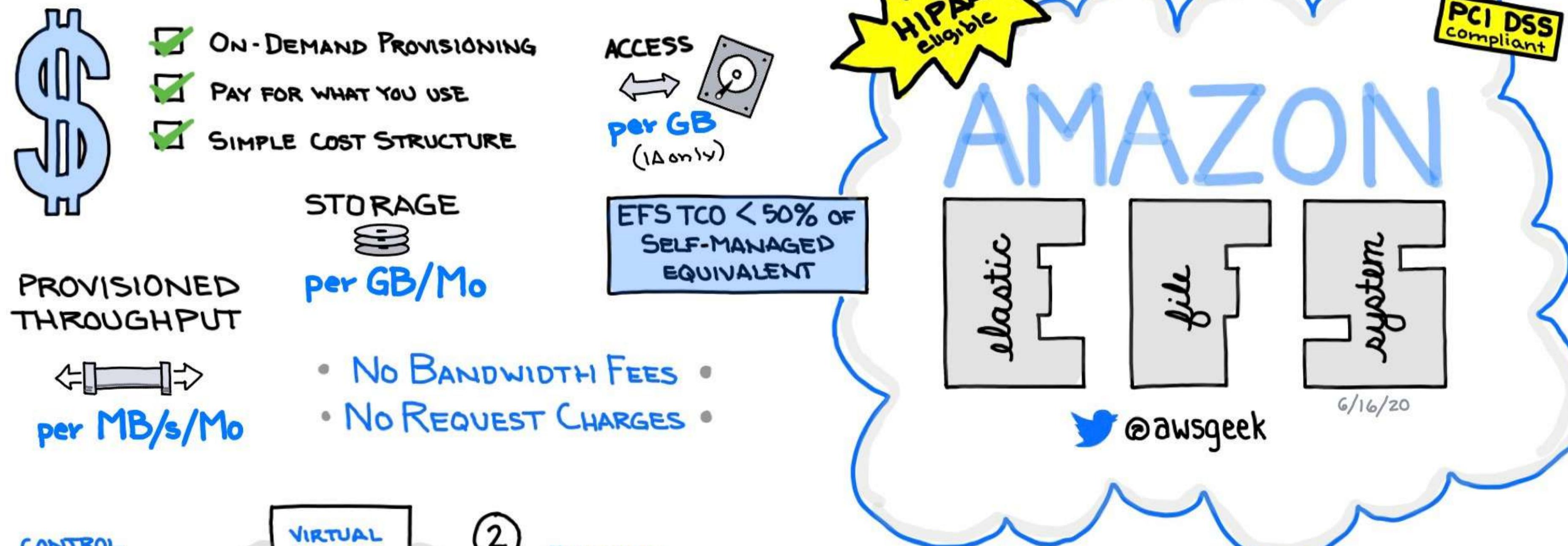
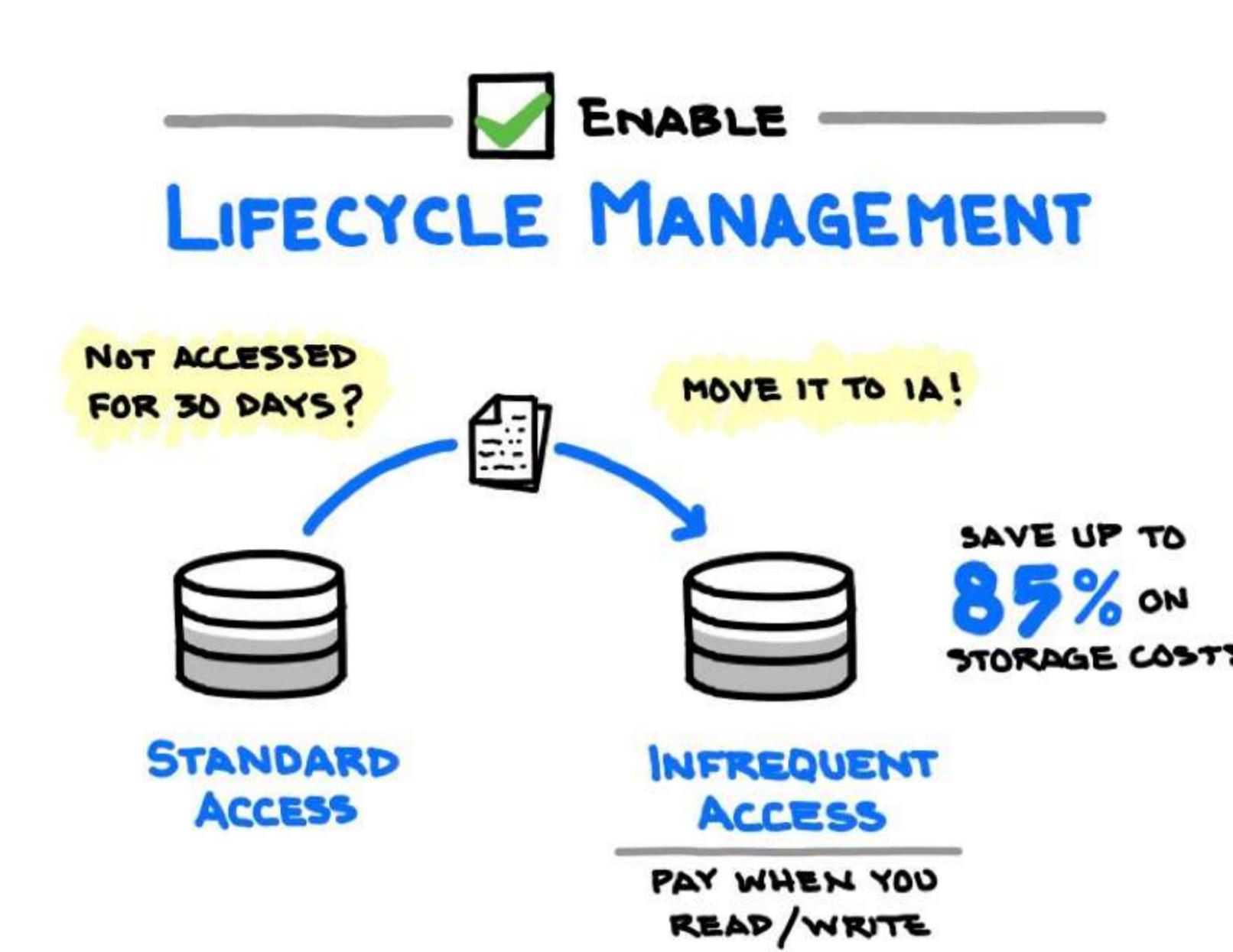
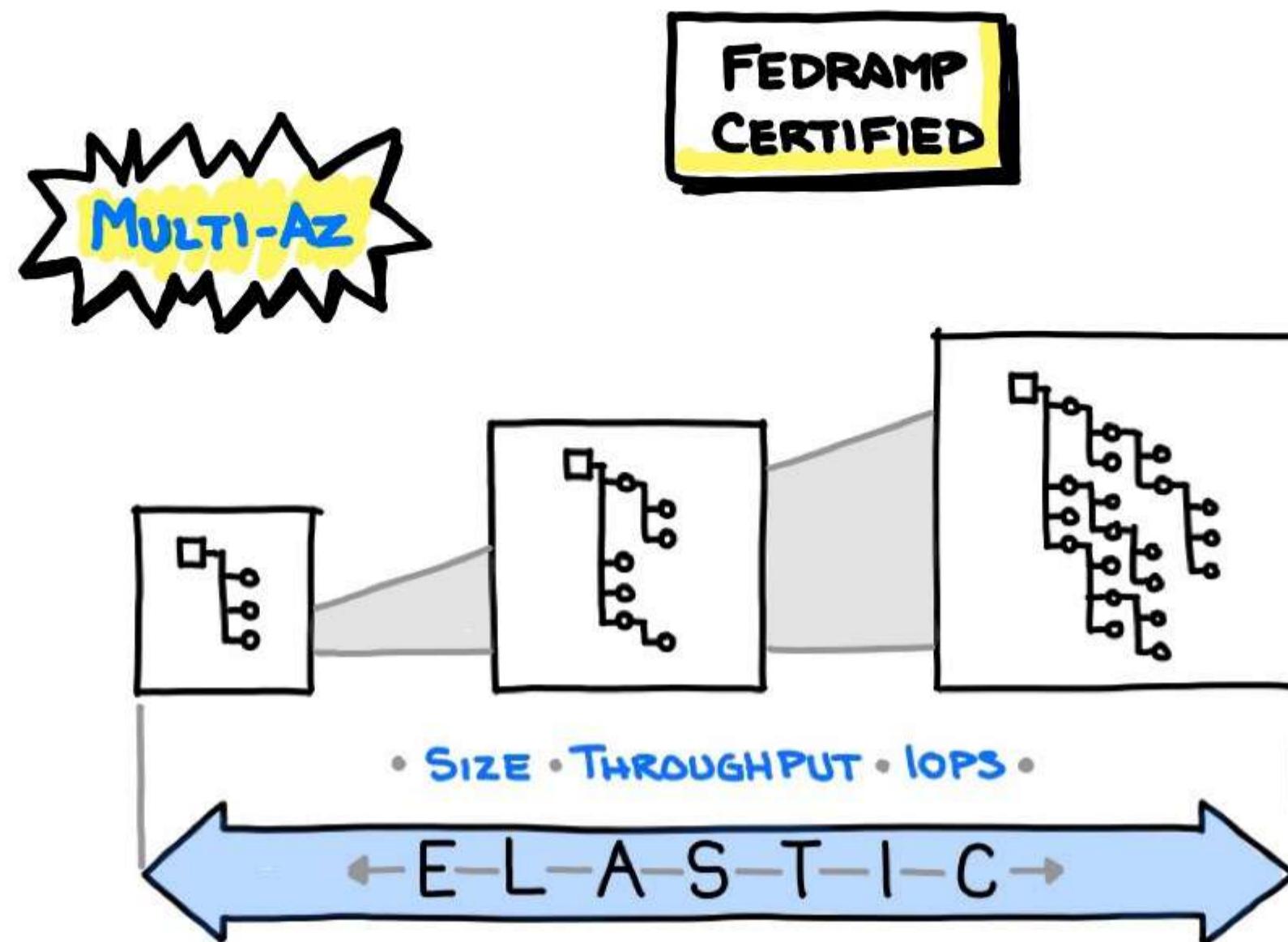
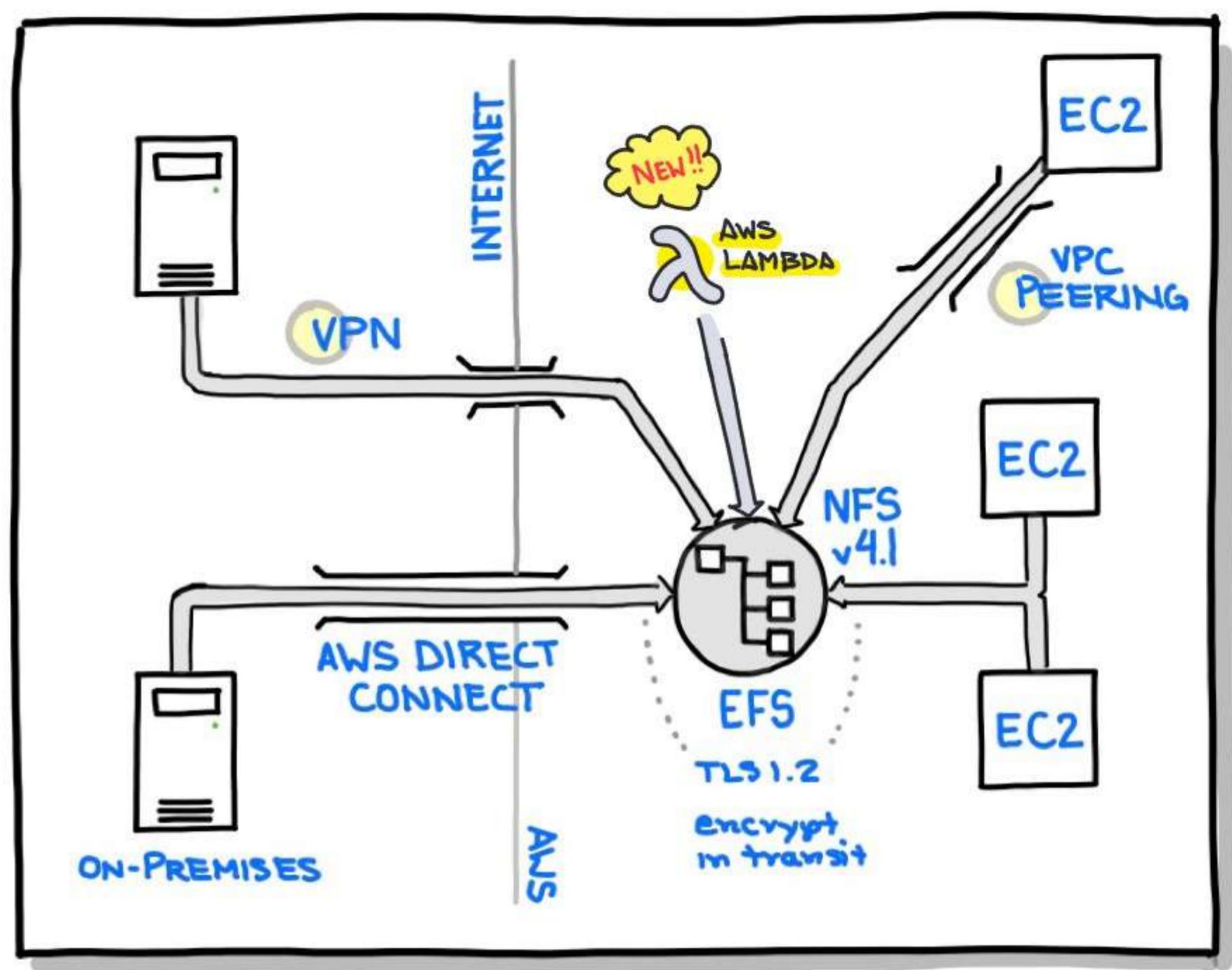
NEW
HIBERNATE SPOT INSTANCES
RAM & EBS VOLUMES ARE
SAVED FOR PERSISTENT
REQUESTS & SPOT FLEETS
SET TO MAINTAIN CAPACITY



AMAZON Ec2 Spot Instances

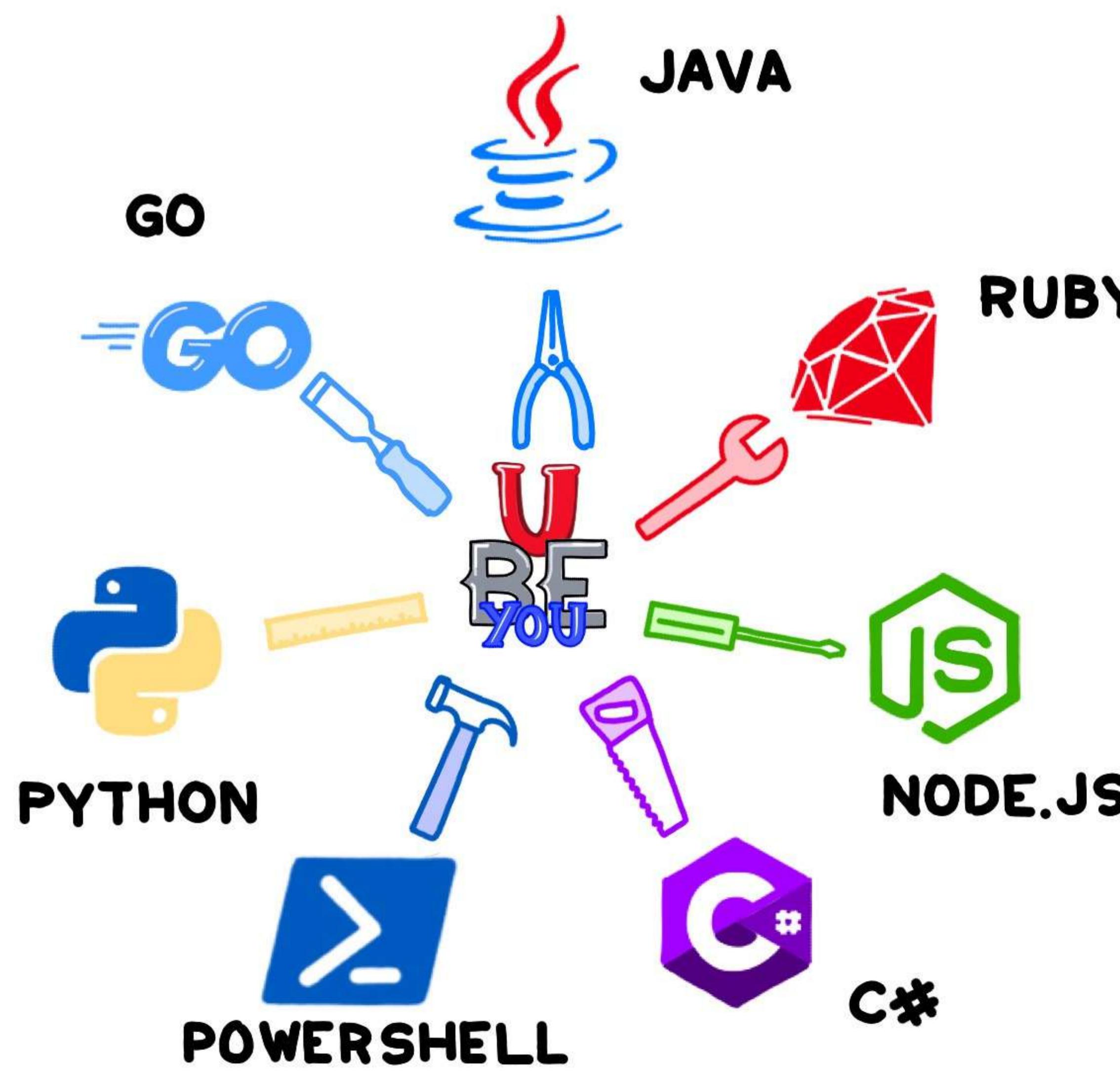
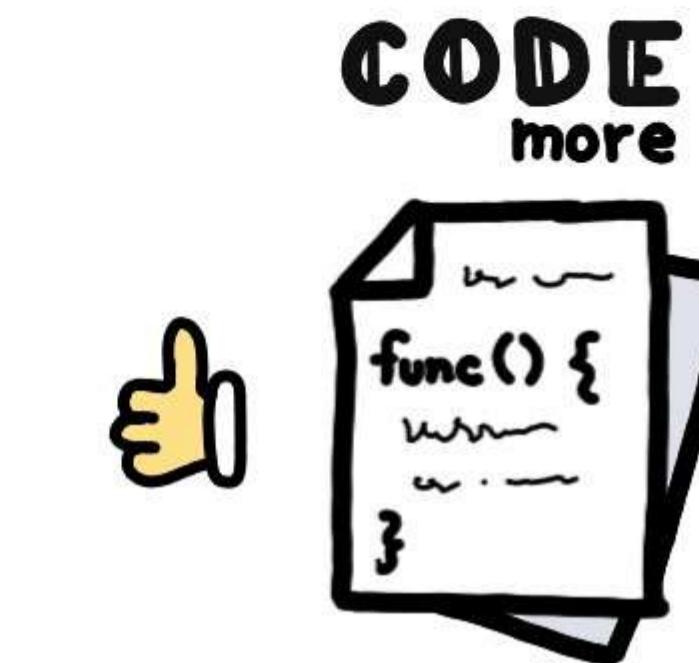
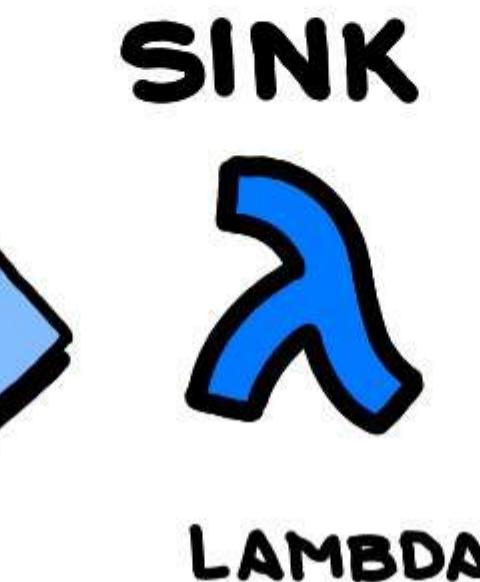
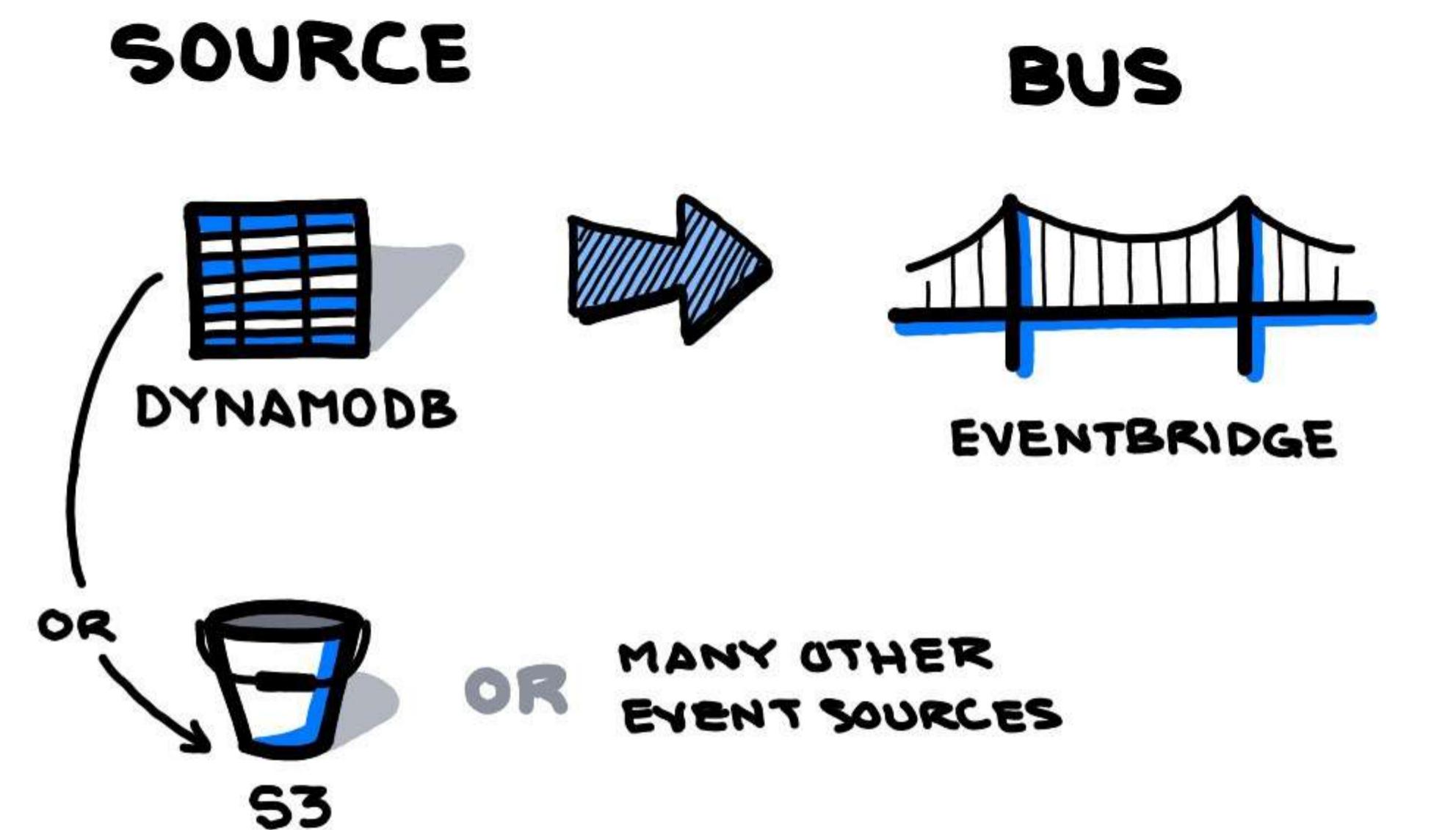
11/29/17





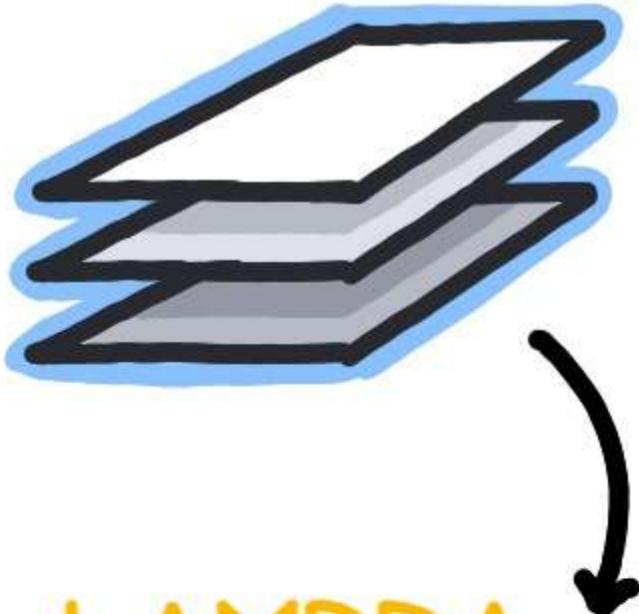
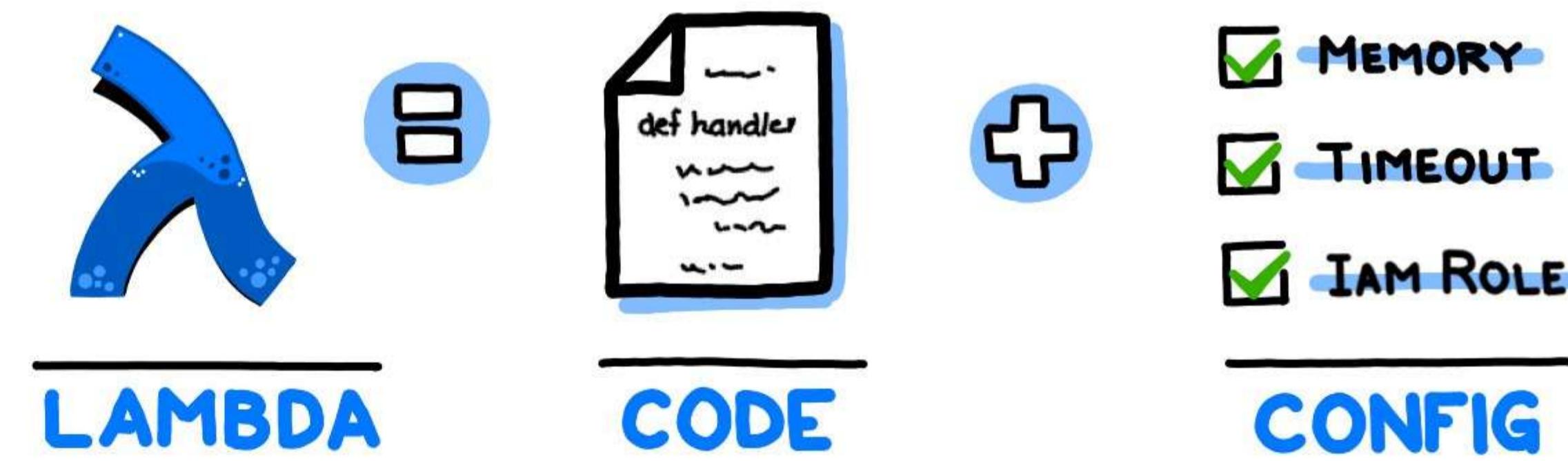
Event Driven Apps

#serverlessforeveryone



AWS LAMBDA

4/6/2020



bring your
BYOC
own code

LAMBDA FUNCTIONS

LAMBDA LAYERS

TIMELINE

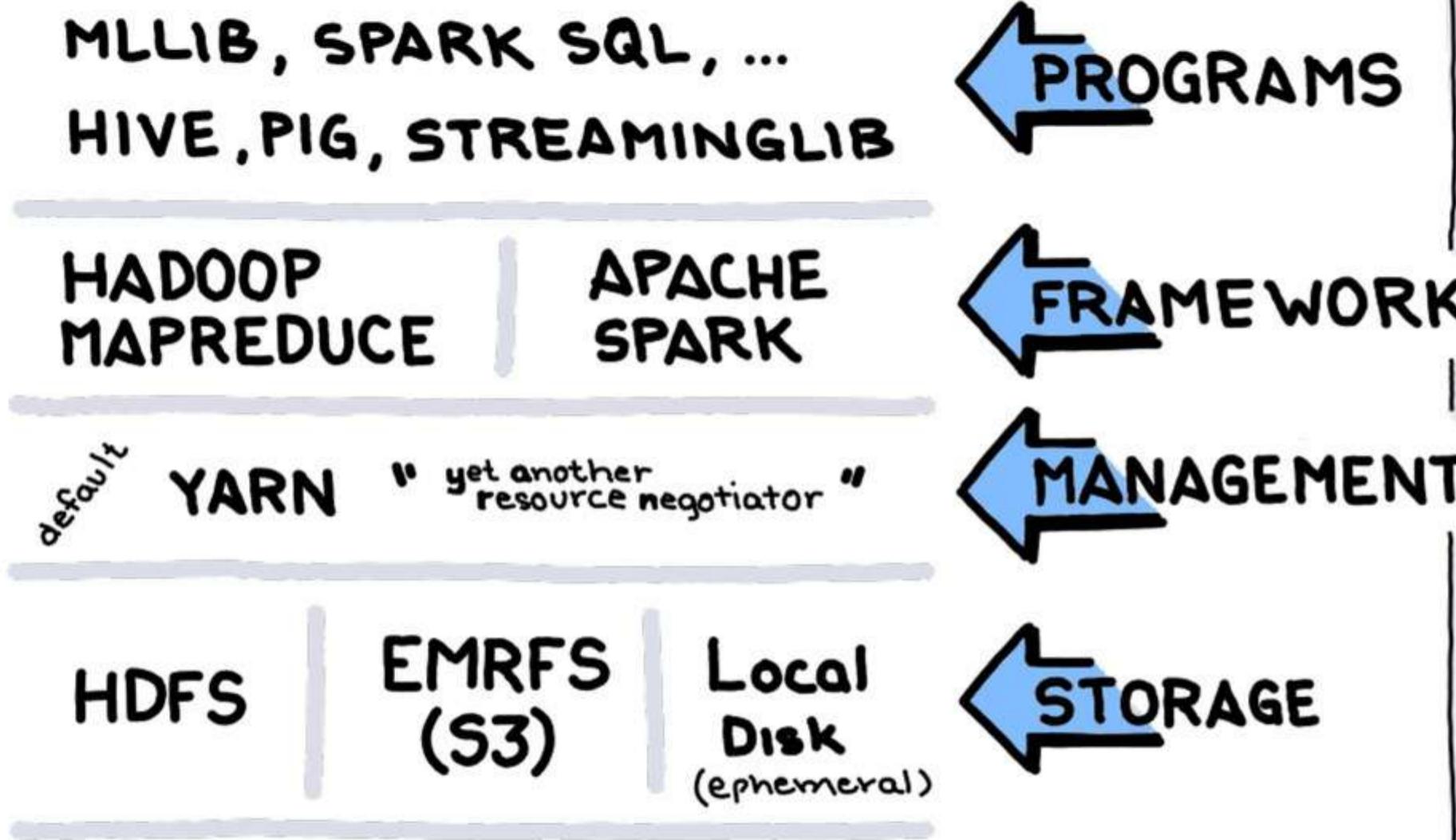
- 2009: BETA LAUNCH
PIG & HIVE
- 10: CC1/GPU INSTANCES
BOOTSTRAP ACTIONS
- 11: SPOT INSTANCES
- CC2 INSTANCES
- 12: HBASE
- DATA PIPELINE
- 13: S3 SSE
- IMPALA
- 14: IAM ROLES
- HUNK
- 15: APACHE SPARK
- PRIVATE SUBNETS
- CLOUDFORMATION
- FLINK
- 17: AUTO-SCALING
- MXNET
- NOTEBOOKS
- TENSORFLOW
- 2019: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



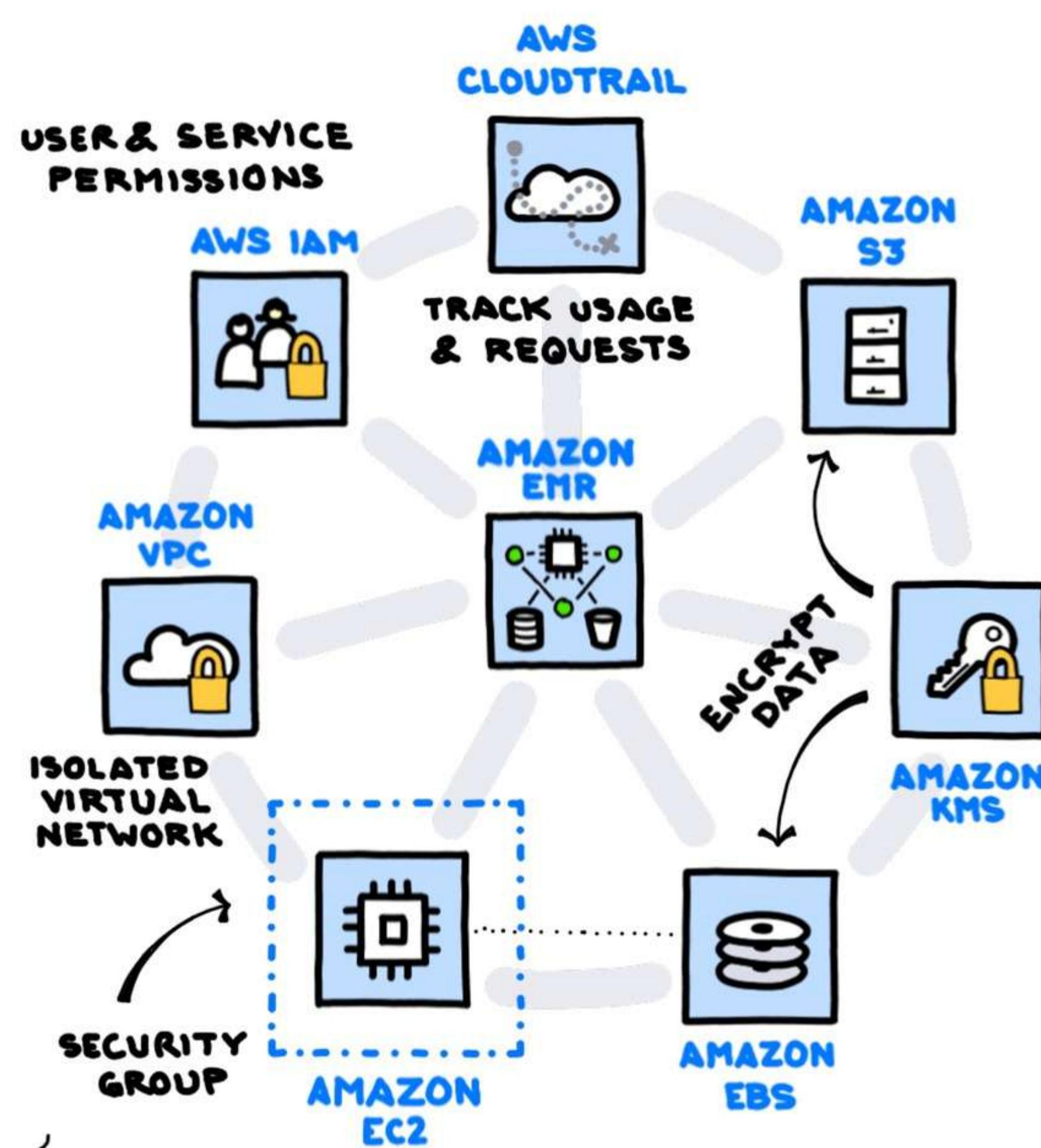
- MACHINE LEARNING
- REALTIME STREAMING
- CLICKSTREAM ANALYSIS
- GENOMICS
- ETL

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

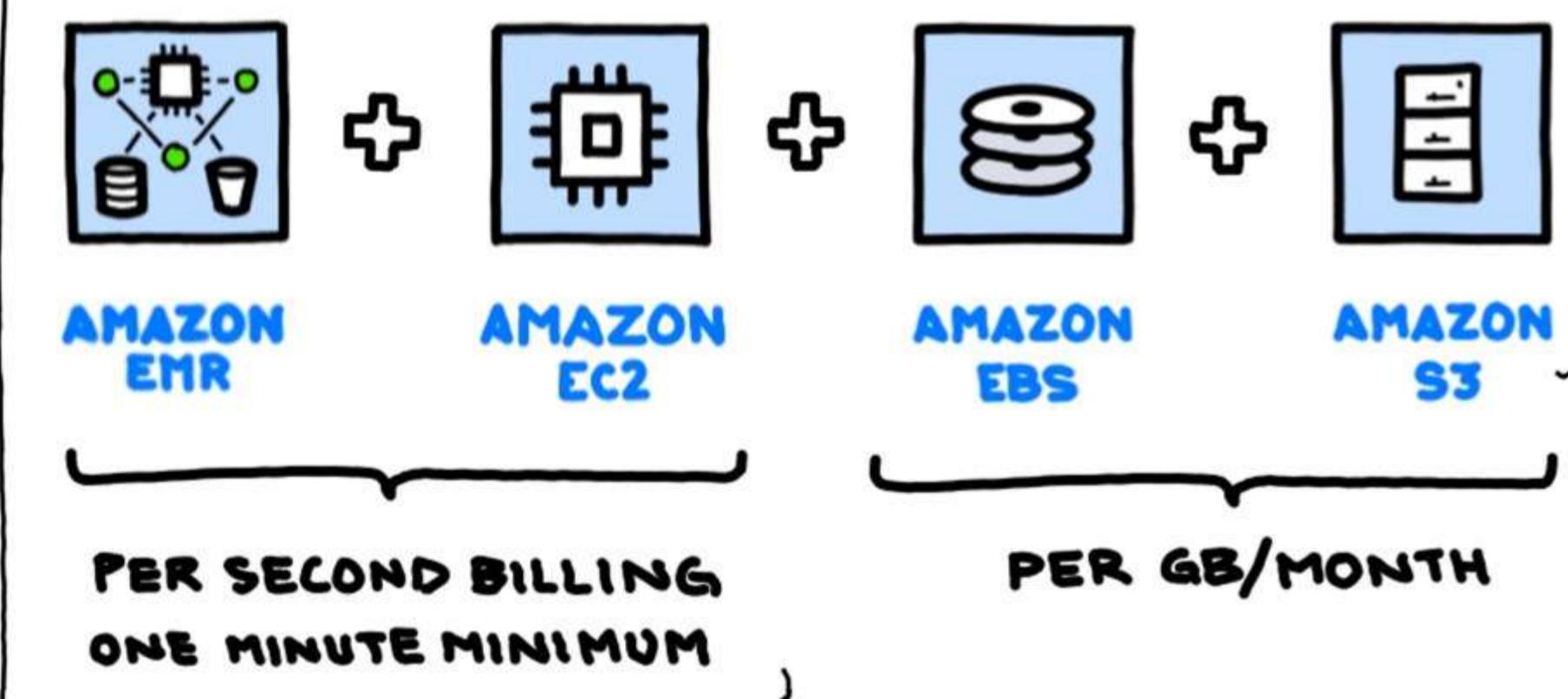
LAYERS



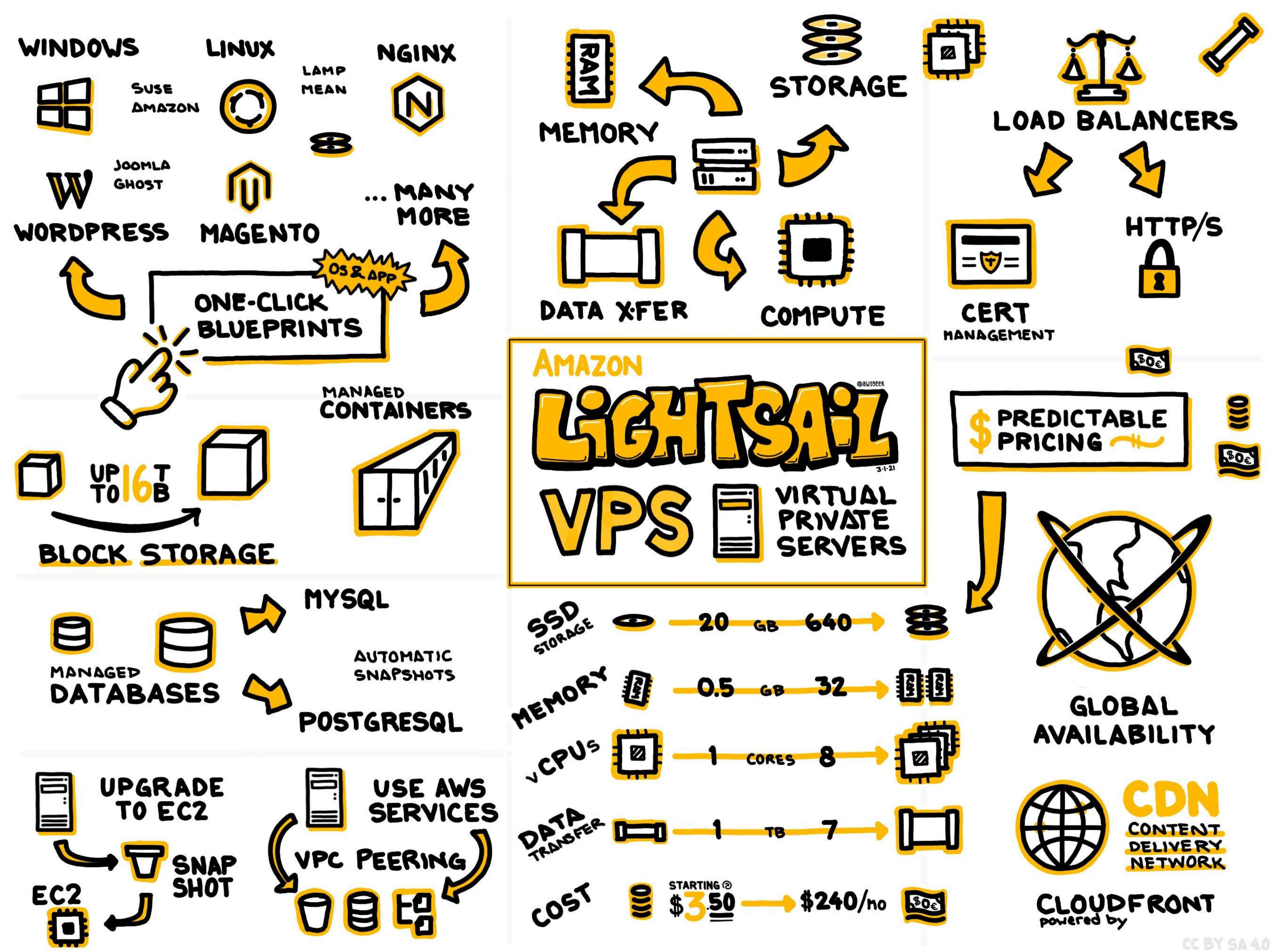
SECURITY

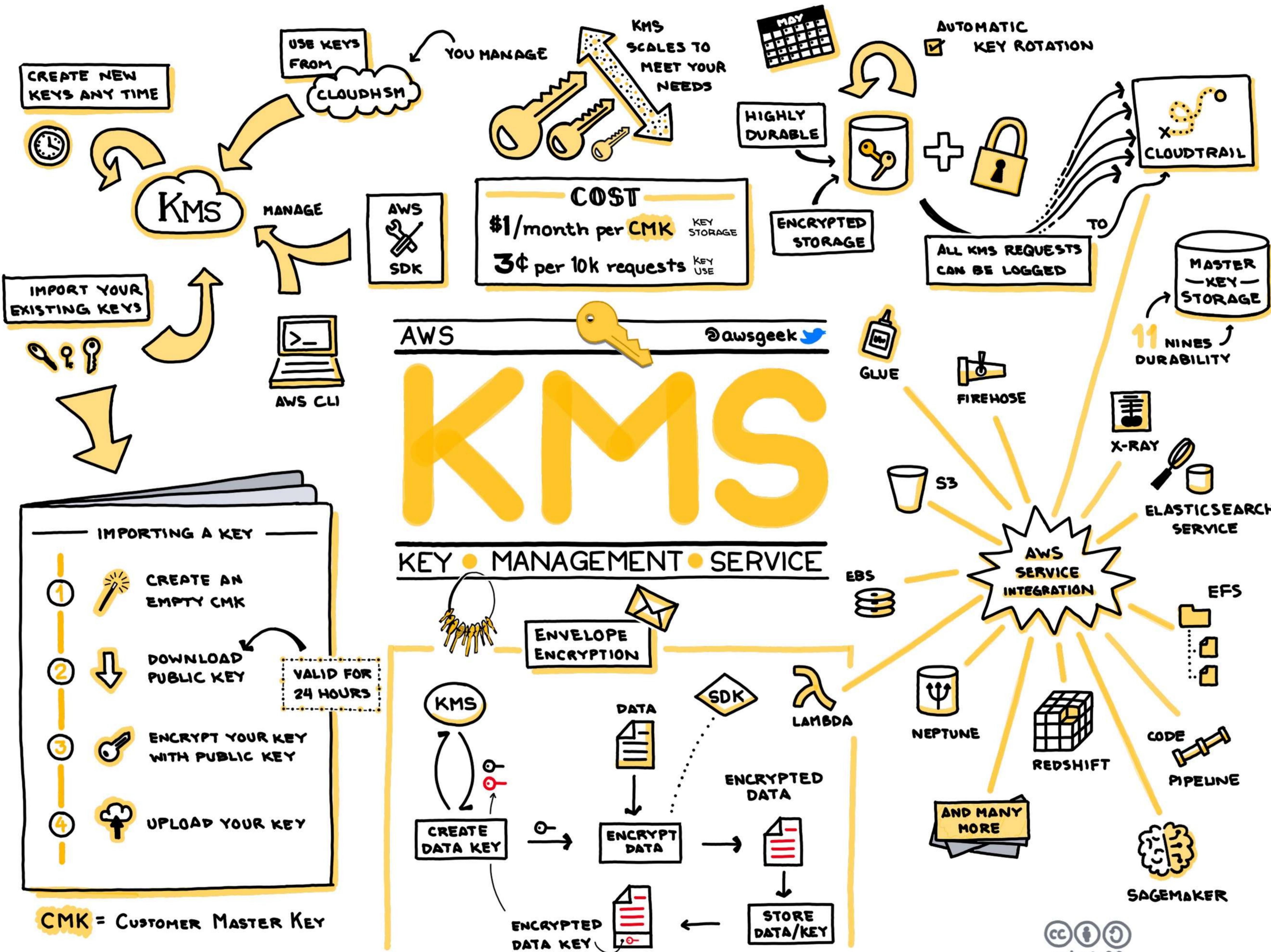


PAY-AS-YOU-GO PRICING ...



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#

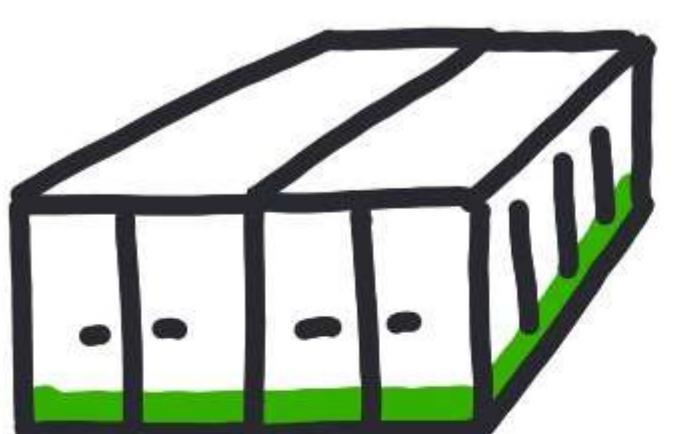
JS

ELASTIC
BEANSTALK

dotNET



JAVA

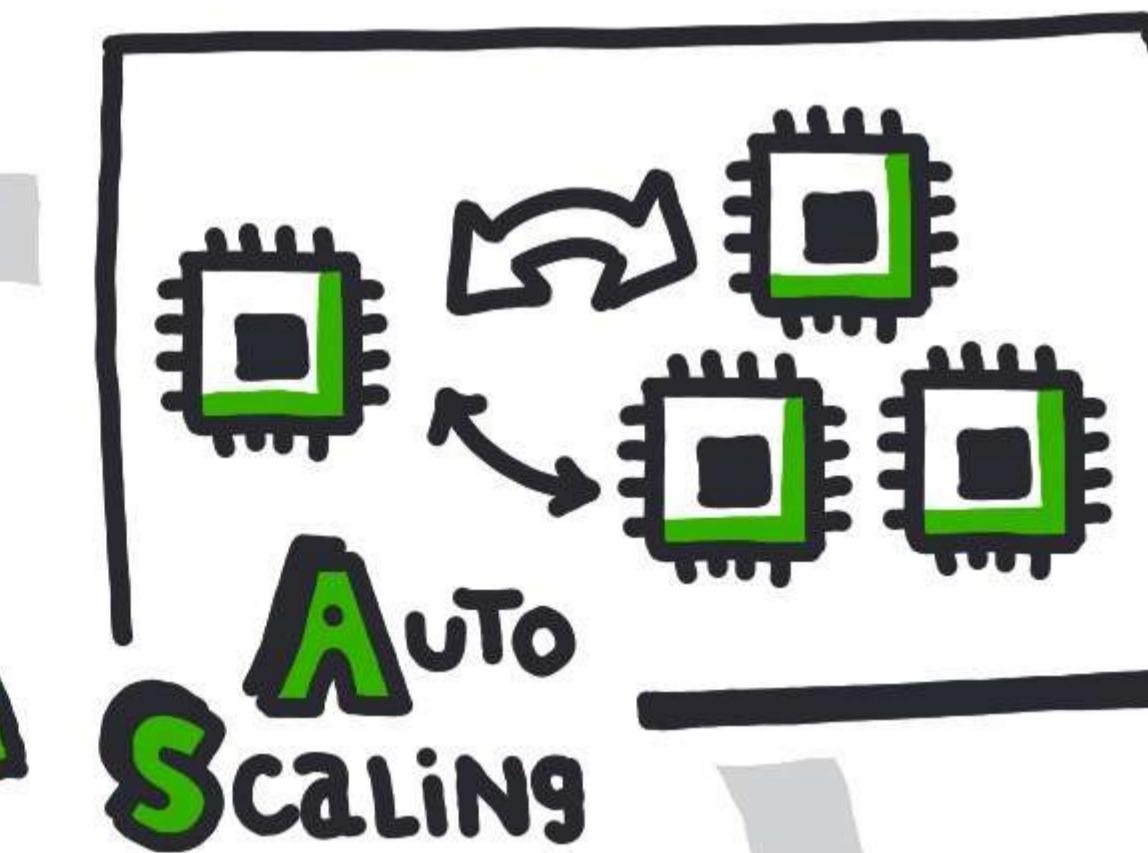


DOCKER CONTAINERS

Python

Console
SDK
CLI

ADMIN

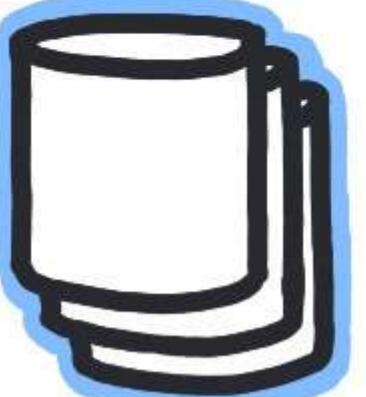


MONITORING



- CLOUDWATCH
- ALERTS
- NOTIFICATIONS

DOMAIN



REPOSITORIES

REPOSITORY



PACKAGE VERSIONS

PACKAGE

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

ASSET



FILE

aws

CodeArtifact

• SOFTWARE • ARTIFACT • REPOSITORY •

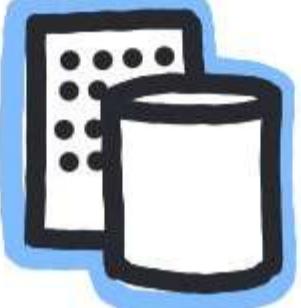
SECURE, SCALABLE, & COST EFFECTIVE ARTIFACT MANAGEMENT FOR SOFTWARE DEVELOPMENT

Maven

Central

NuGet.org

npm



PyPI



AWS
Code
Artifact

- AWS Managed -
Centralized
Repository

Maven

Gradle

NuGet

npm

twine

pip

Python

.Net

Java

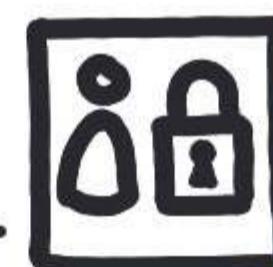
JavaScript



Public Repos



AWS KMS
ENCRYPTION



AWS IAM
RESOURCE PROTECTION

Development
Teams

CI/CD
Systems

PAY-PER-USE



\$

BYTES STORED

DATA TRANSFER

out of Region



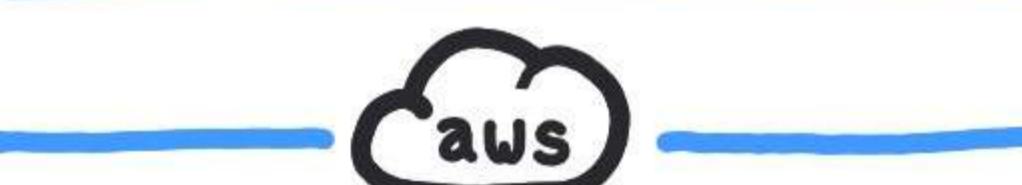
\$

005



\$

007



AWS
CODE
ARTIFACT

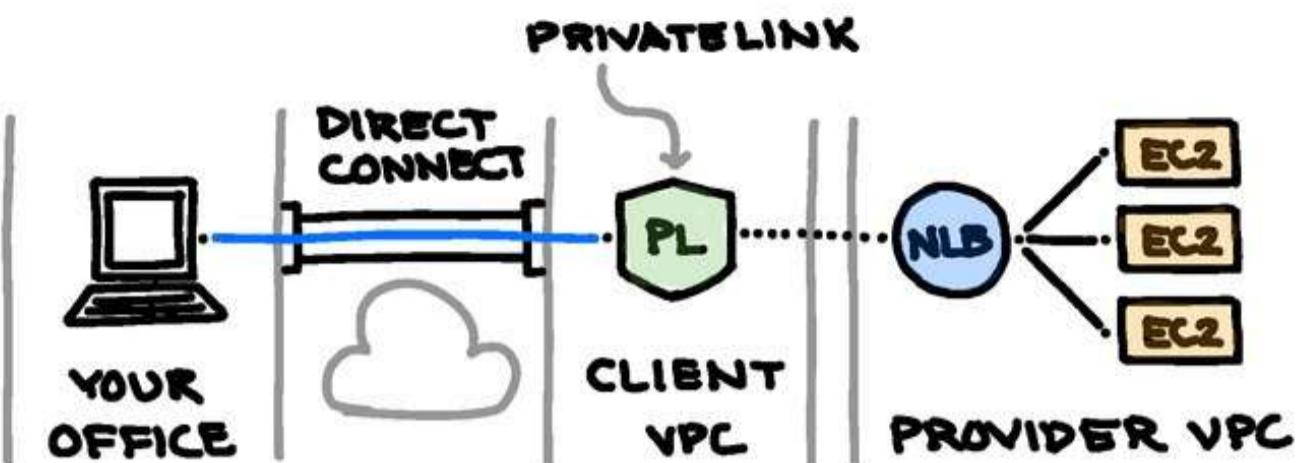
PRIVATE
LINK

YOUR
VPC

CI/CD
APPS

YOUR
TOOLS

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

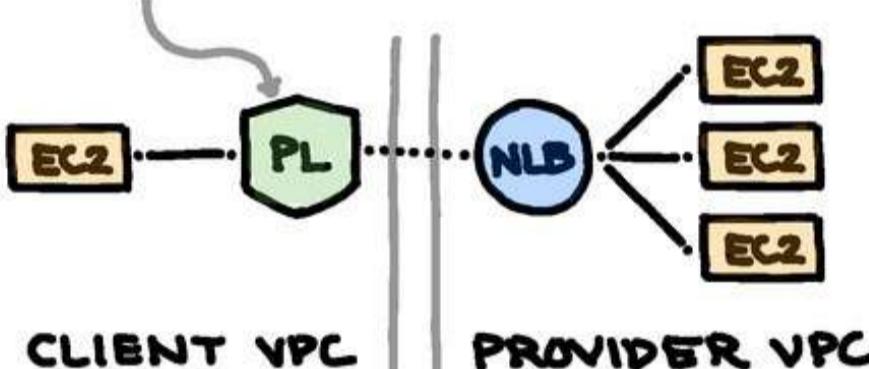
CLOUDWATCH, SNS, SAGEMAKER
KINESIS, CODEBUILD, CONFIG

EC2, API GATEWAY, AWS SERVICE CATALOG

ELB, CLOUDFORMATION

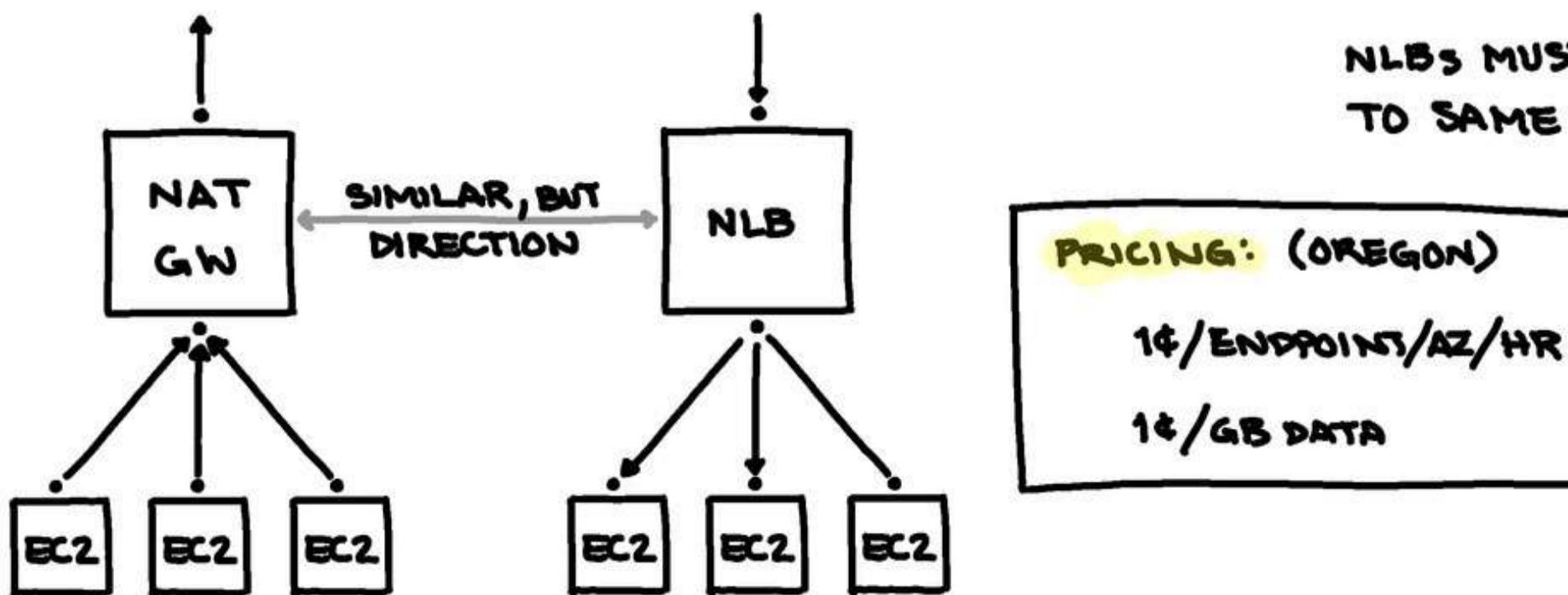
EC2 SYSTEMS MANAGER

PRIVATELINK

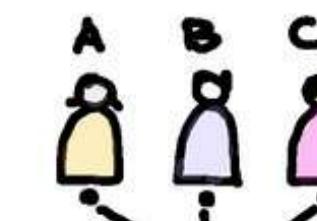


EFS — NAT GW — NLB — PRIVATELINK HYPERPLANE NODES

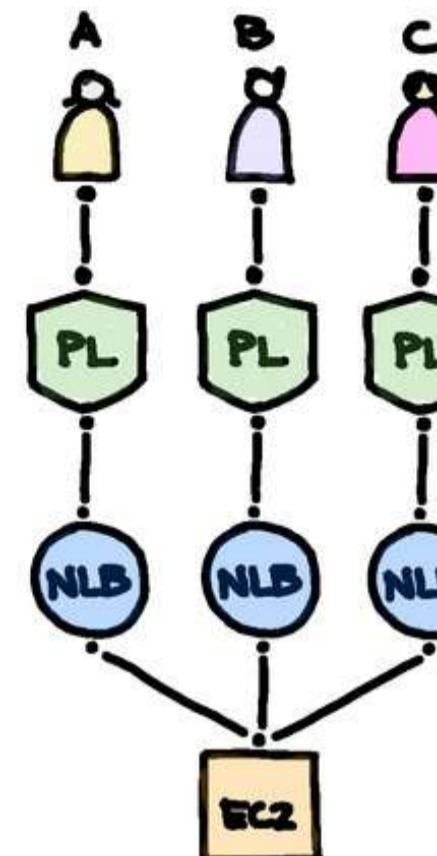
- BASED ON S3 LOAD BALANCER ARCHITECTURE
- HYPERPLANE NODES ARE REALLY EC2 INSTANCES
- USED BY AWS TO MANAGE STATE & ROUTE PACKETS



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



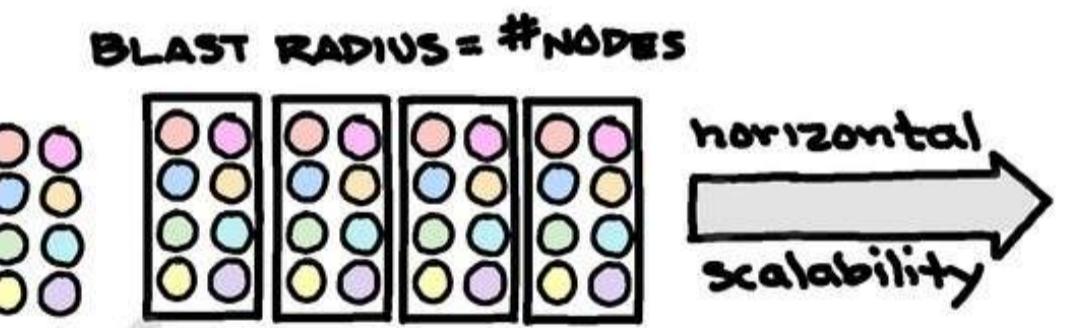
DEFAULT 5GB/S CAPACITY
SCALABLE TO TB/S IN 5GB/S INCR

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

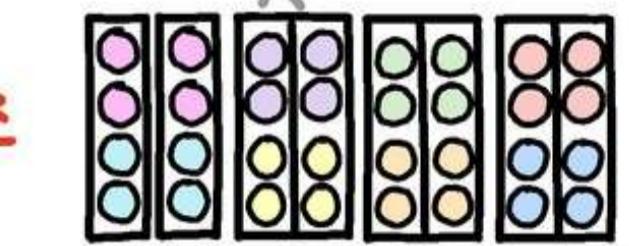


CASCADING FAILURES
OR NOISY NEIGHBORS

IMPACT
EVERYONE

each shard has
#N nodes

SIMPLE
SHARDING



each shard has
#C customers
reduces blast radius

minimize
blast radius

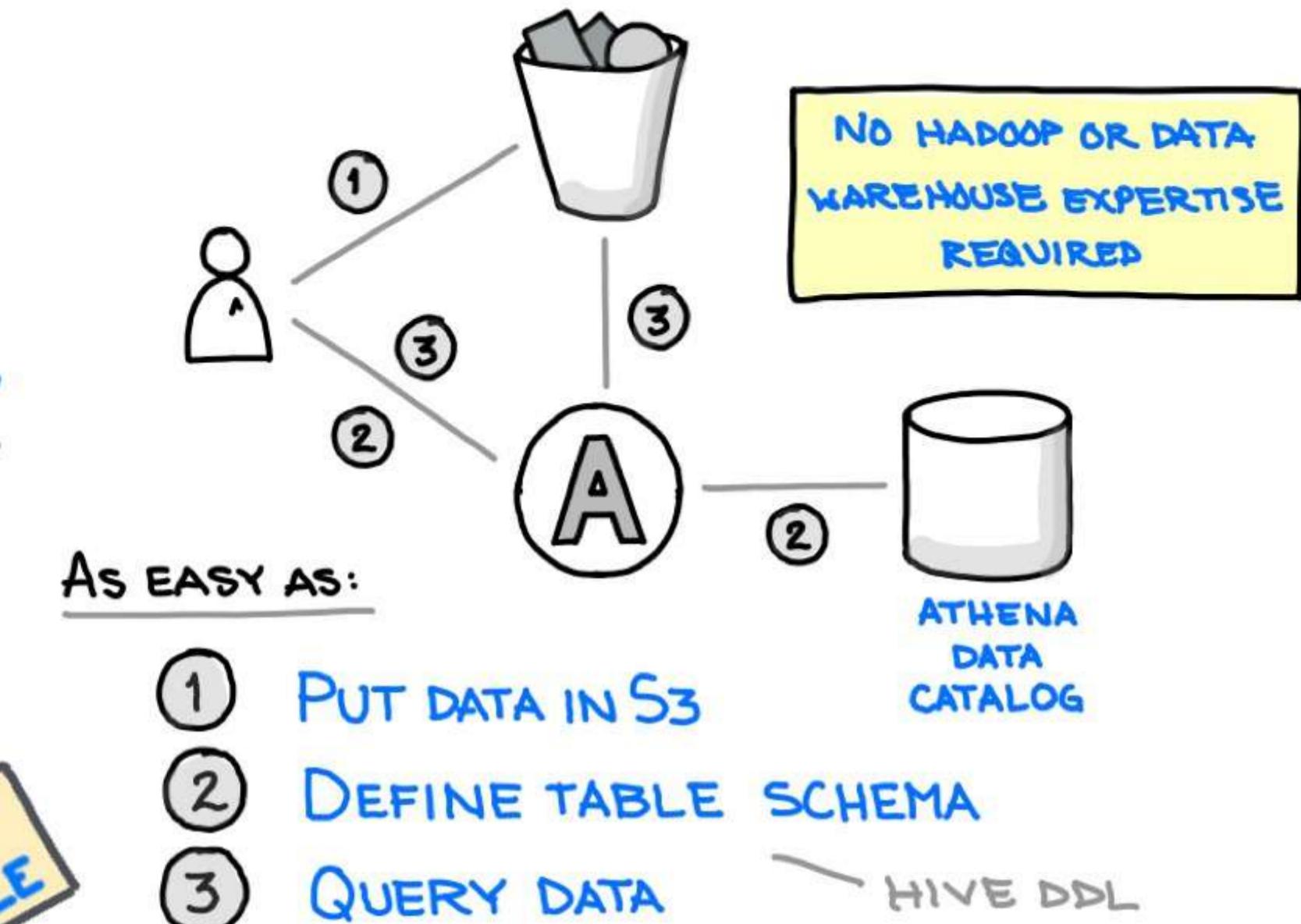
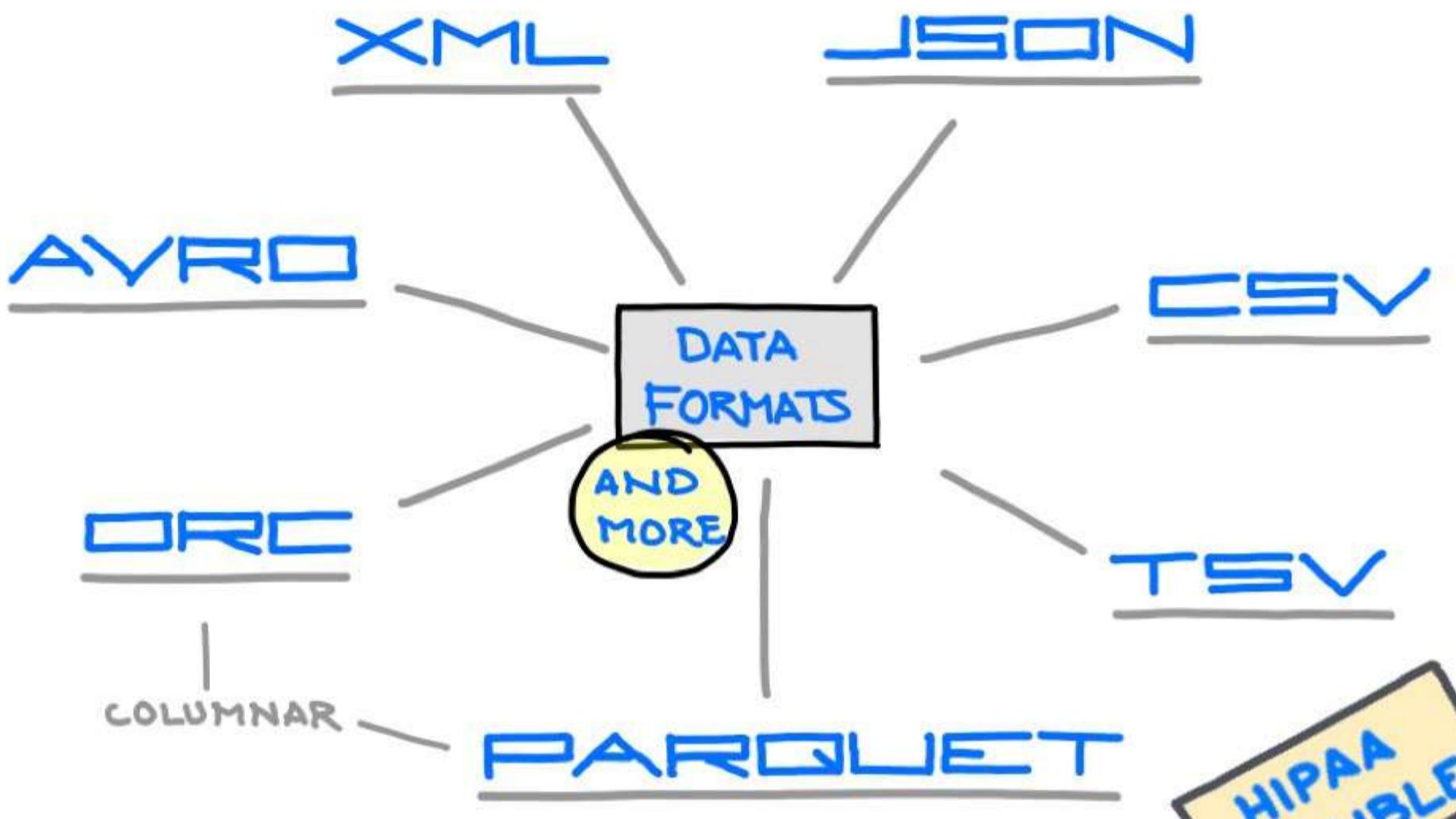
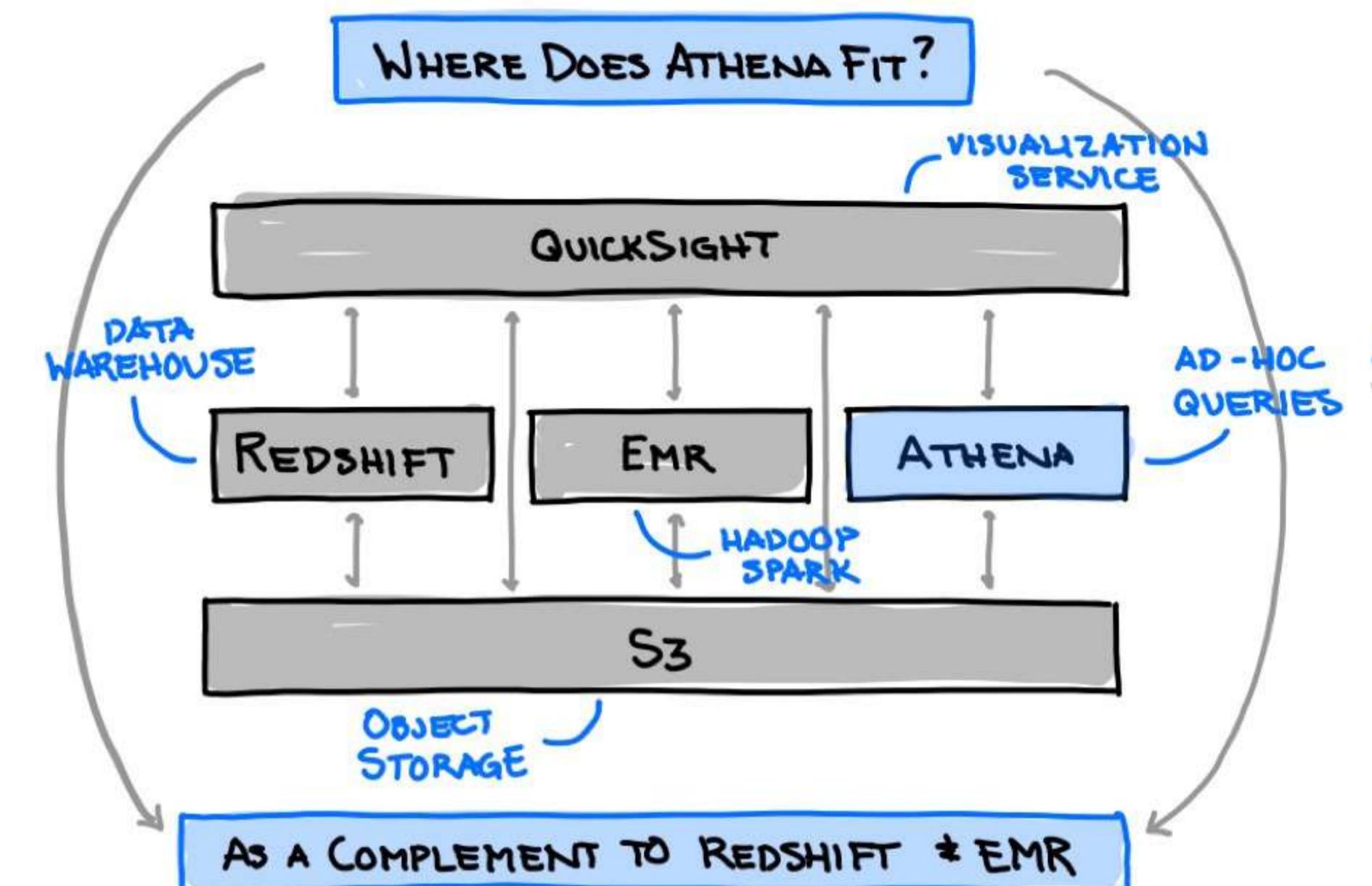
BEST
SHUFFLE
SHARDING



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

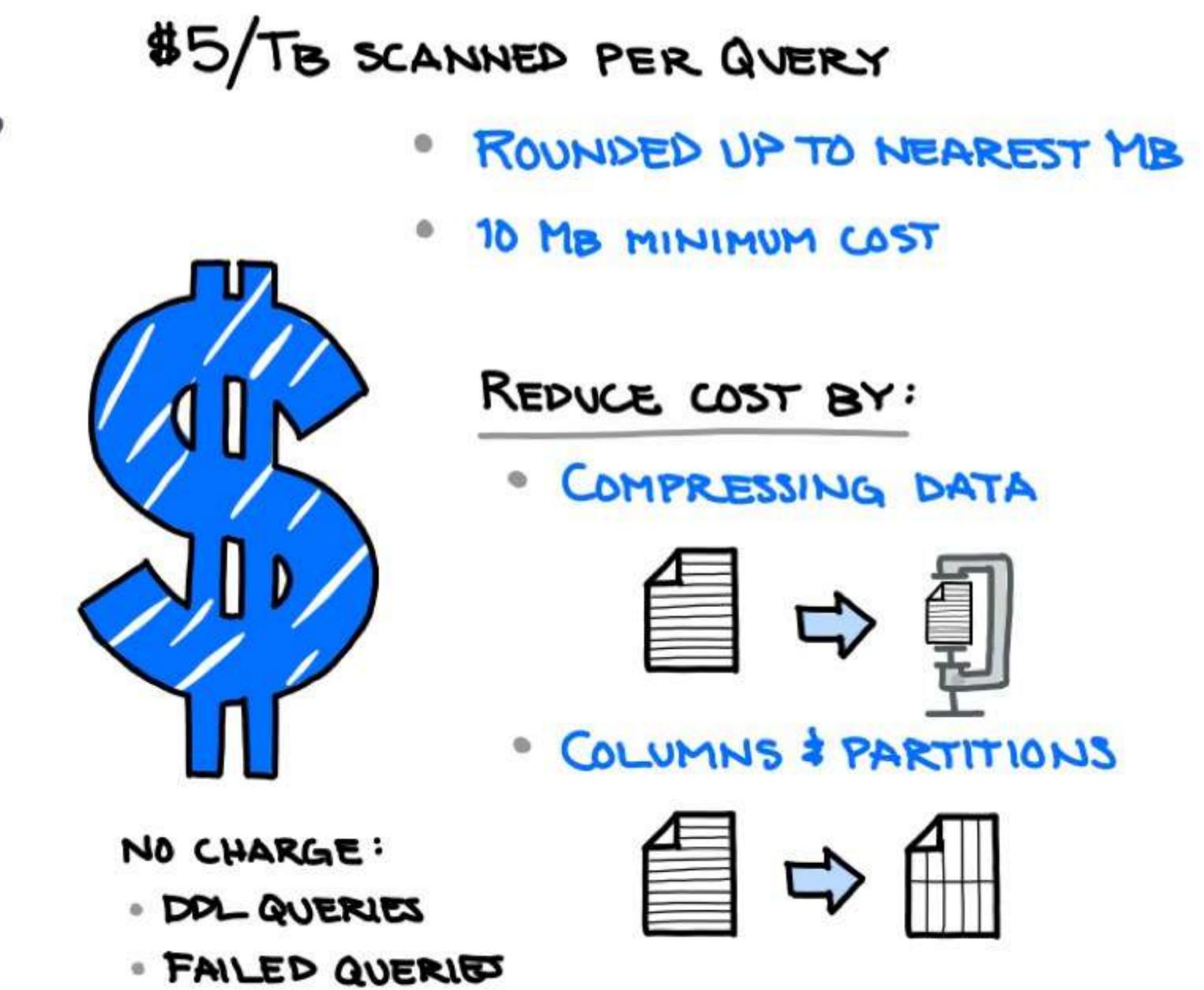
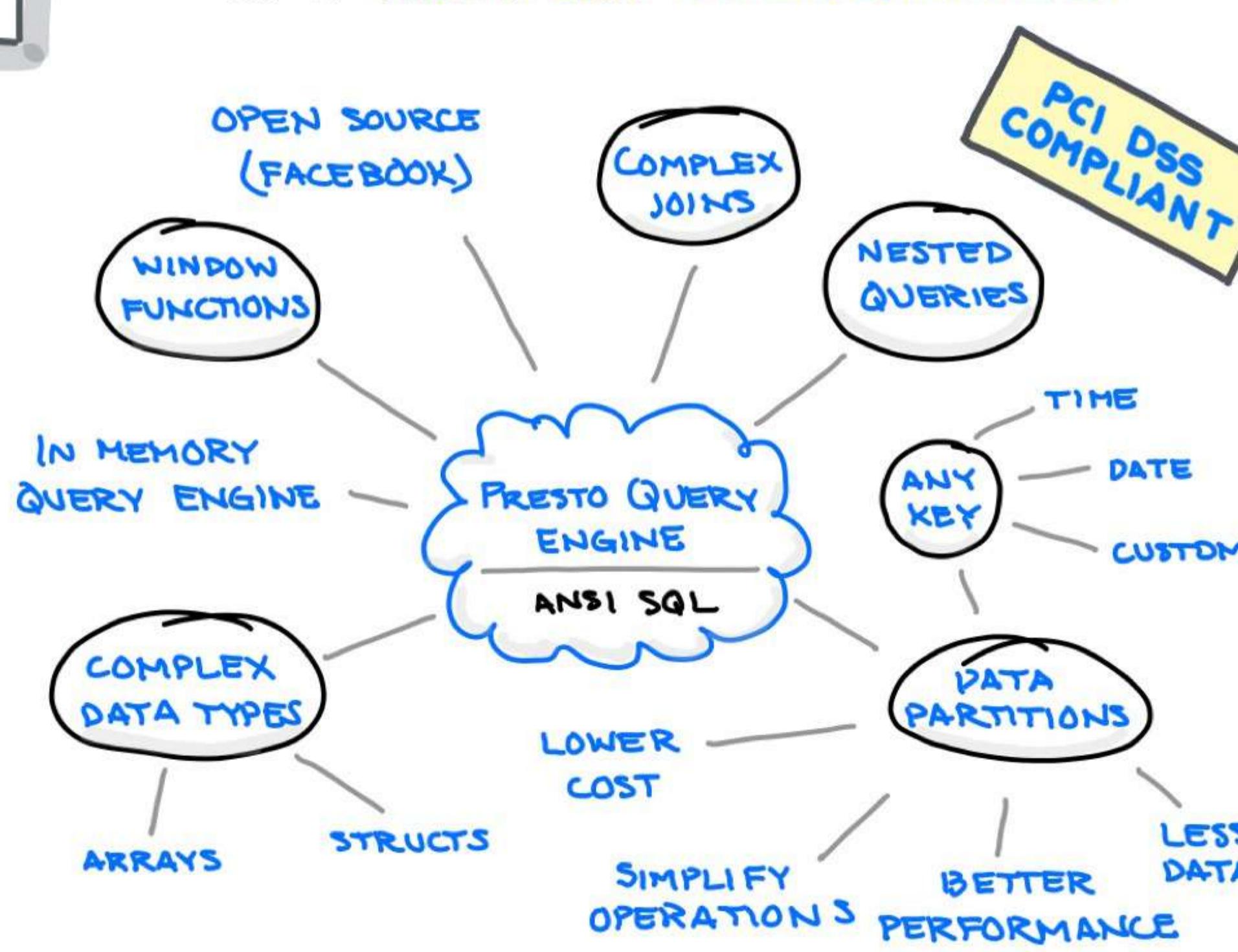
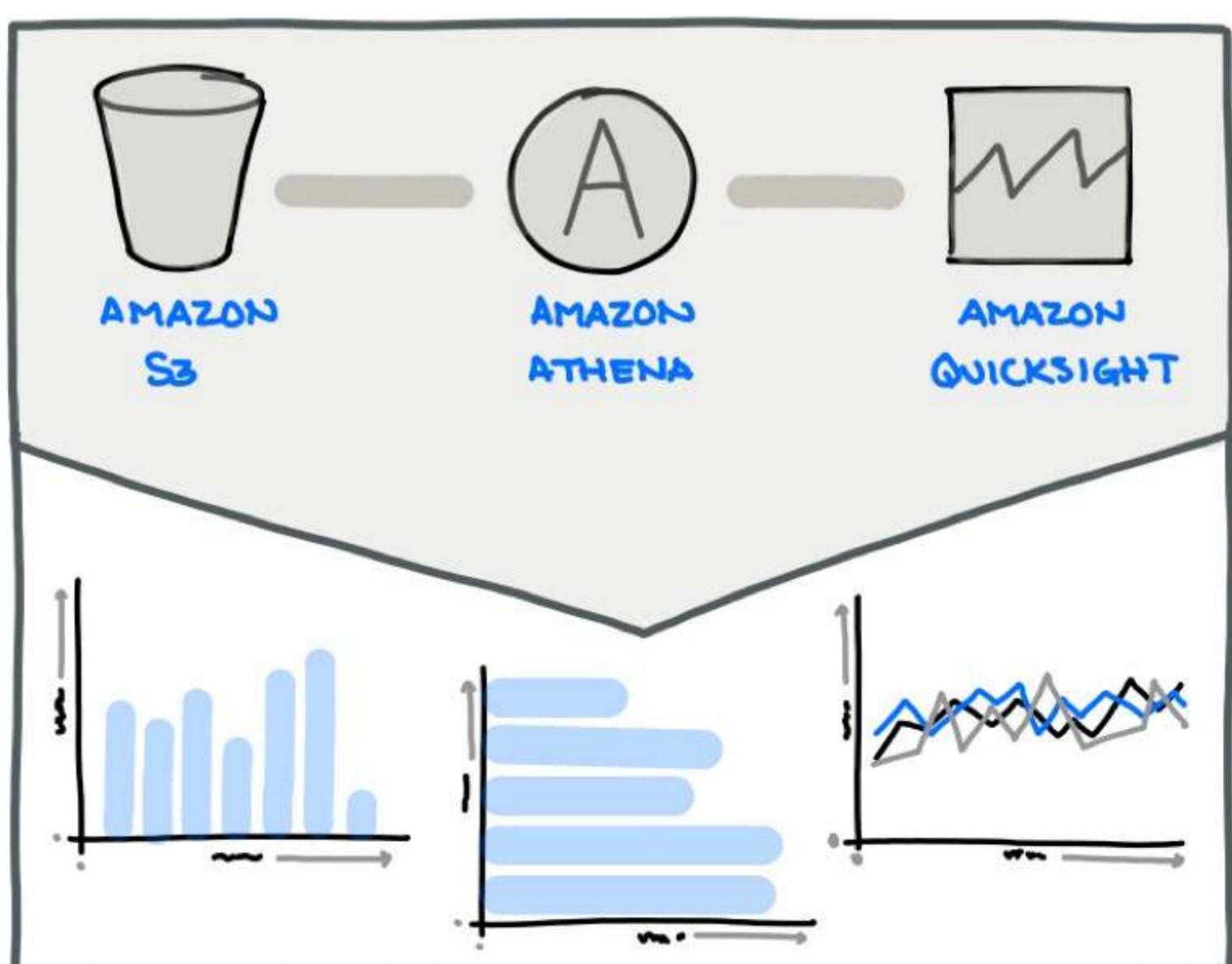
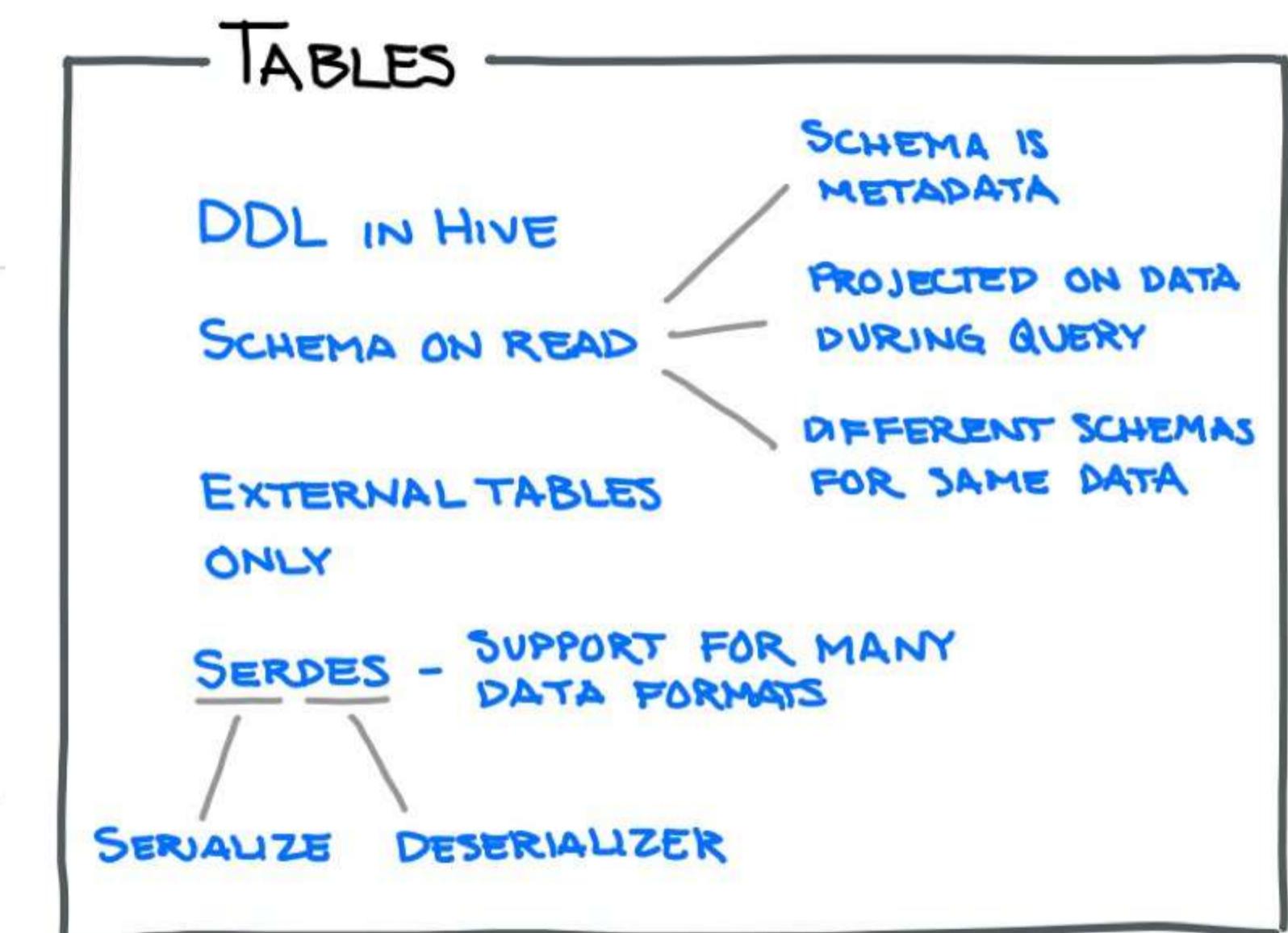


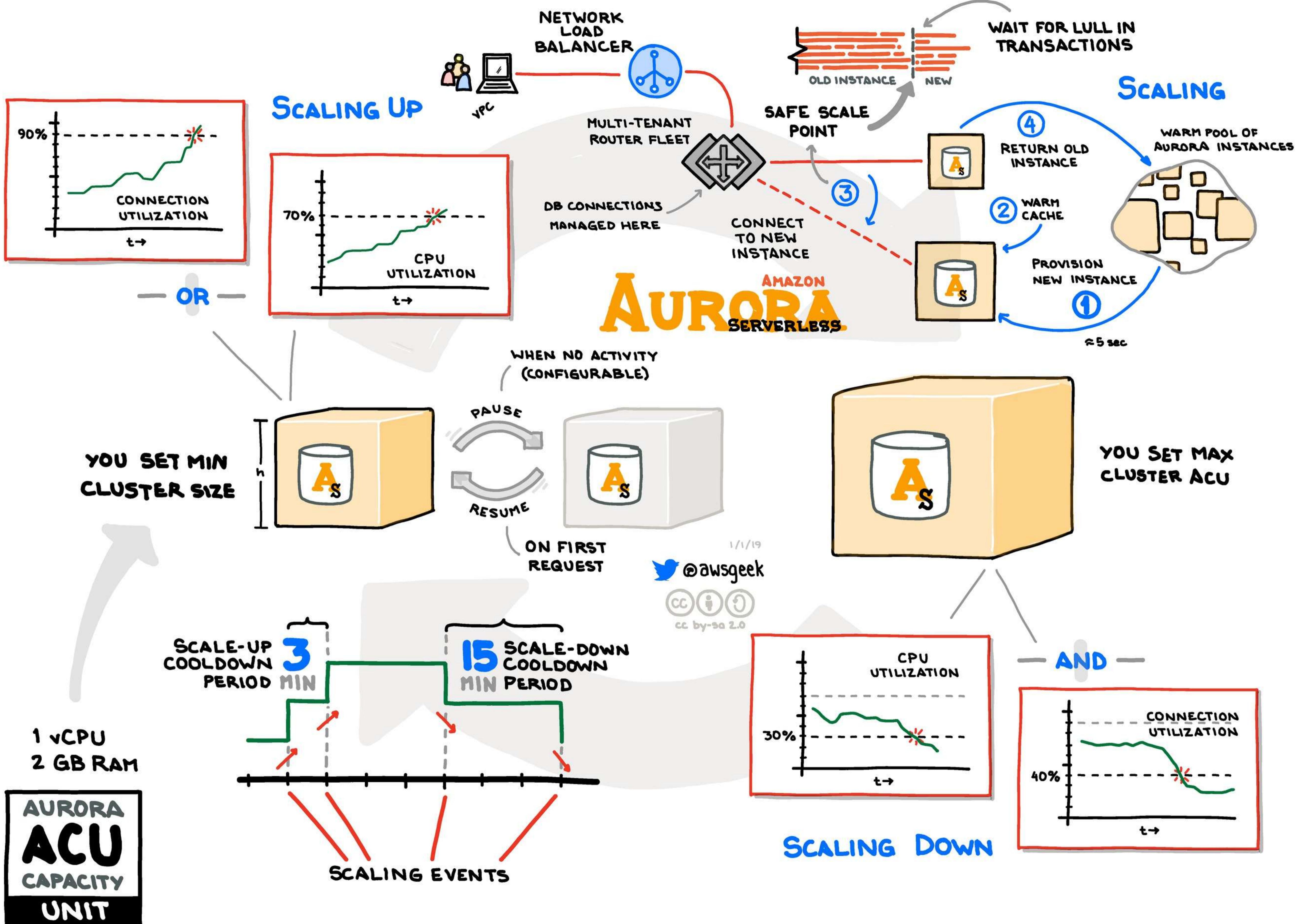
SERVERLESS	HIGHLY AVAILABLE
NO INFRA OR ADMIN	WARM COMPUTE POOLS
NO SPIN UP TIME	DATA IN S3
NO MAINTENANCE	MULTIPLE AZ
CONVENIENT	PERFORMANT
NO DATA LOADING	AUTO PARALLELIZATION
NATIVE DATA FORMATS	STREAMING RESULTS
NO ETL INVOLVED	COMPRESS / COLUMNAR

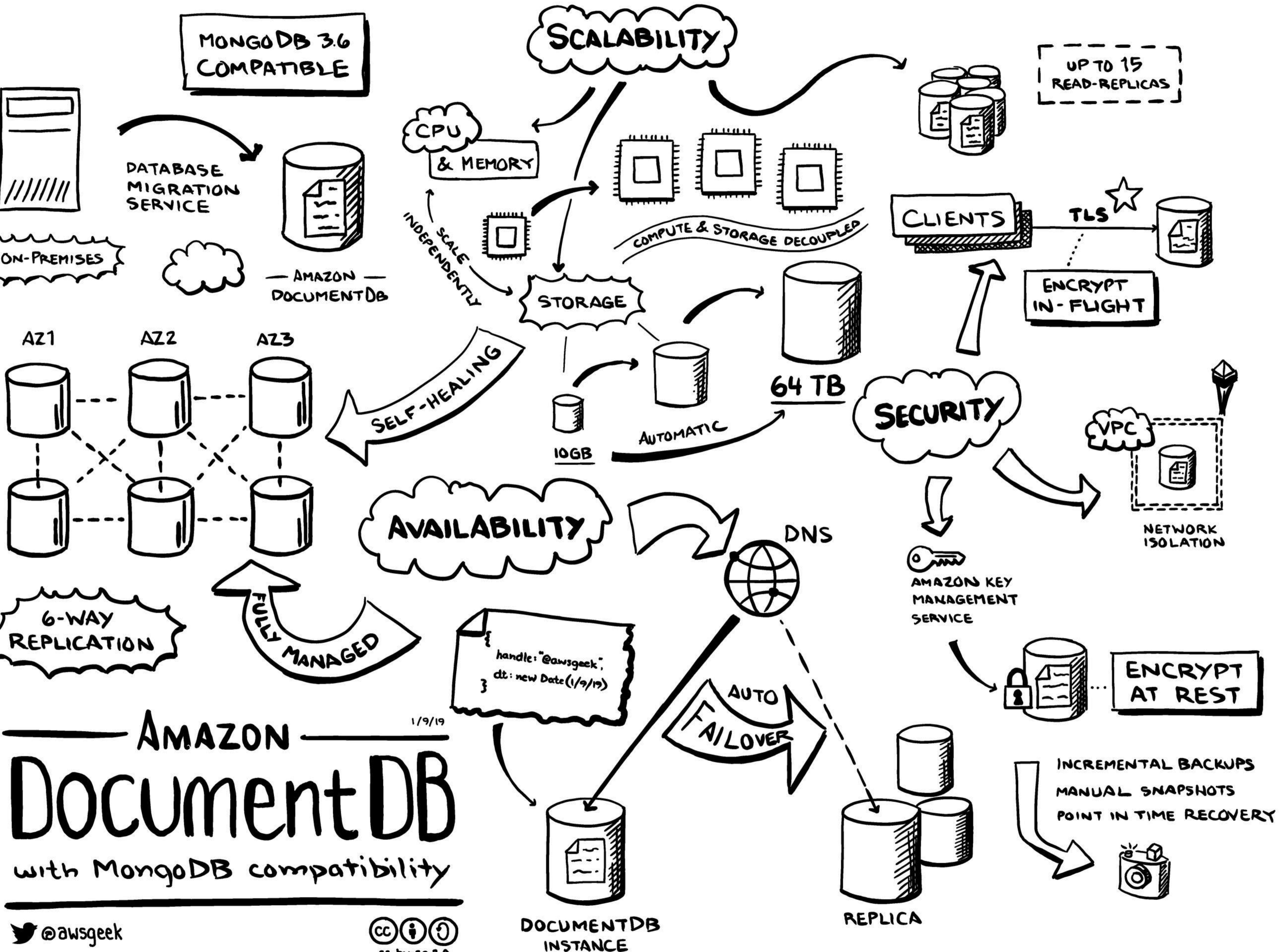
3/6/20 @awsgeek

AMAZON athena

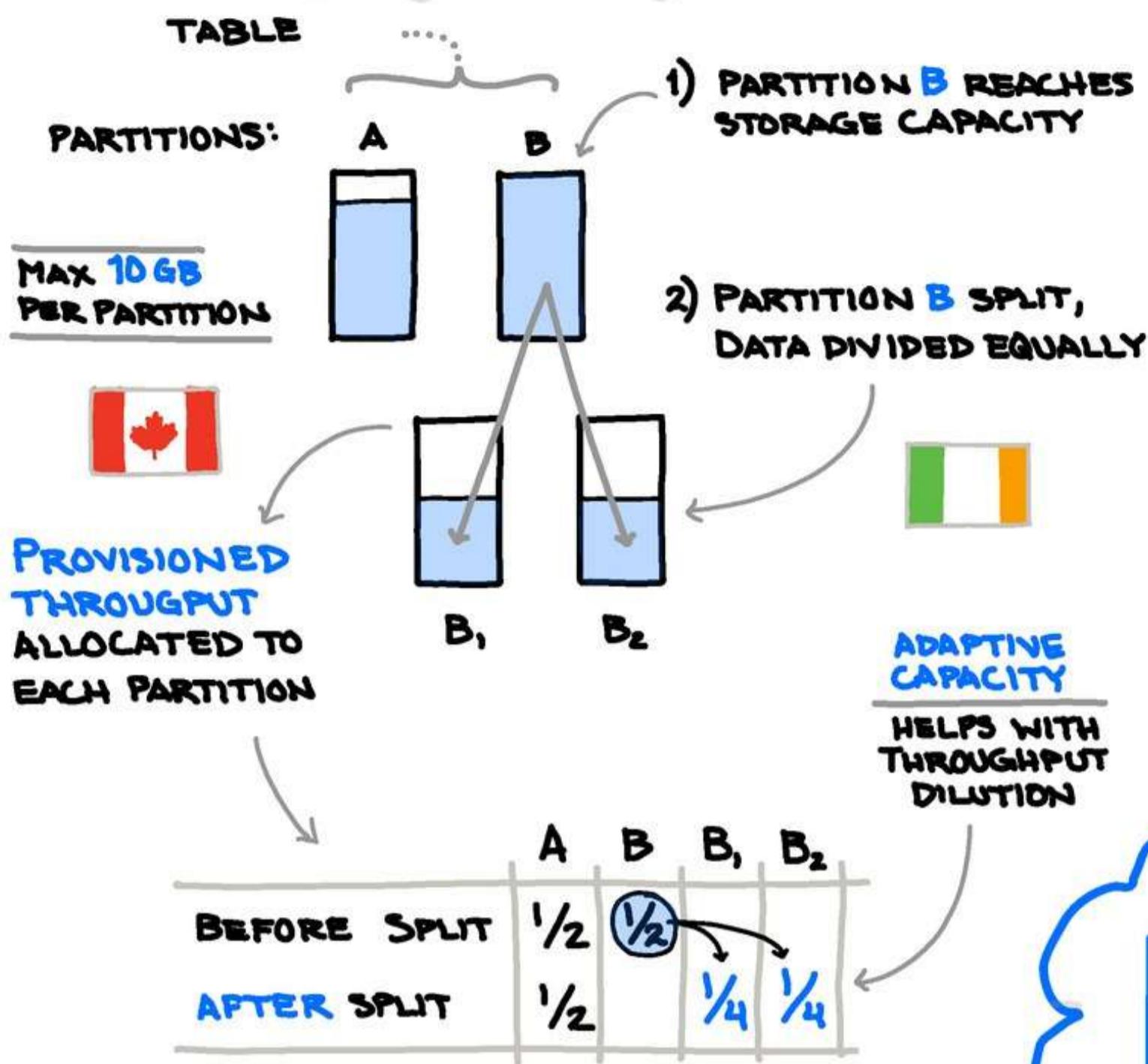
GOAL: MAKE IT EASY TO ANALYZE DATA IN S3



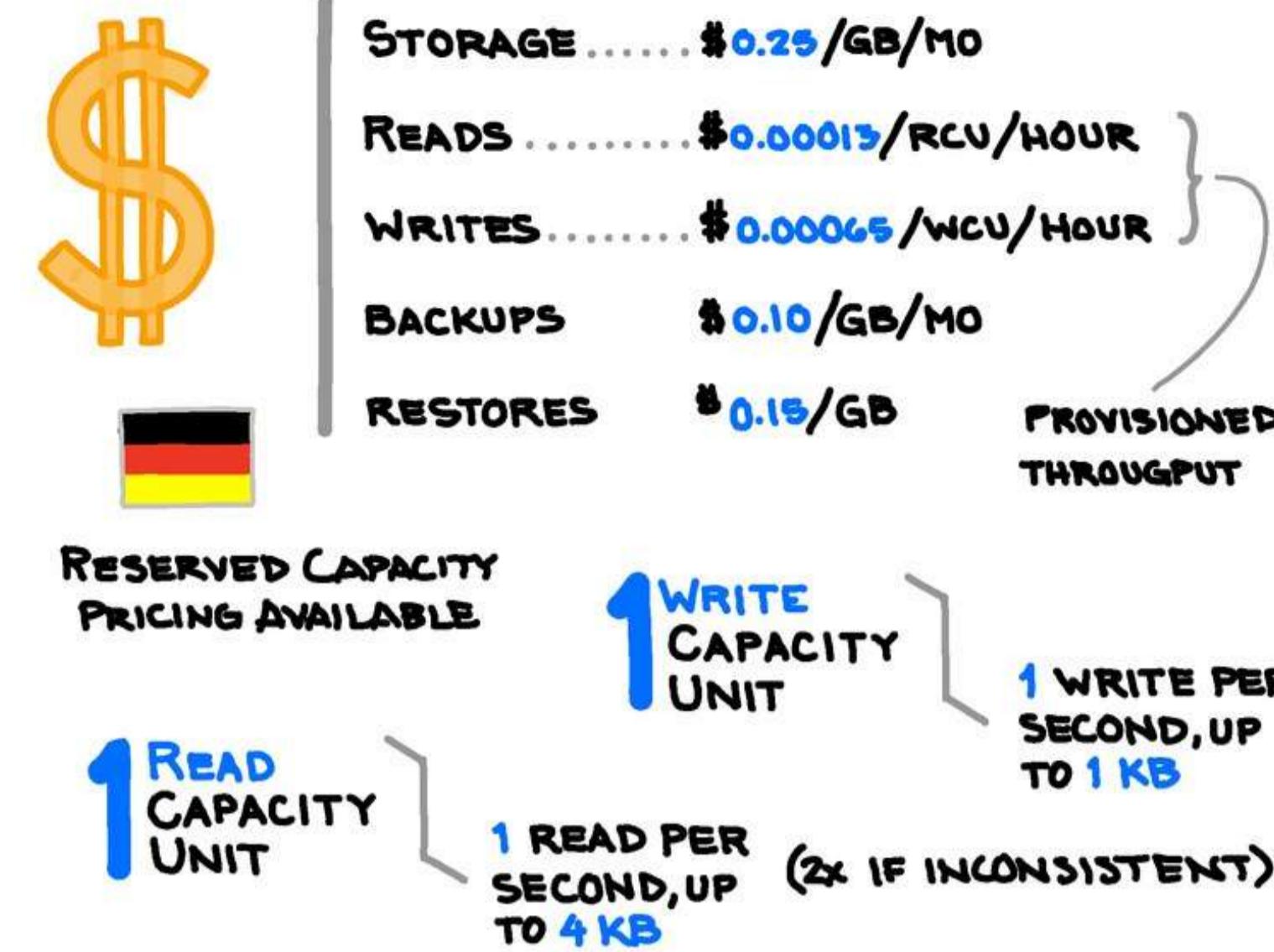




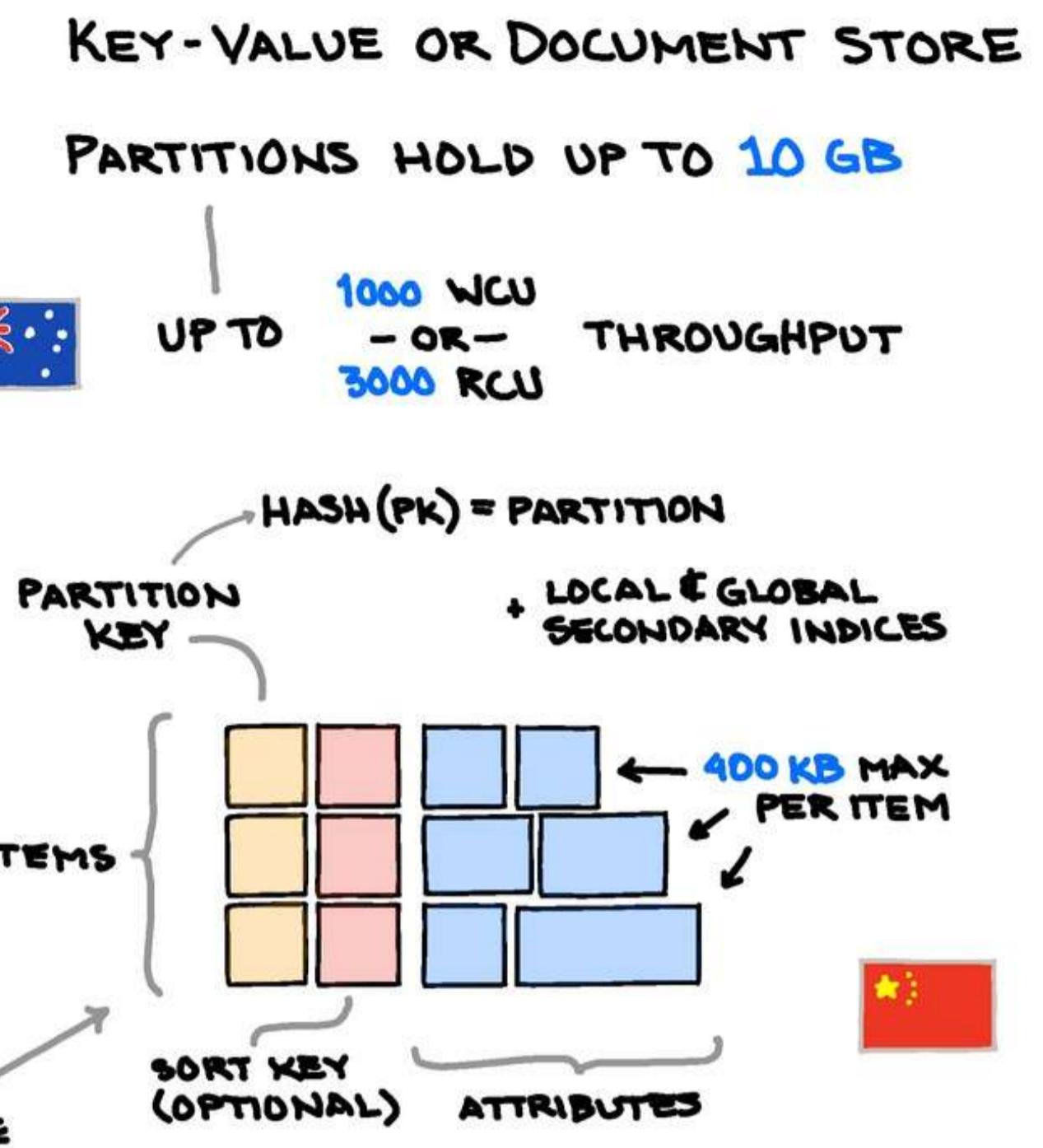
SCALABILITY



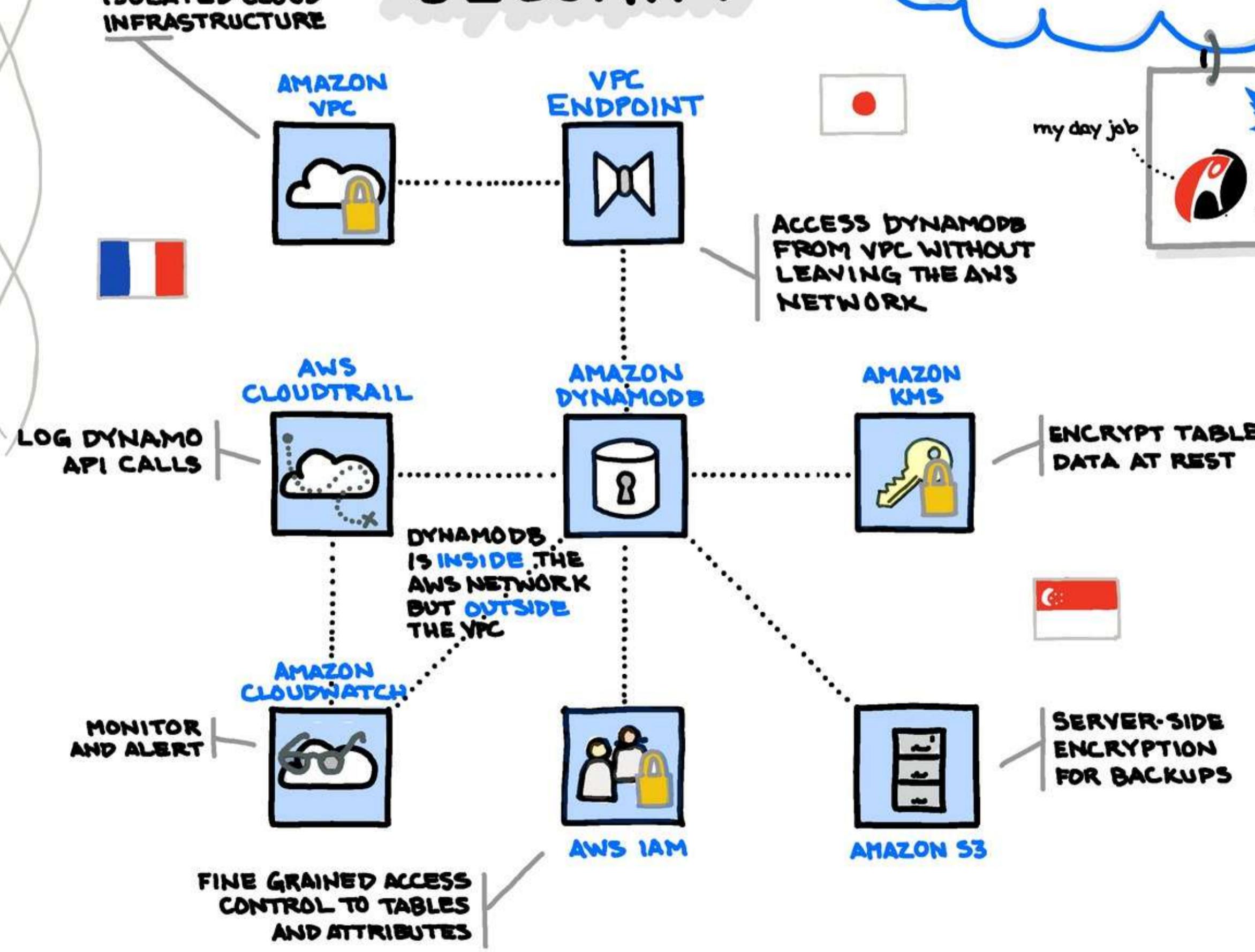
PRICING



ESSENTIALS



SECURITY

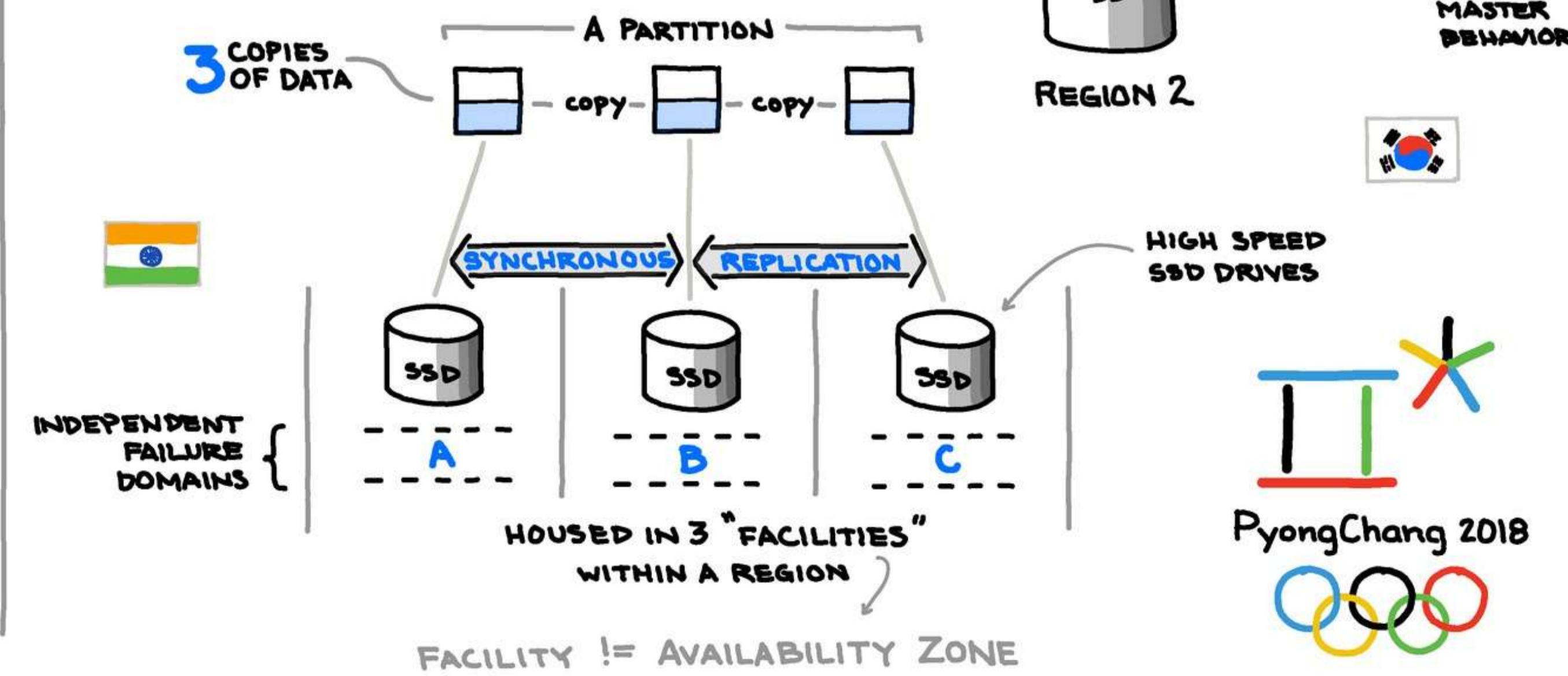


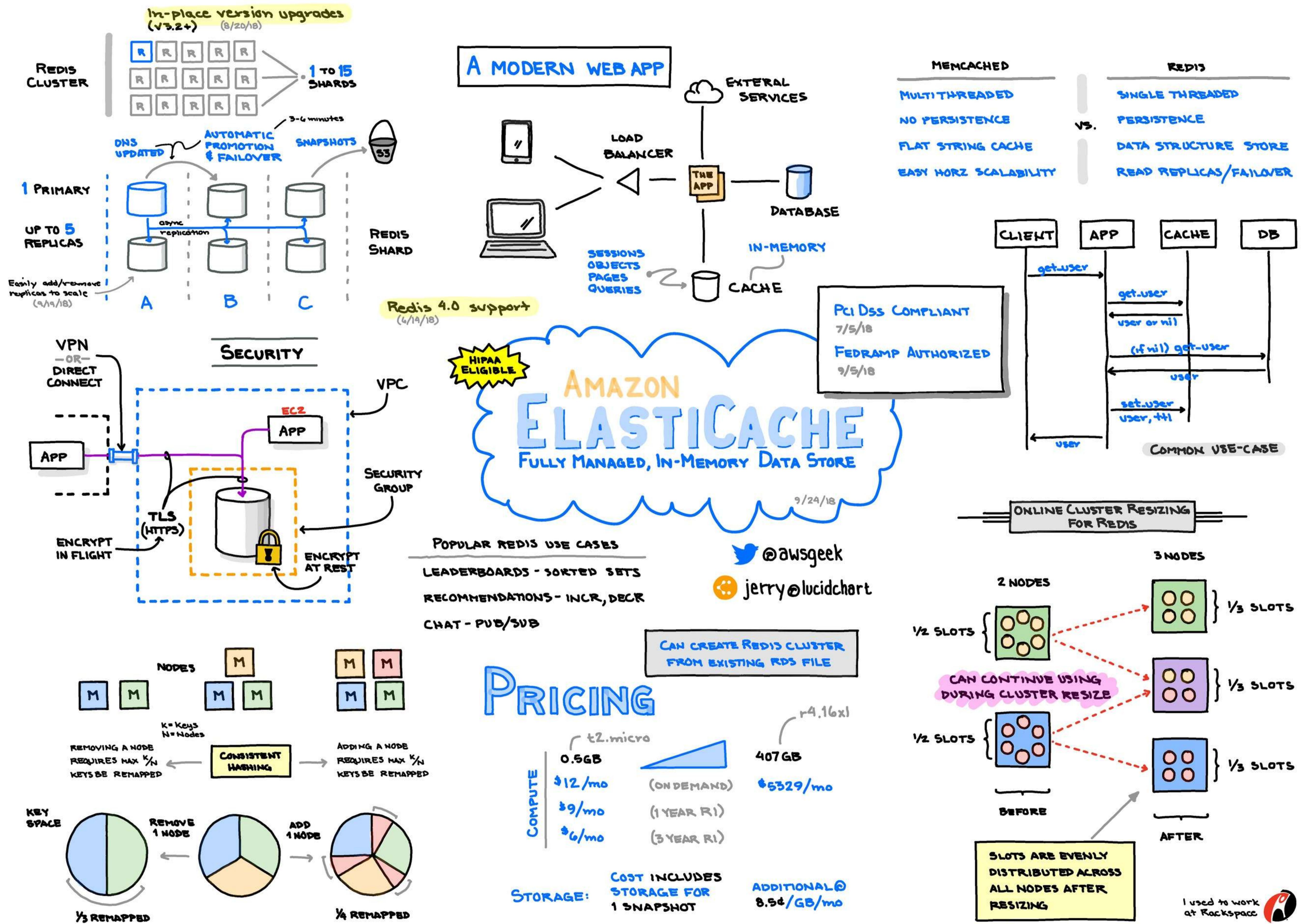
amazon DYNAMO DB

a fast, flexible no-sql database

2/10/18

AVAILABILITY





SOCIAL NETWORKING
GROUP FRIENDS WHO LIKE OR DISLIKE SIMILAR THINGS

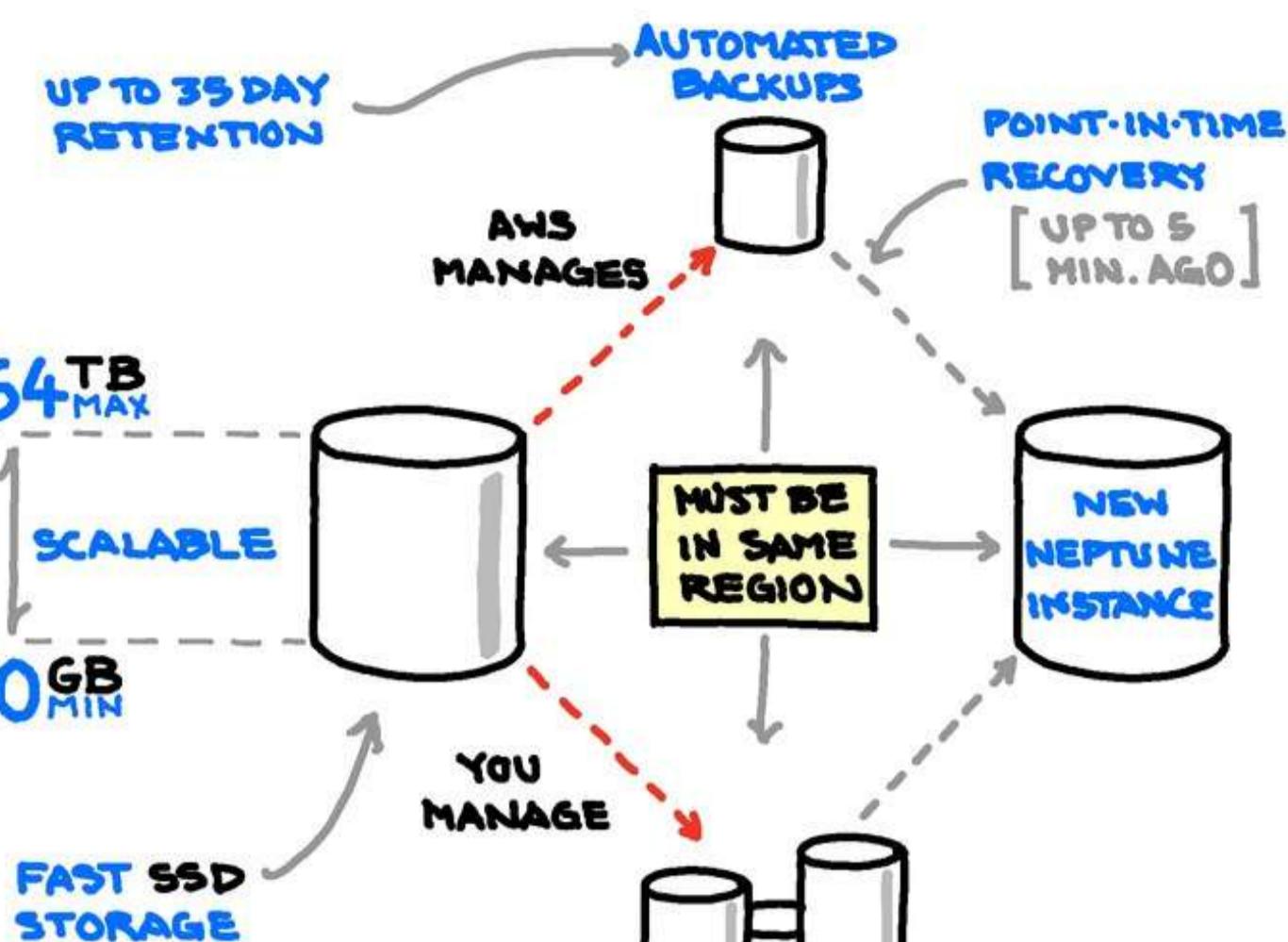
RECOMMENDATION ENGINE
MAKE PURCHASE SUGGESTIONS BASED ON OTHER USERS WITH SIMILAR INTERESTS

FRAUD DETECTION
DETECT CONNECTIONS TO KNOWN FRAUD SCENARIOS

KNOWLEDGE GRAPHS
STORE AND QUERY INFO & RELATIONSHIPS BETWEEN USERS

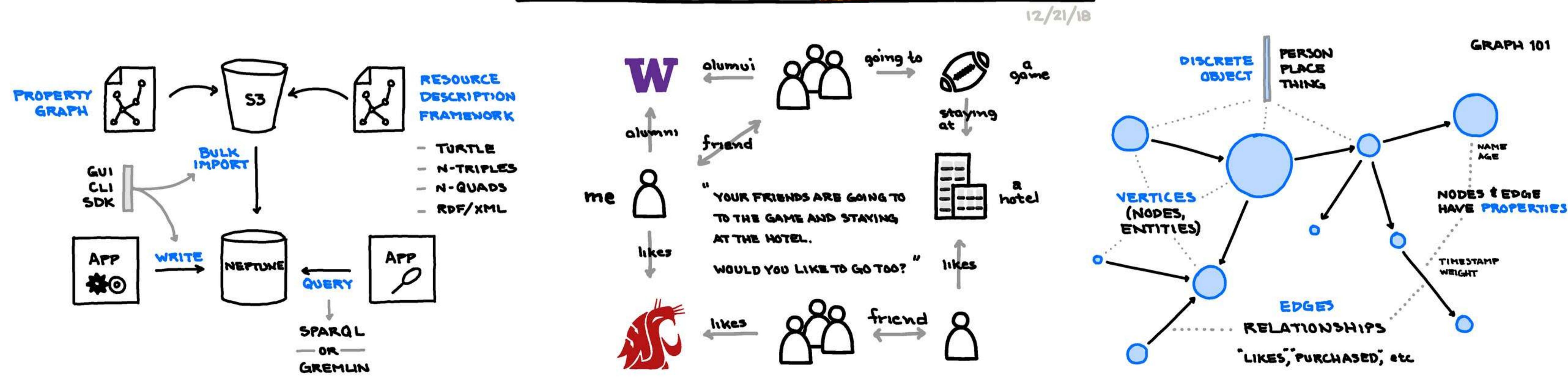
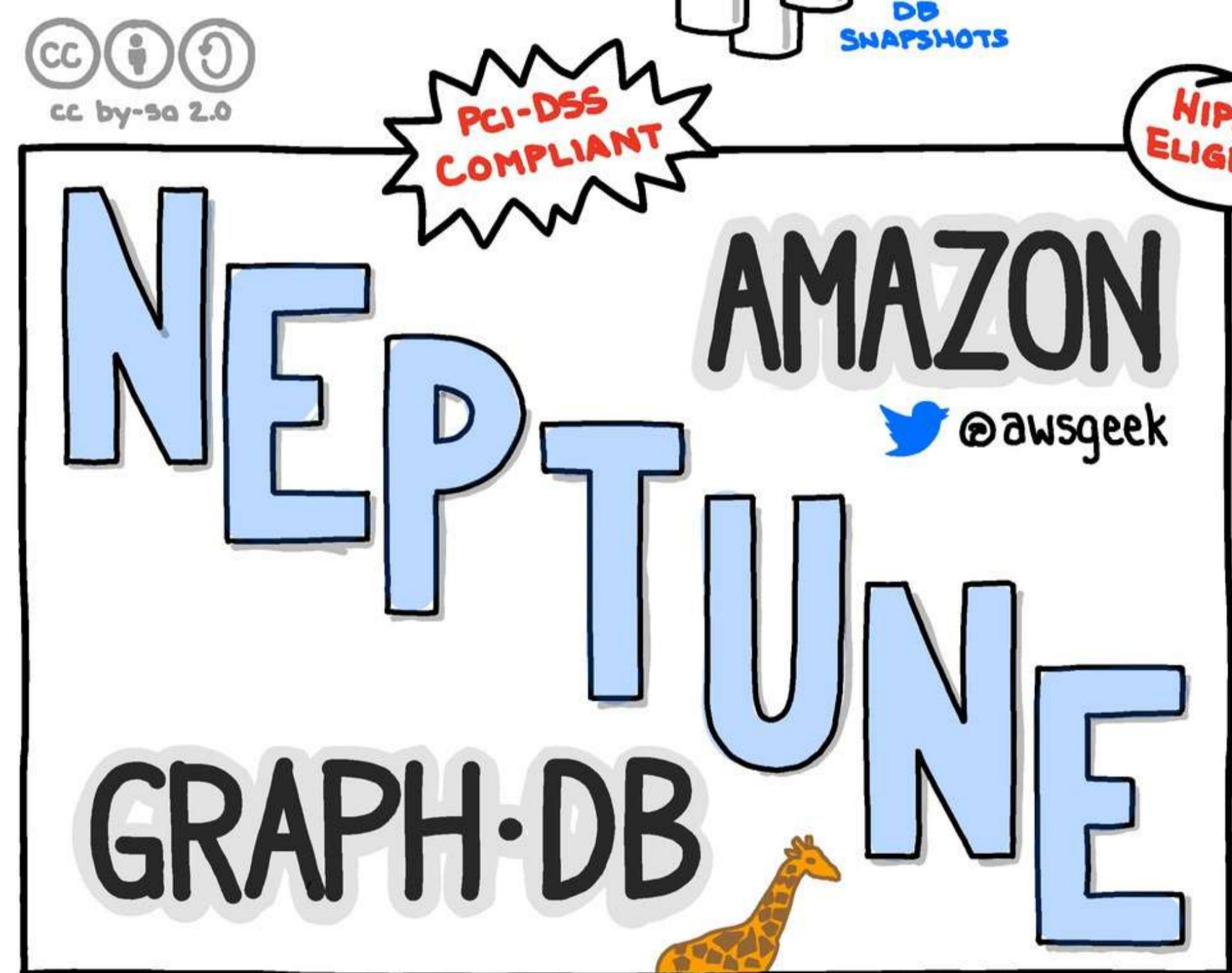
LIFE SCIENCES
SECURELY STORE AND PROCESS PATIENT & HEALTHCARE DATA

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

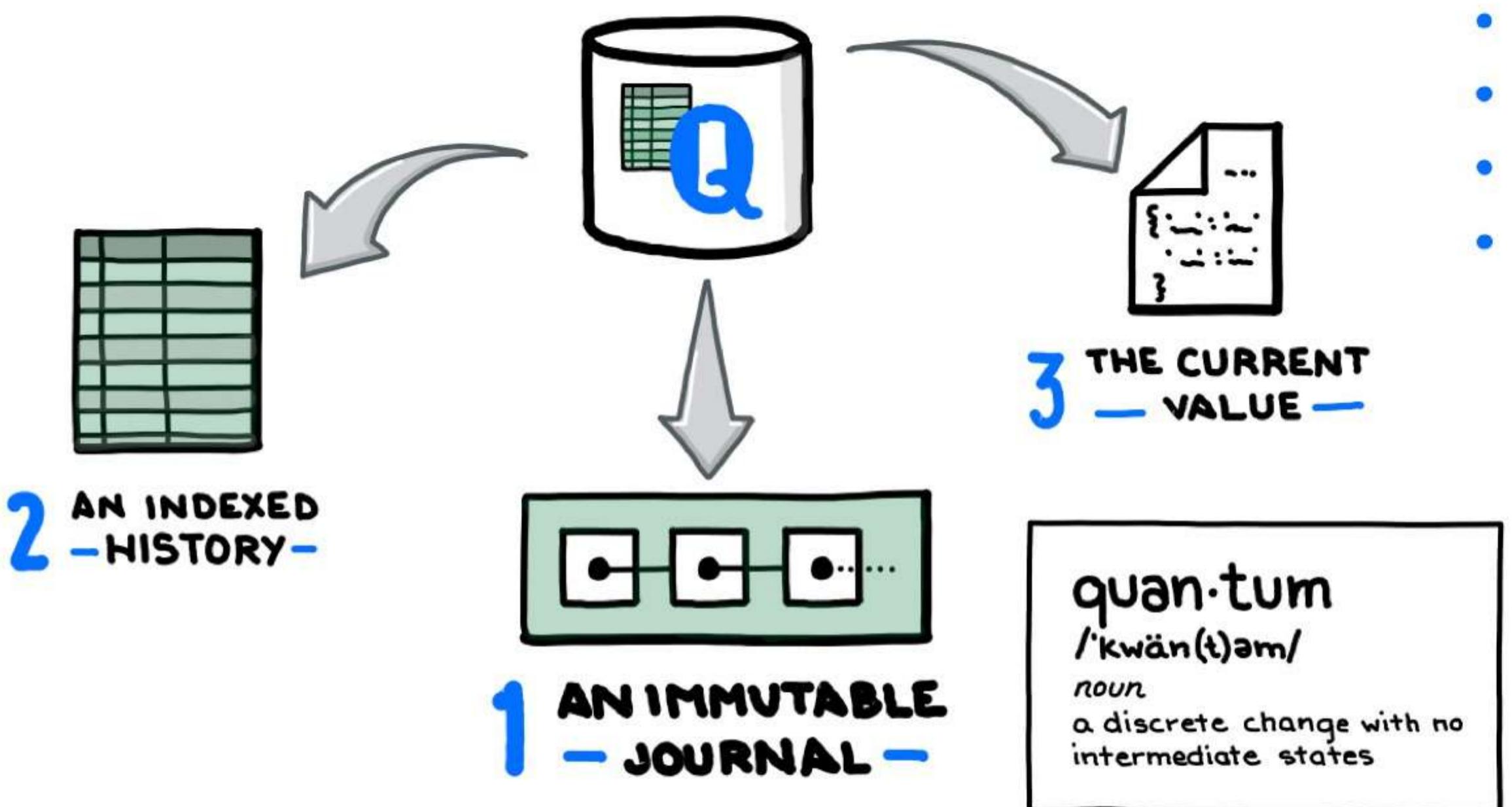


PRICING

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

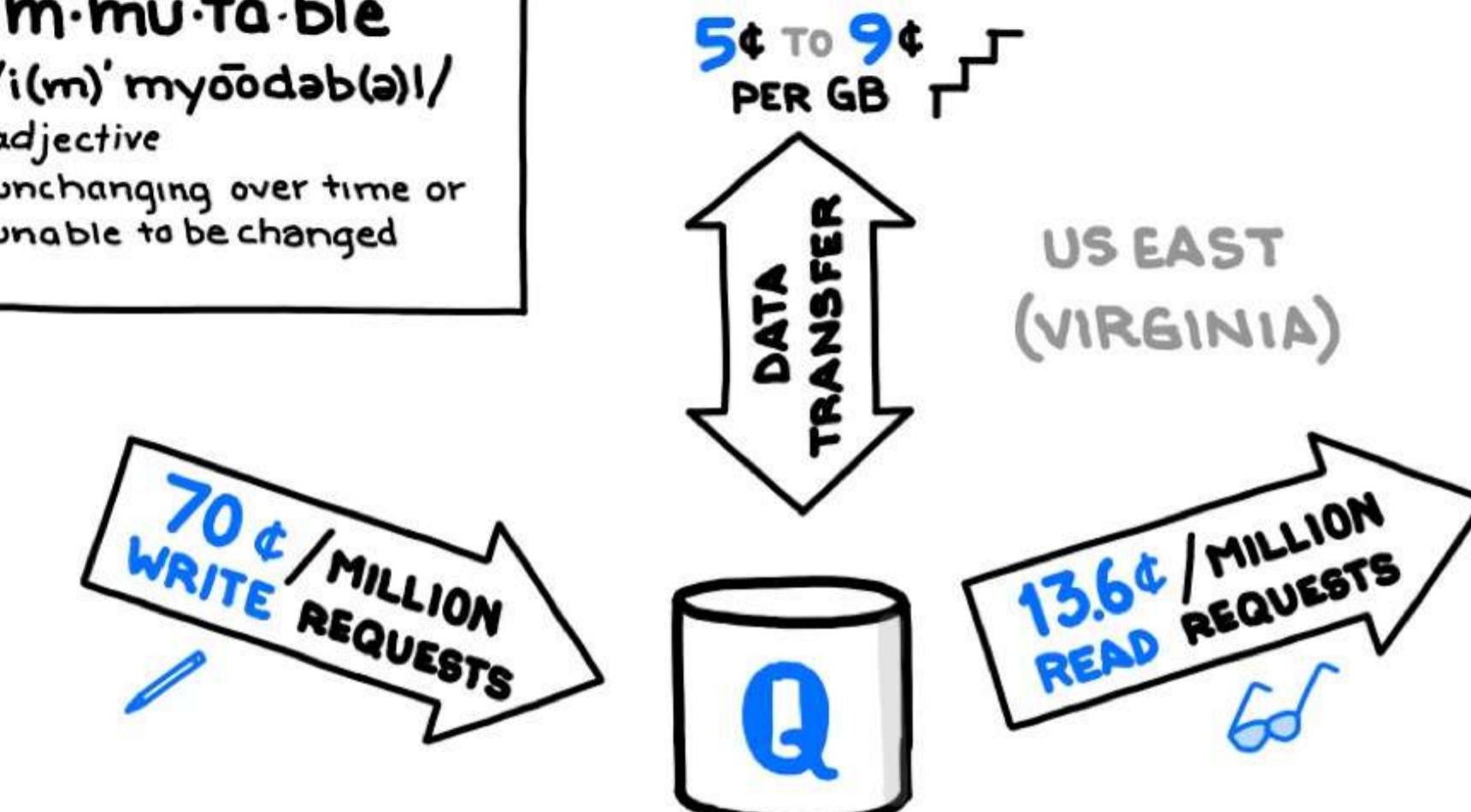
- NEAR REAL TIME
- KINESIS DATA STREAMS

SERVERLESS

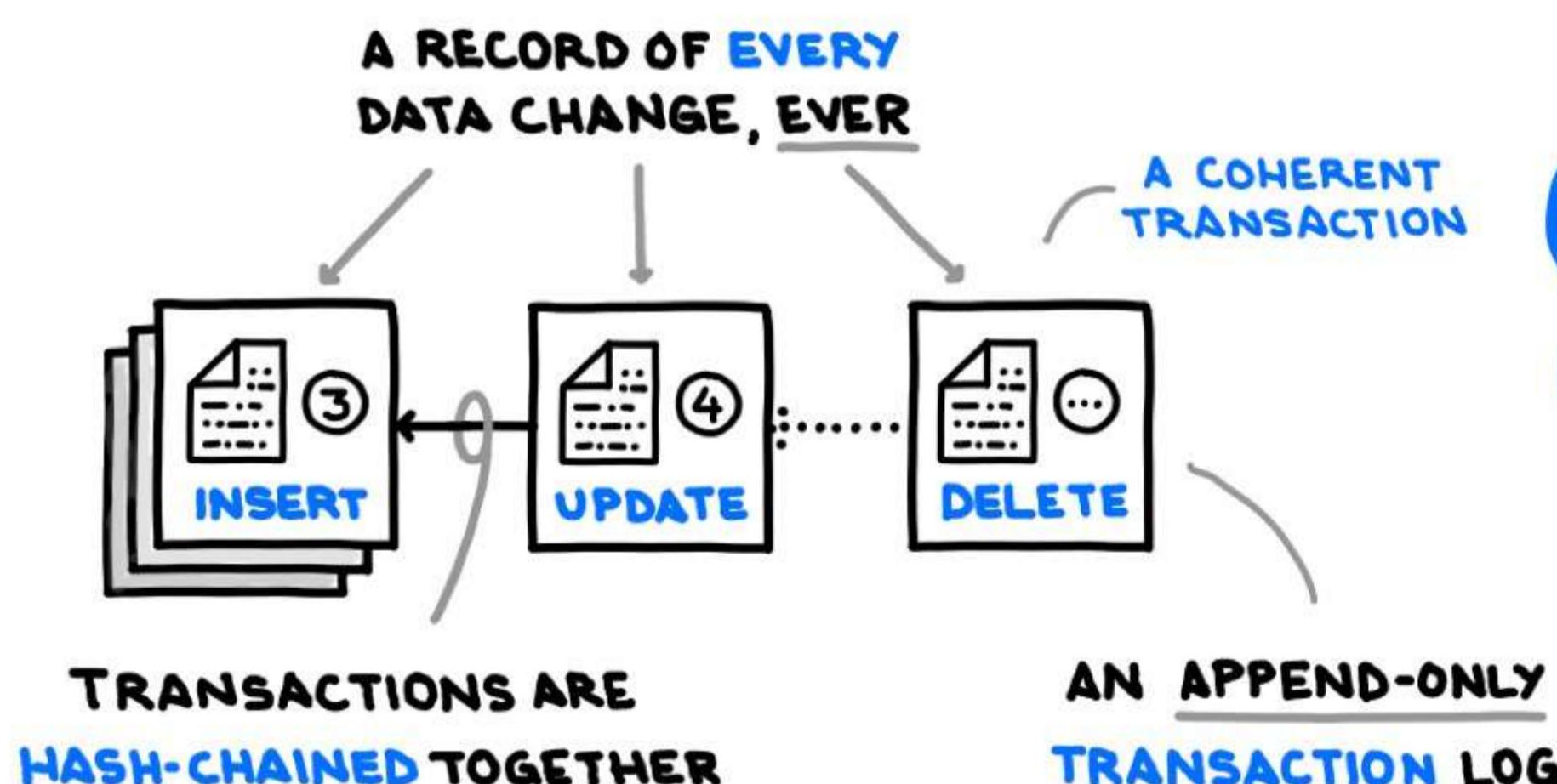
- NO NODE PROVISIONING
- NO IO PROVISIONING

How Much Does QLDB Cost?

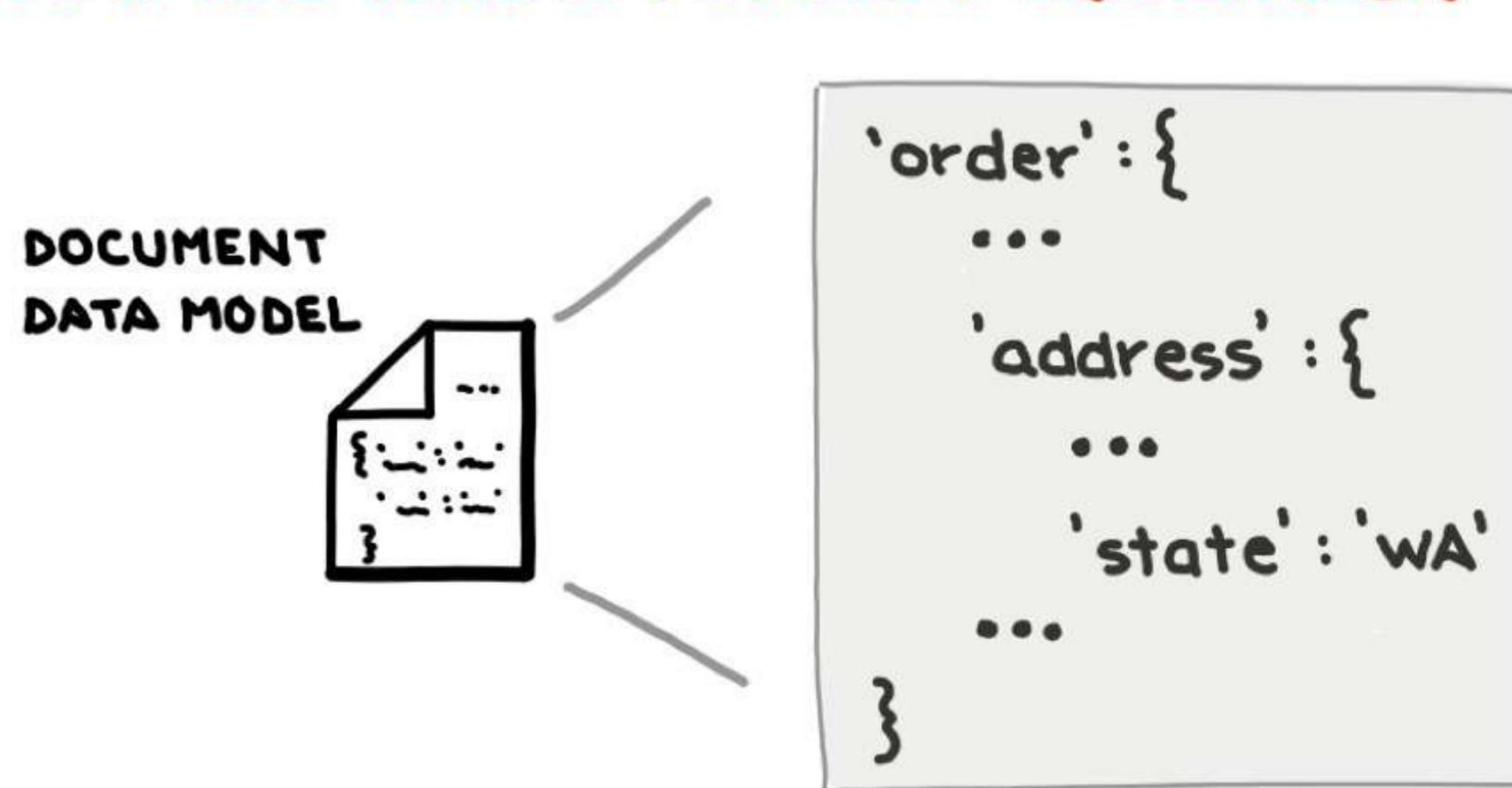
im·mu·ta·ble
/i(m)'myooðab(a)b/
adjective
unchanging over time or
unable to be changed



WHAT IS AN IMMUTABLE JOURNAL?



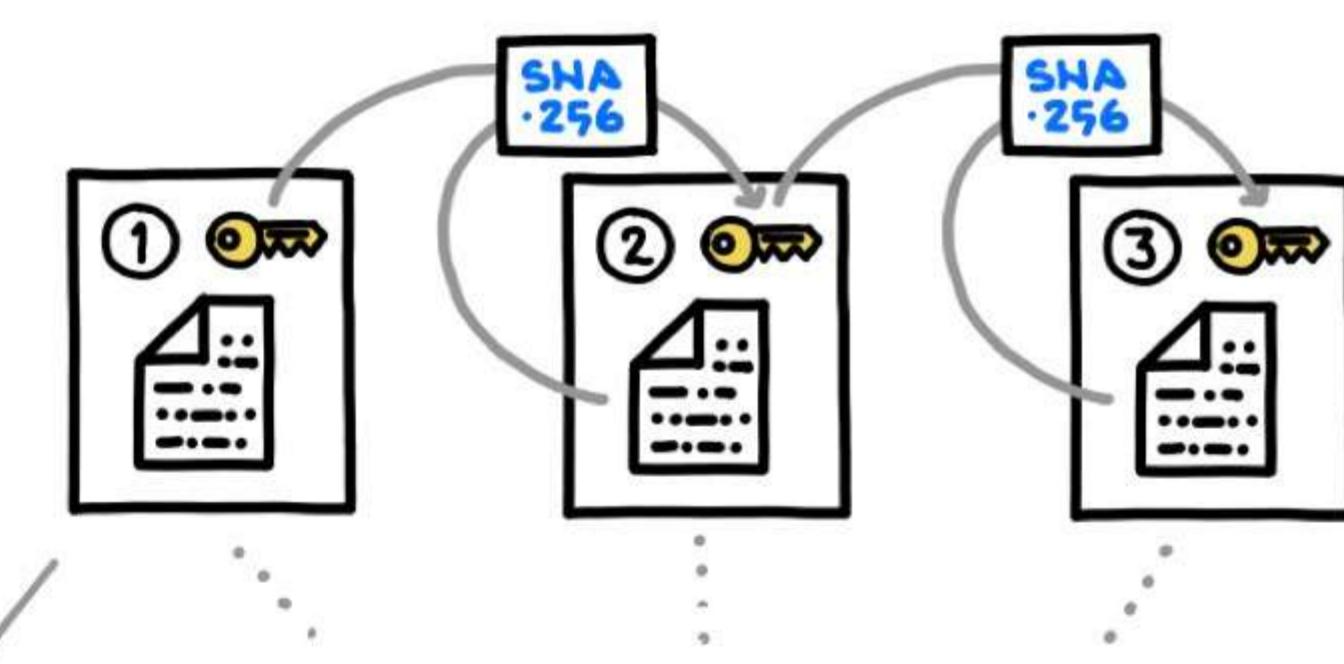
How is Data Stored/Queried?



FOR SYSTEM OF RECORD APPS

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

CHANGES
IMMEDIATELY
DETECTABLE



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

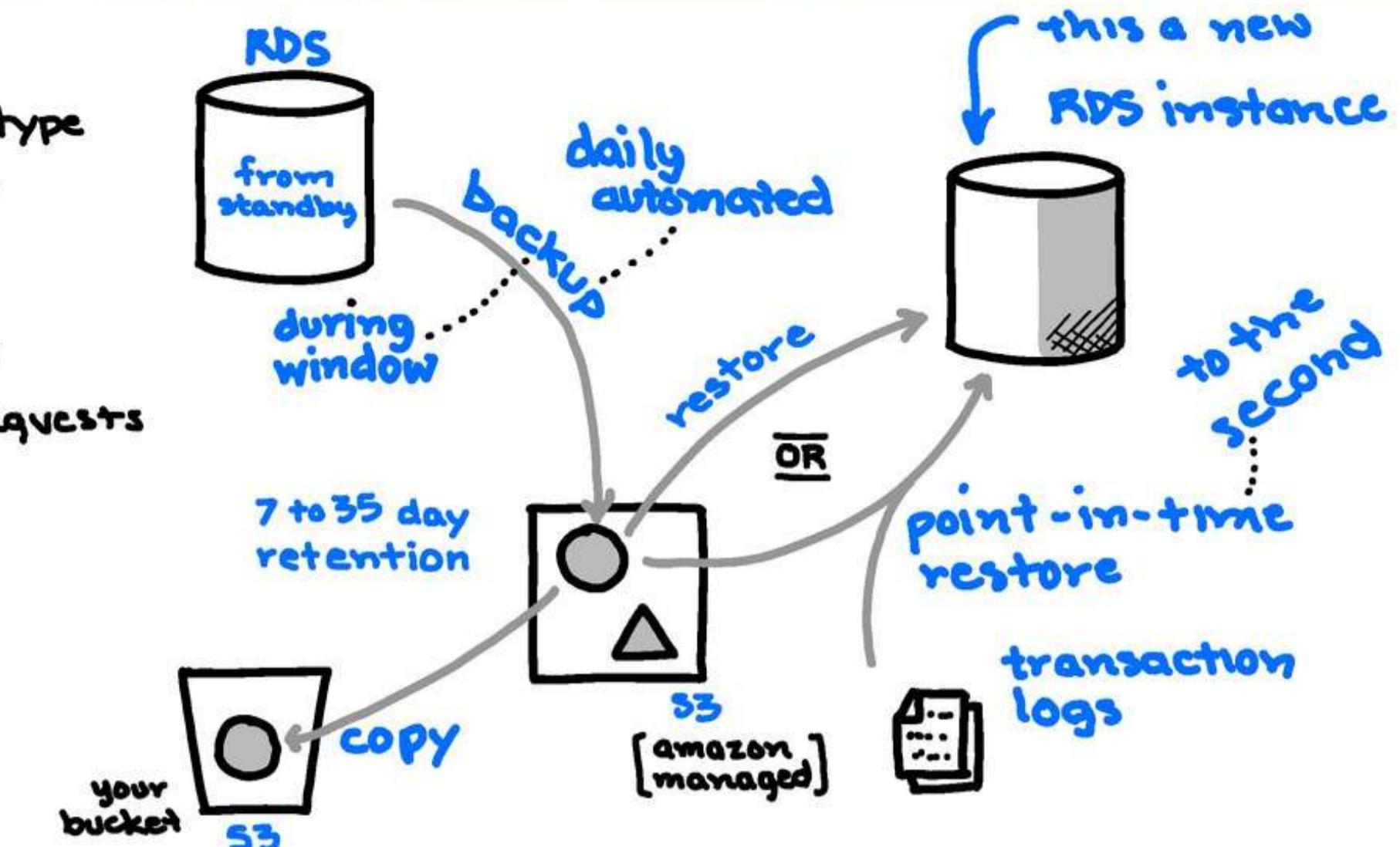
BACKUP STORAGE

DATA TRANSFER

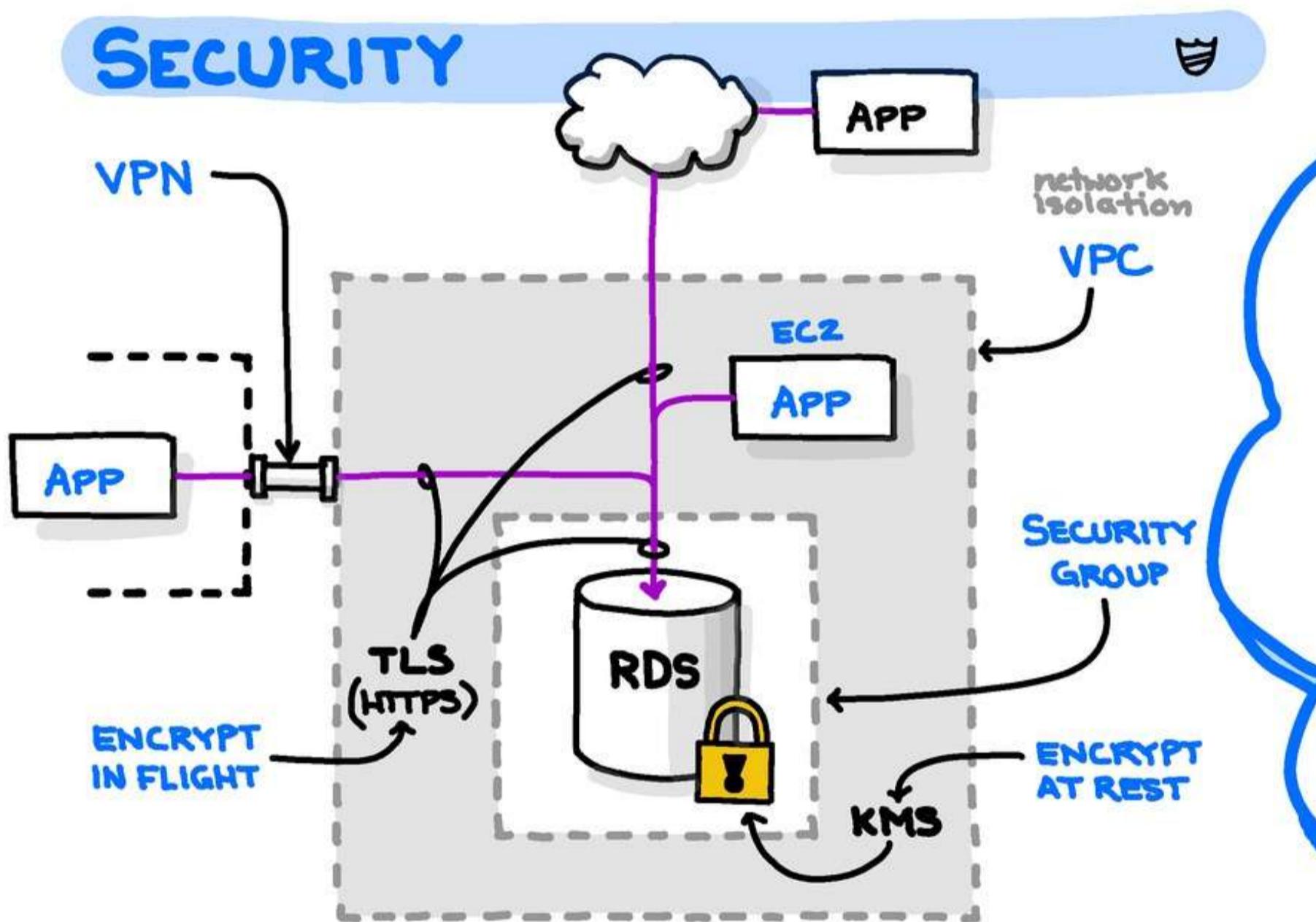
100% of DB size free
9.5¢/GB/Mo after

varies by destination

BACKUPS

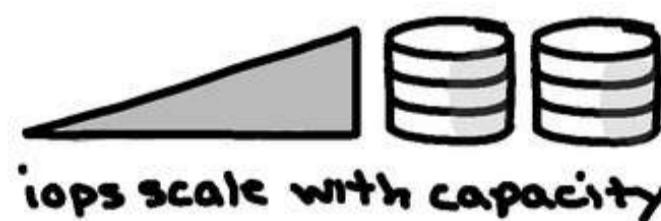


SECURITY

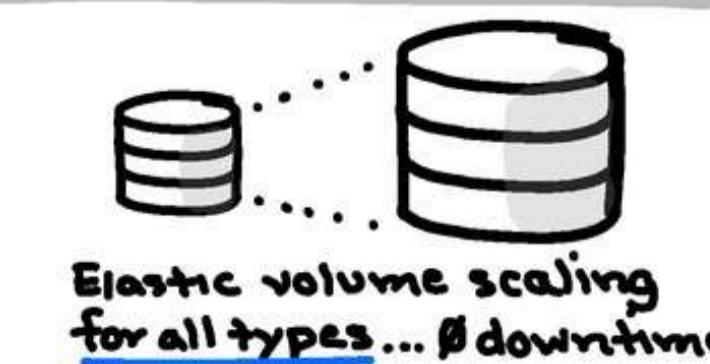


STORAGE

GP2 General Purpose
SSD 16TB Max

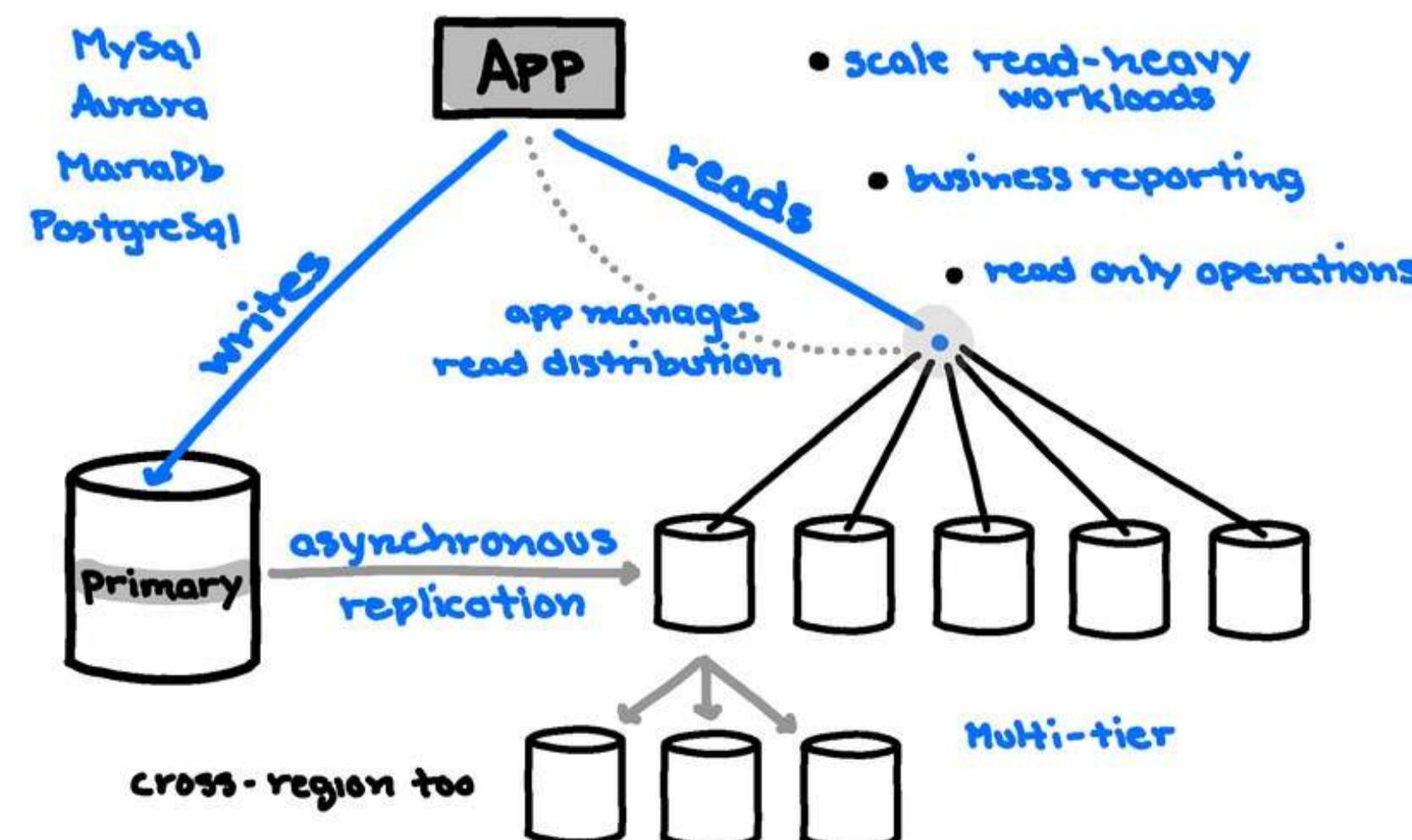


IOP Provisioned IOPS
SSD 16TB Max
30K IOPS



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

STORAGE CLASSES

STANDARD
— and —
INFREQUENT ACCESS

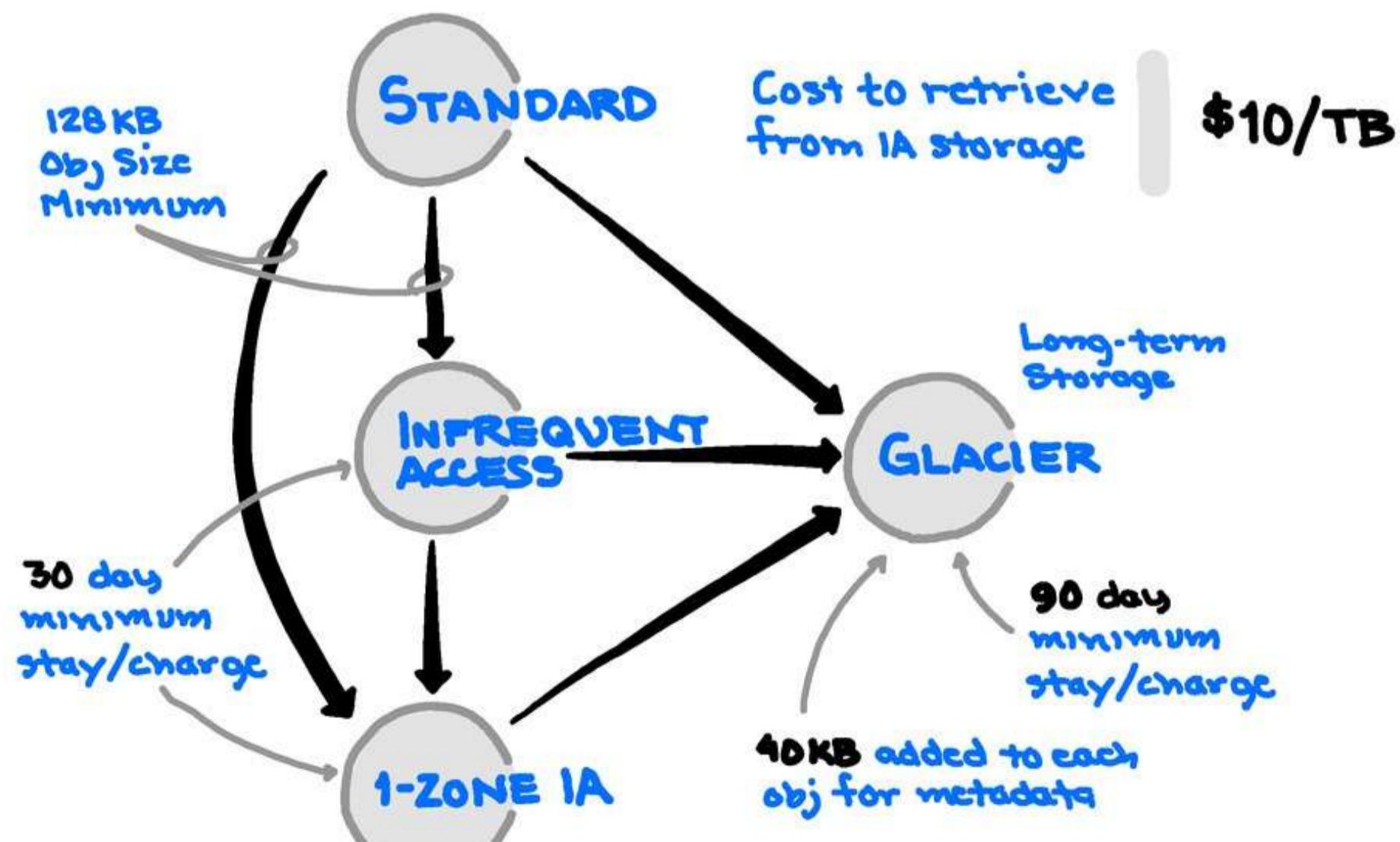
11 NINES DURABILITY

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

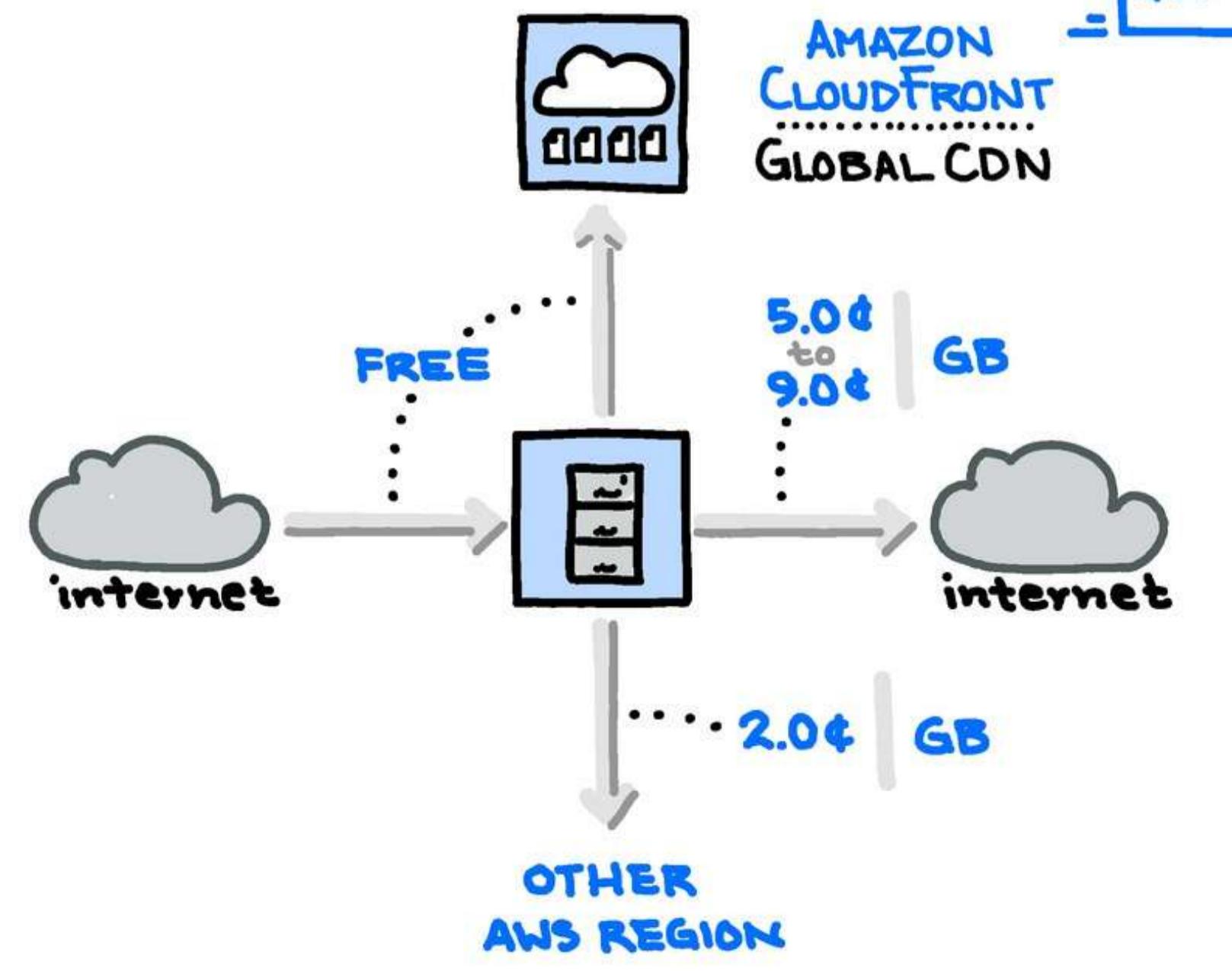
STORAGE

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

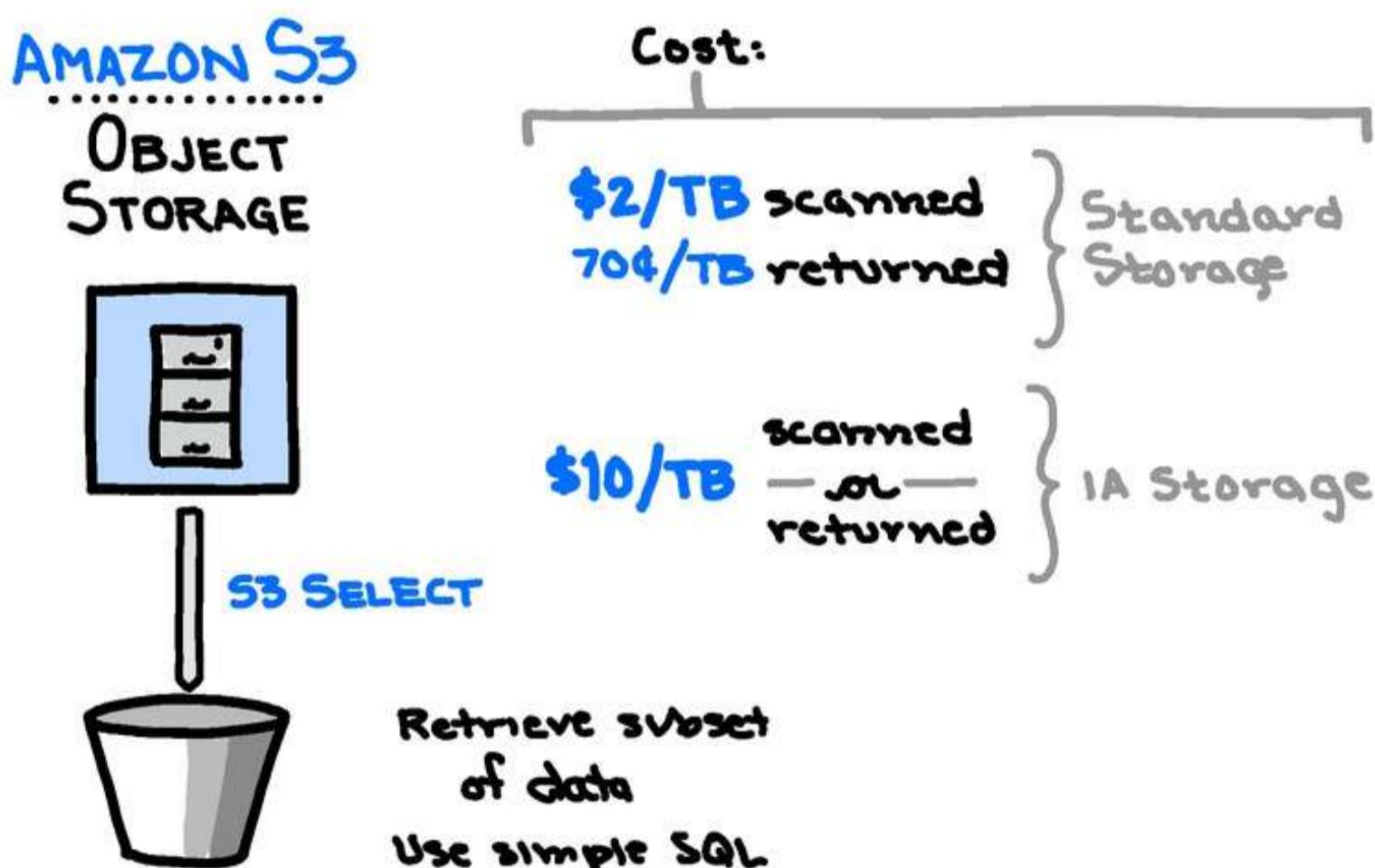
per GB/Mo

	STD 1-ZONE	1.25¢
GLACIER	1.0¢	

DATA TRANSFER



QUERY IN PLACE



OBJECT LOCKING

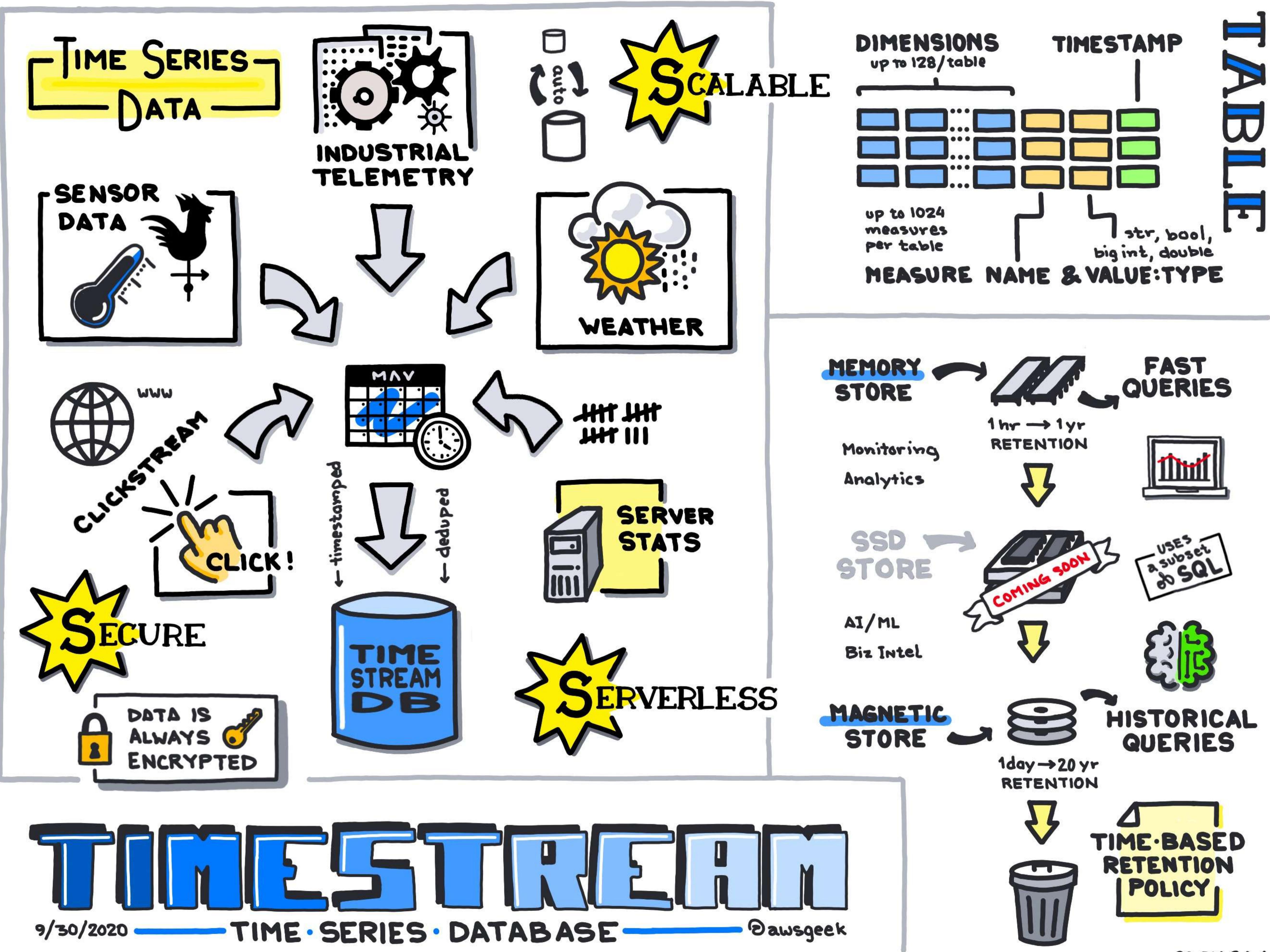
PREVENT OBJECT DELETION

CAN'T DELETE TIL DATE

NEVER DELETE (EVER)

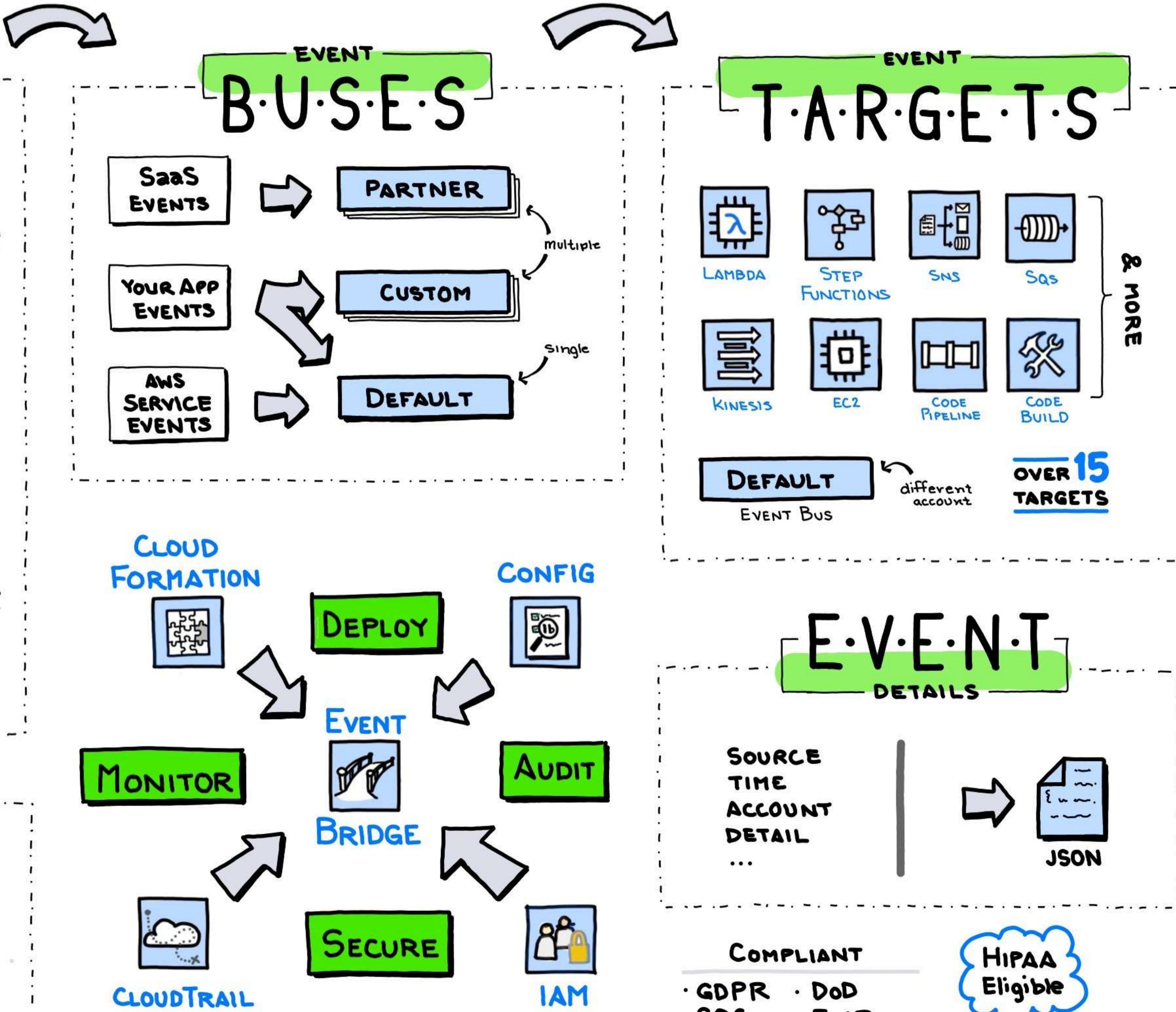
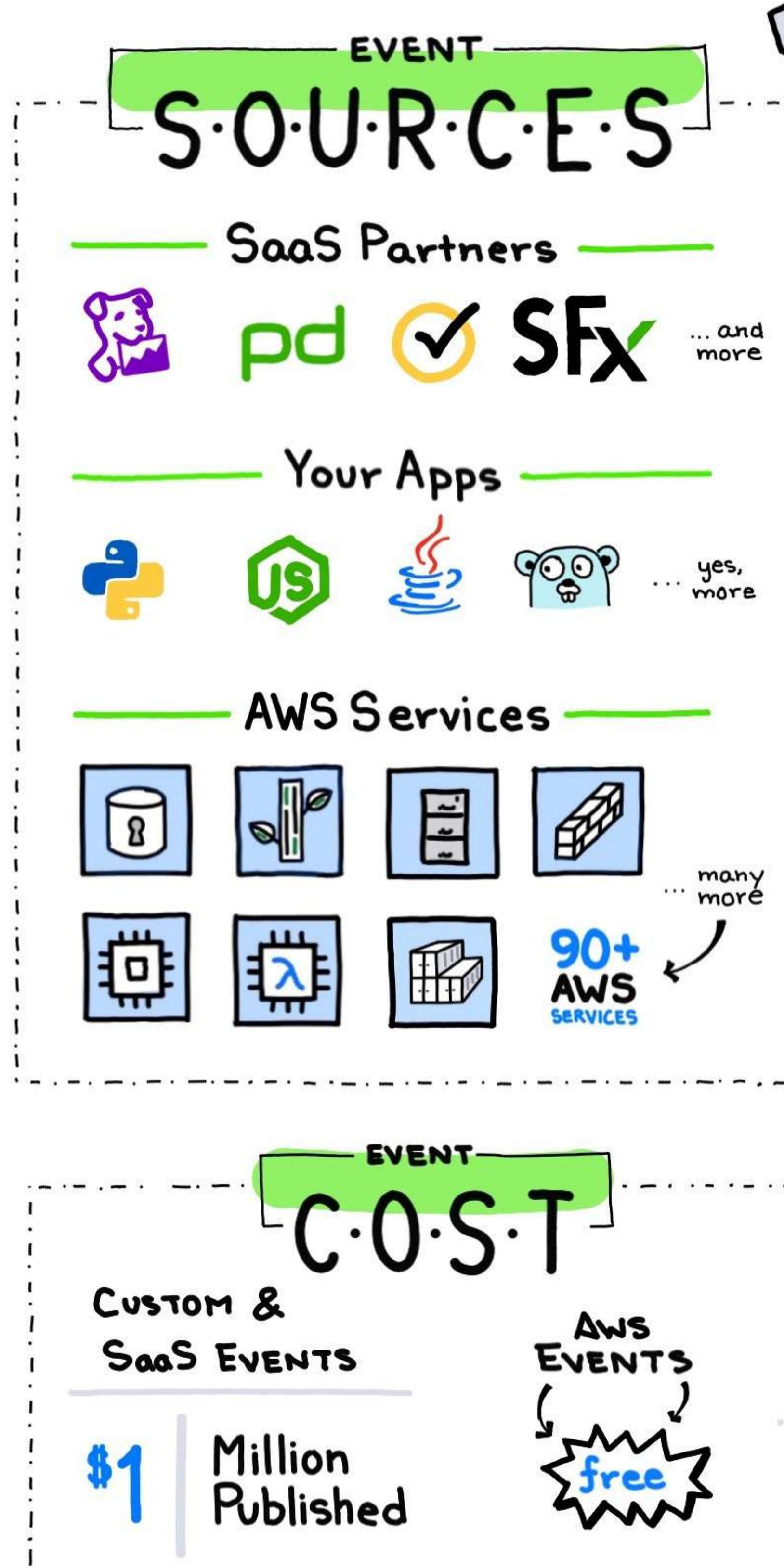
GOVERNANCE

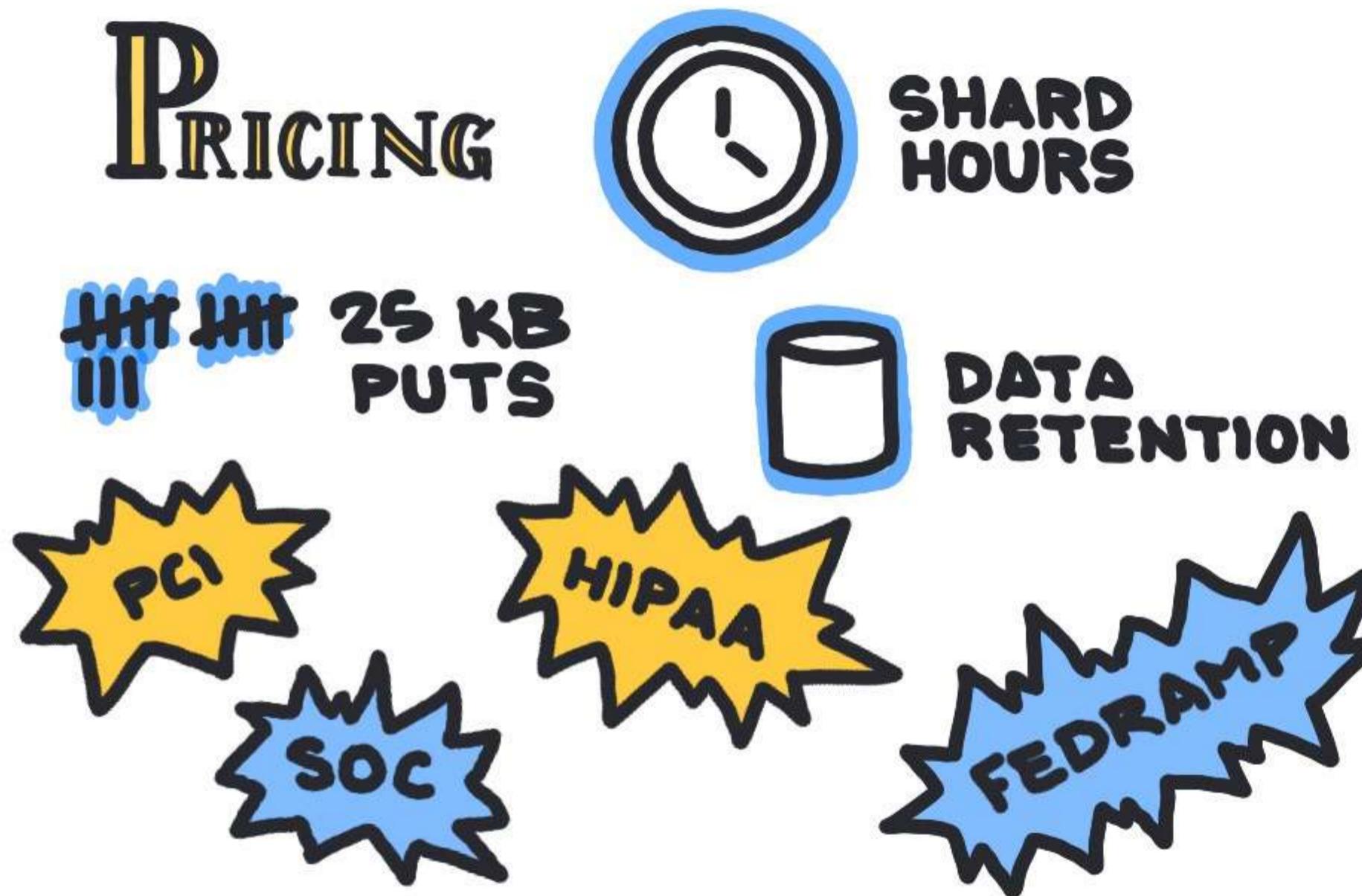
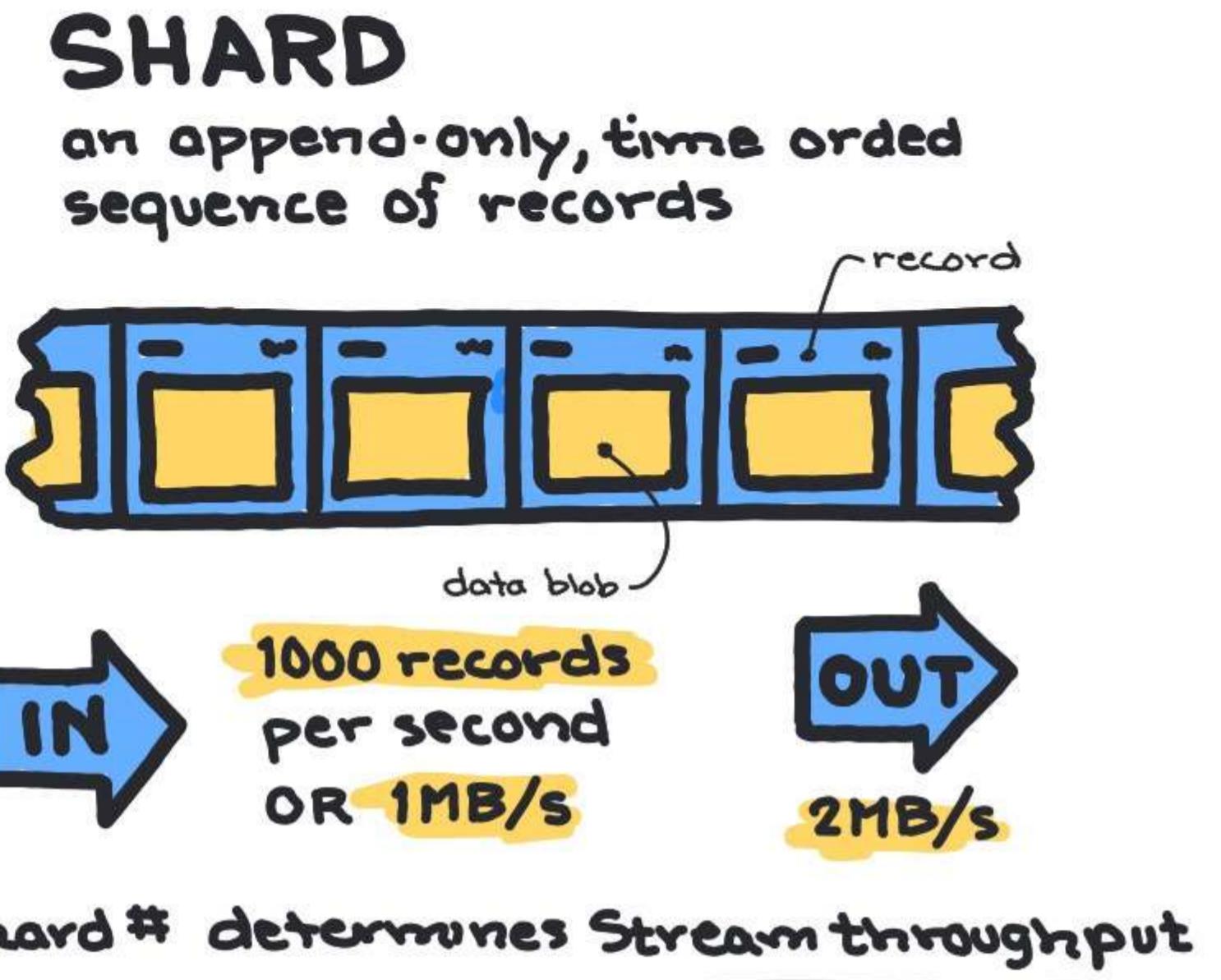
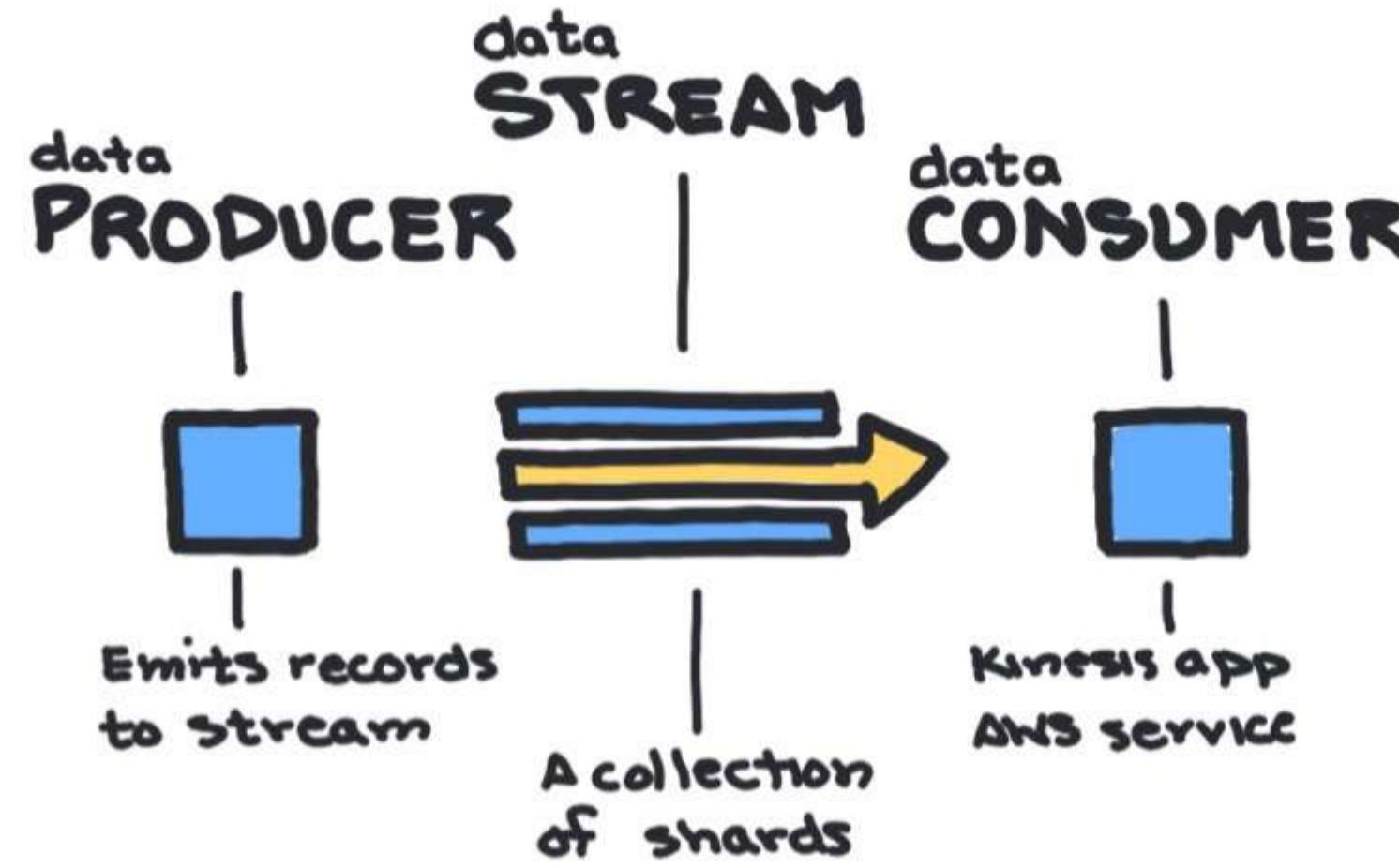
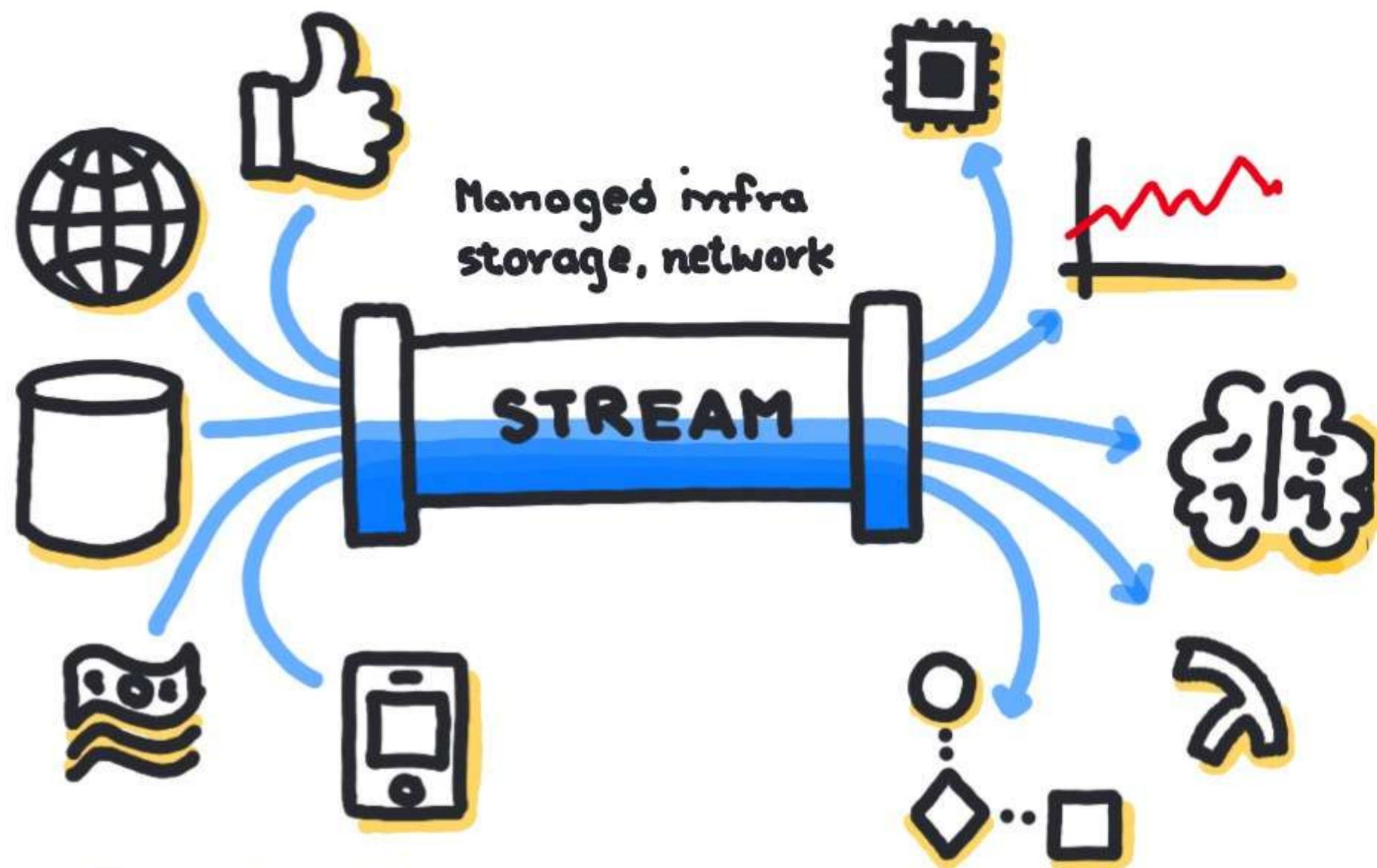
COMPLIANCE



EVENTBRIDGE

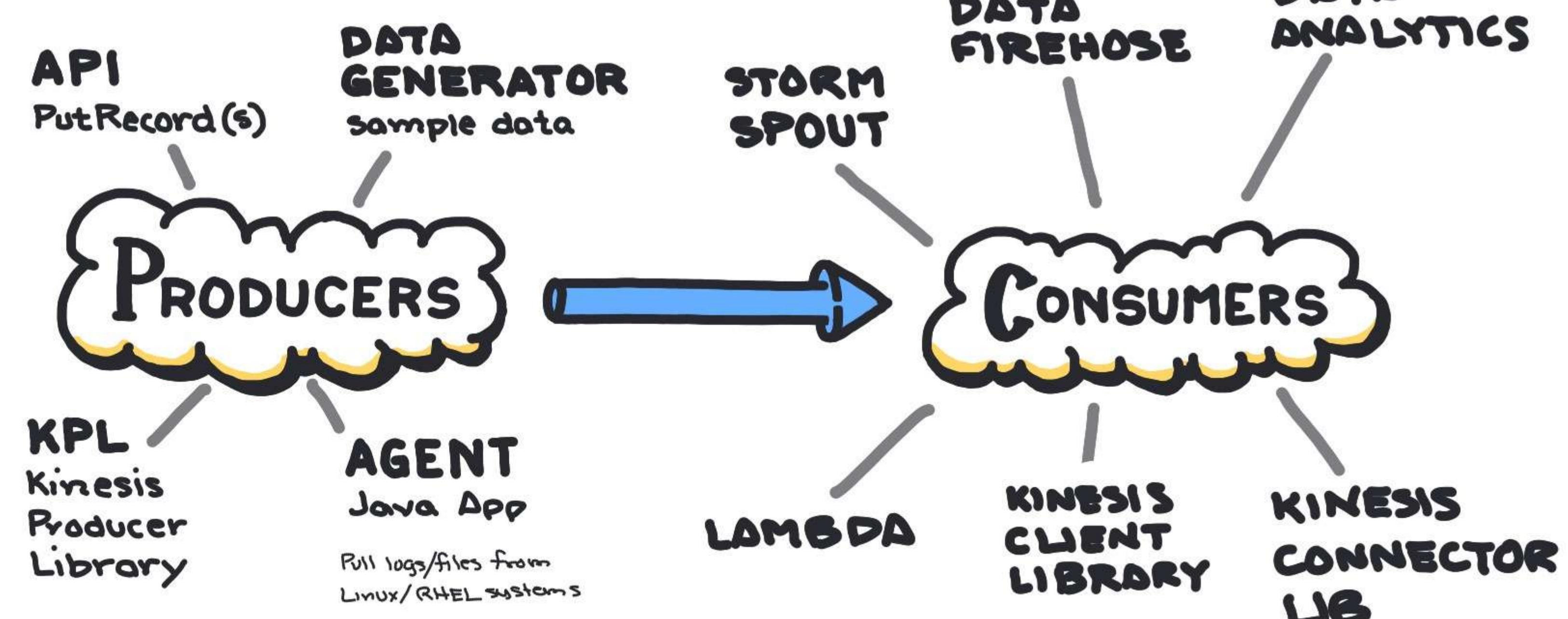
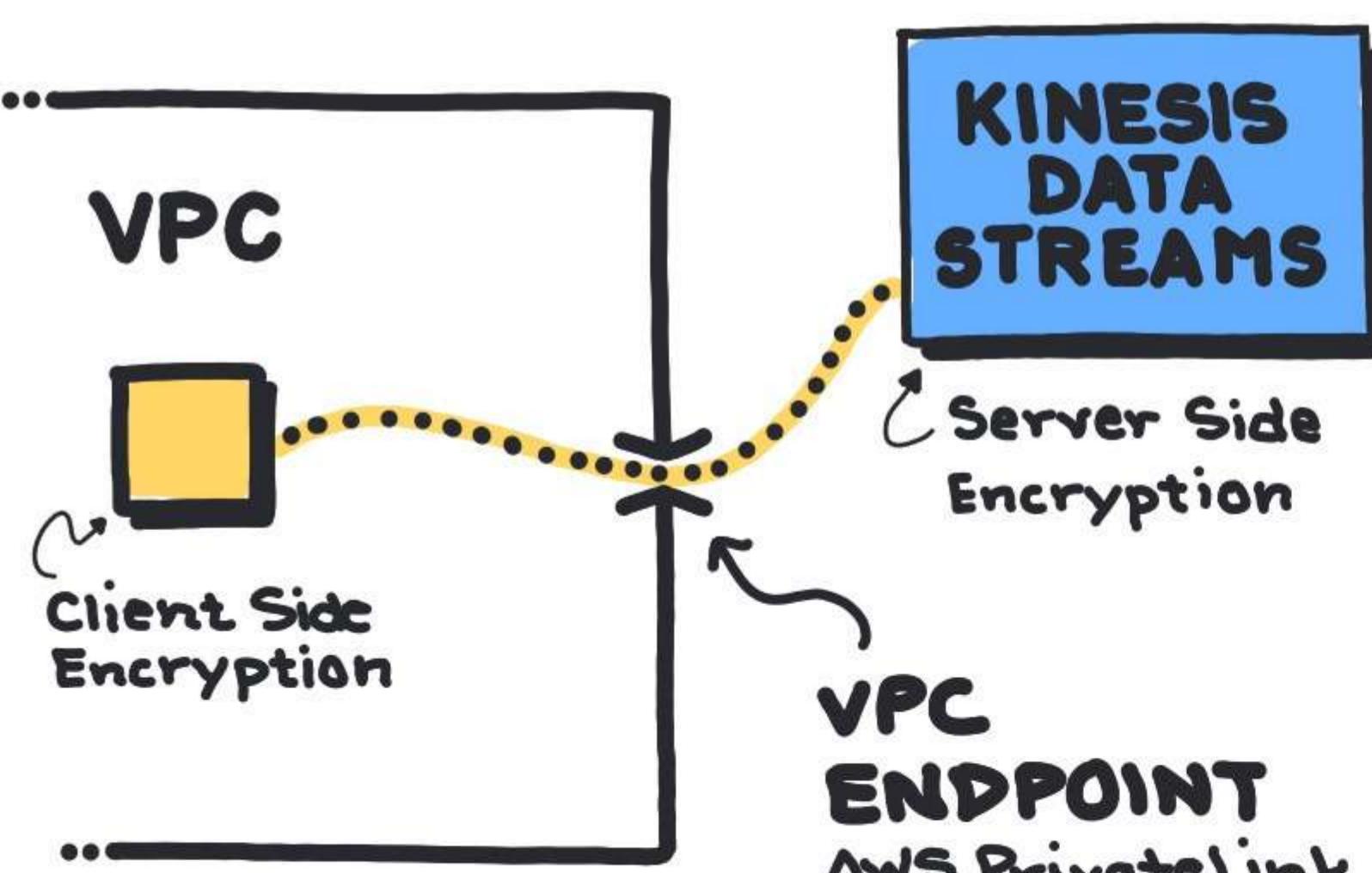
SERVERLESS EVENT BUS

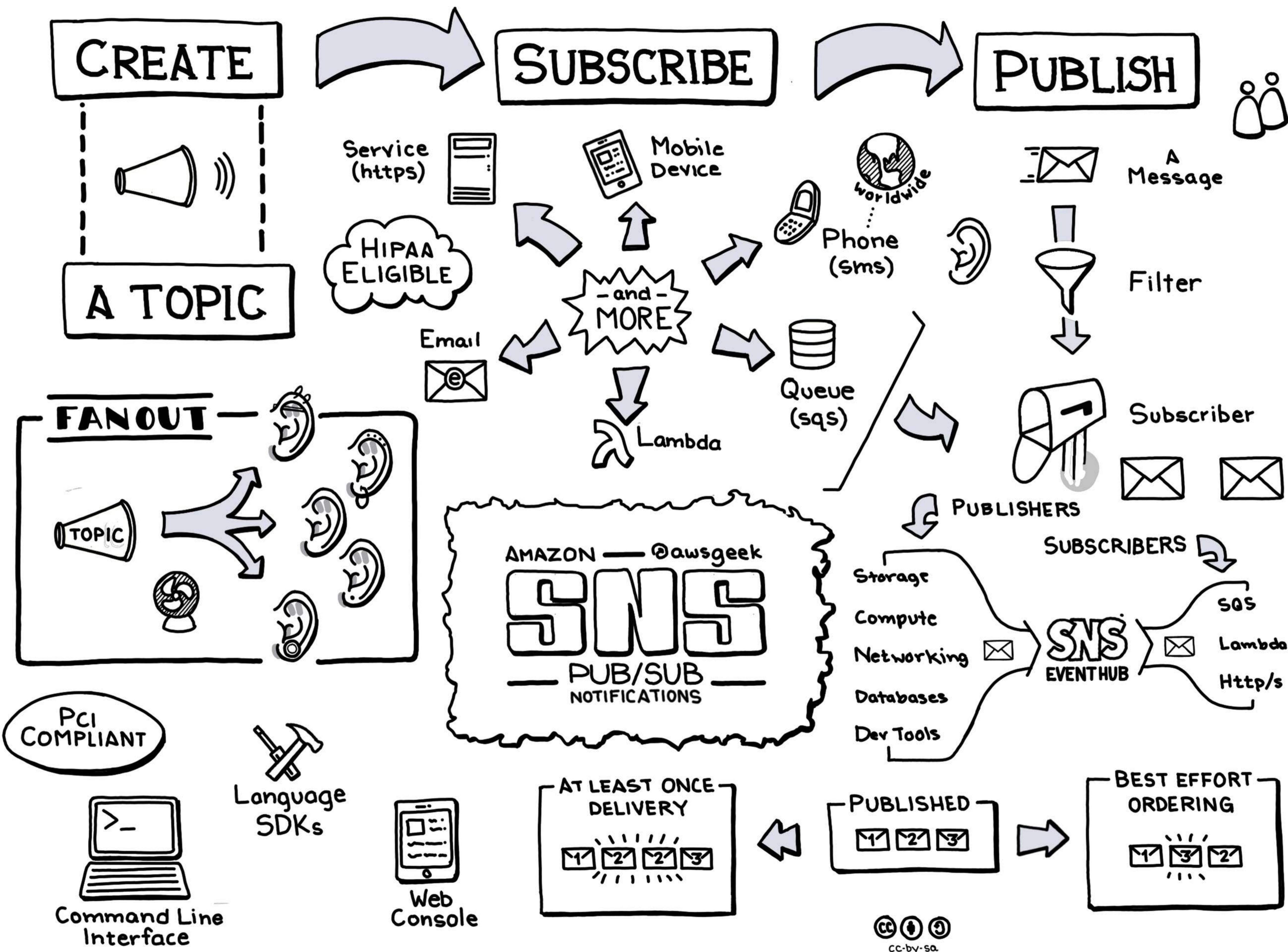




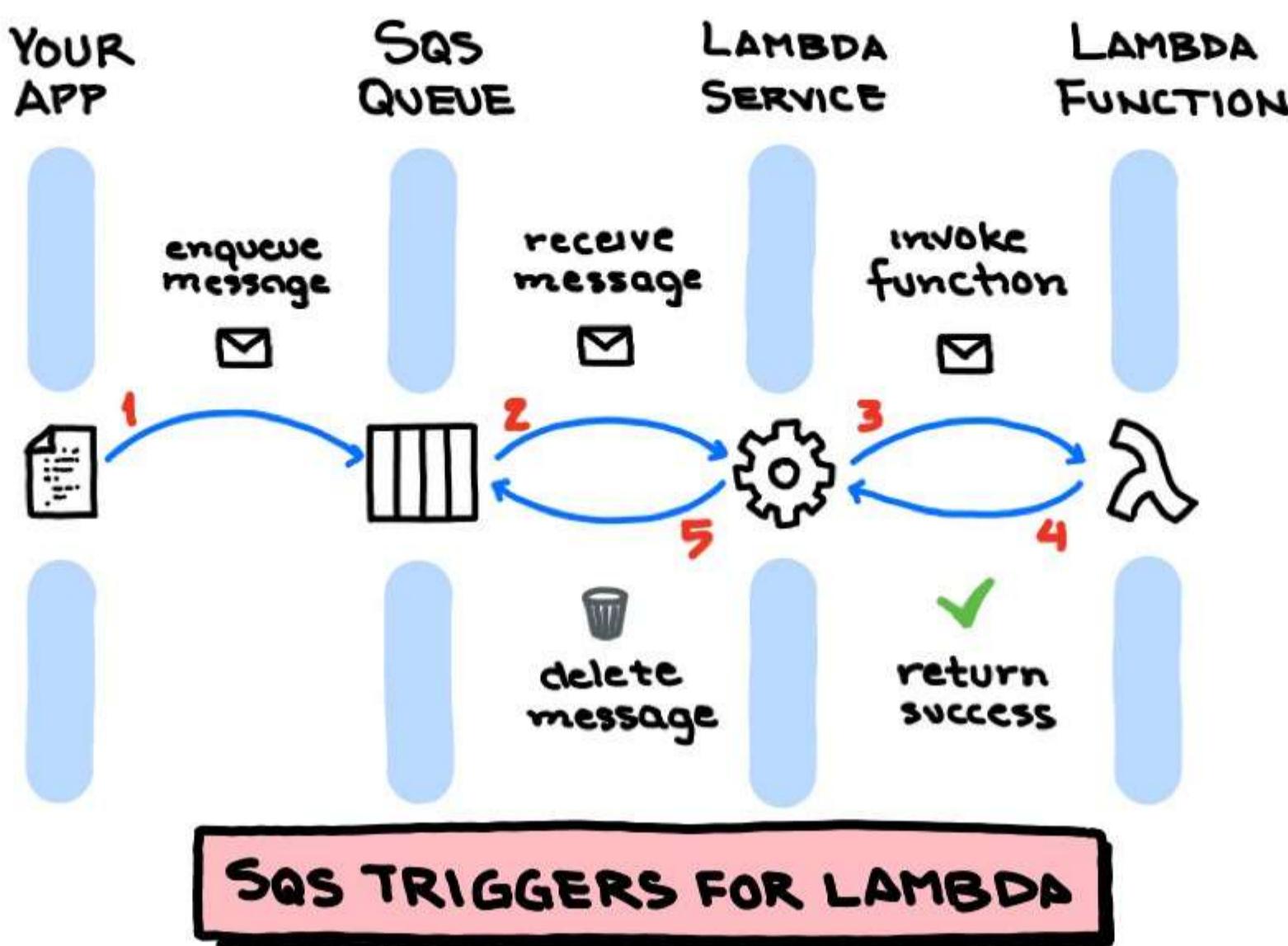
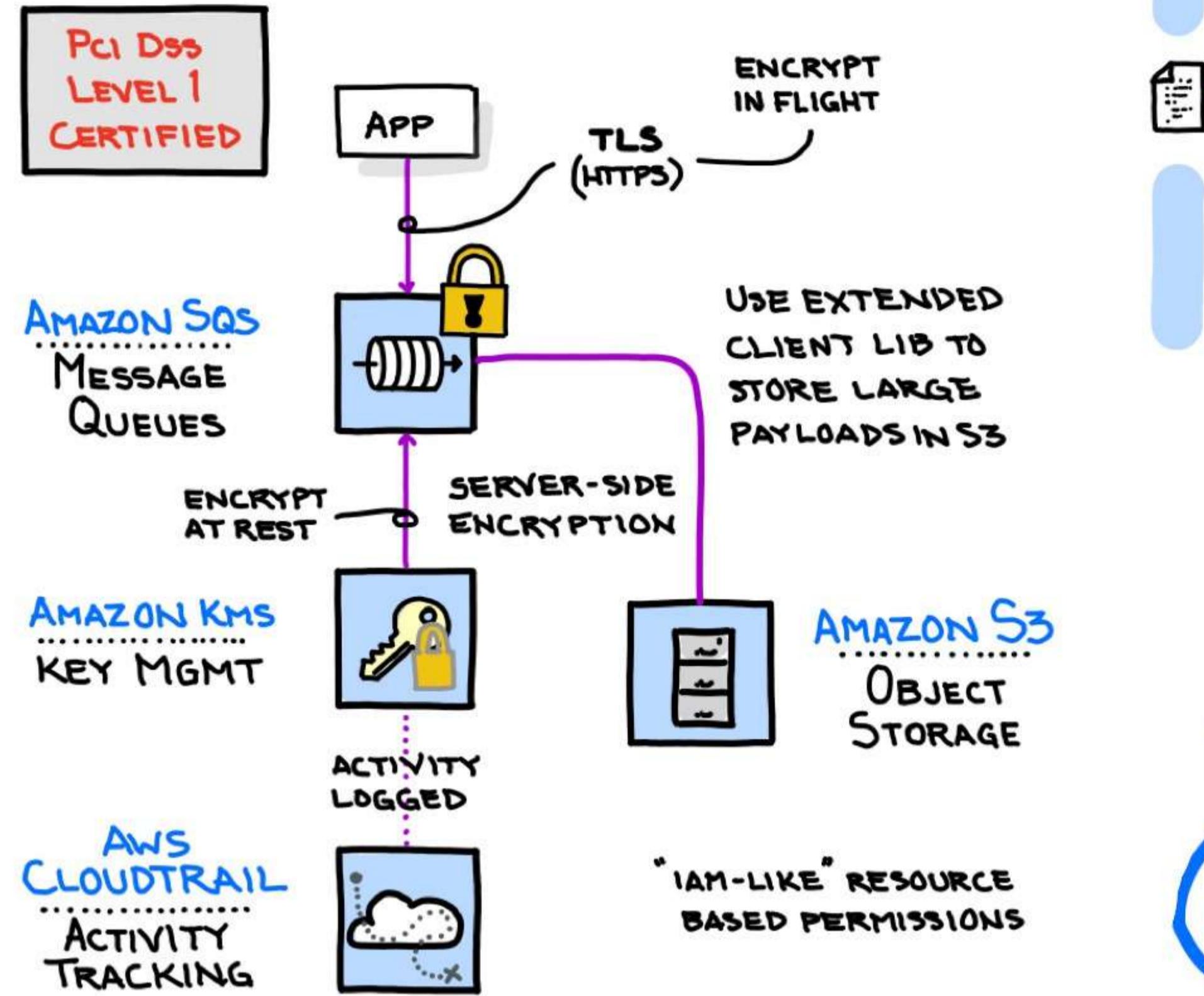
DATA KINESIS STREAMS

STREAM • DATA • AT • SCALE





Security



Pricing

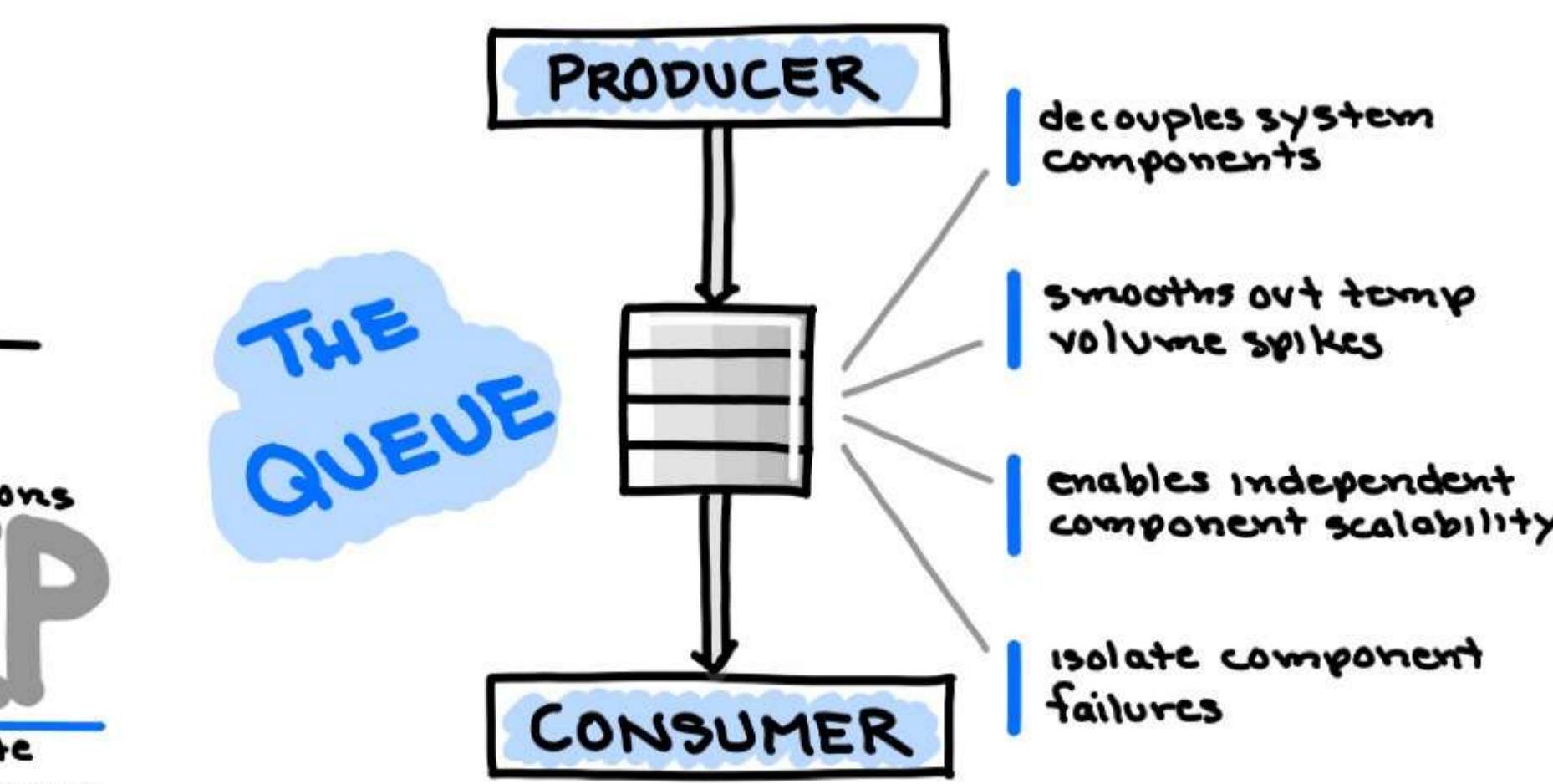
each 64K chunk of payload counts as 1 request

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

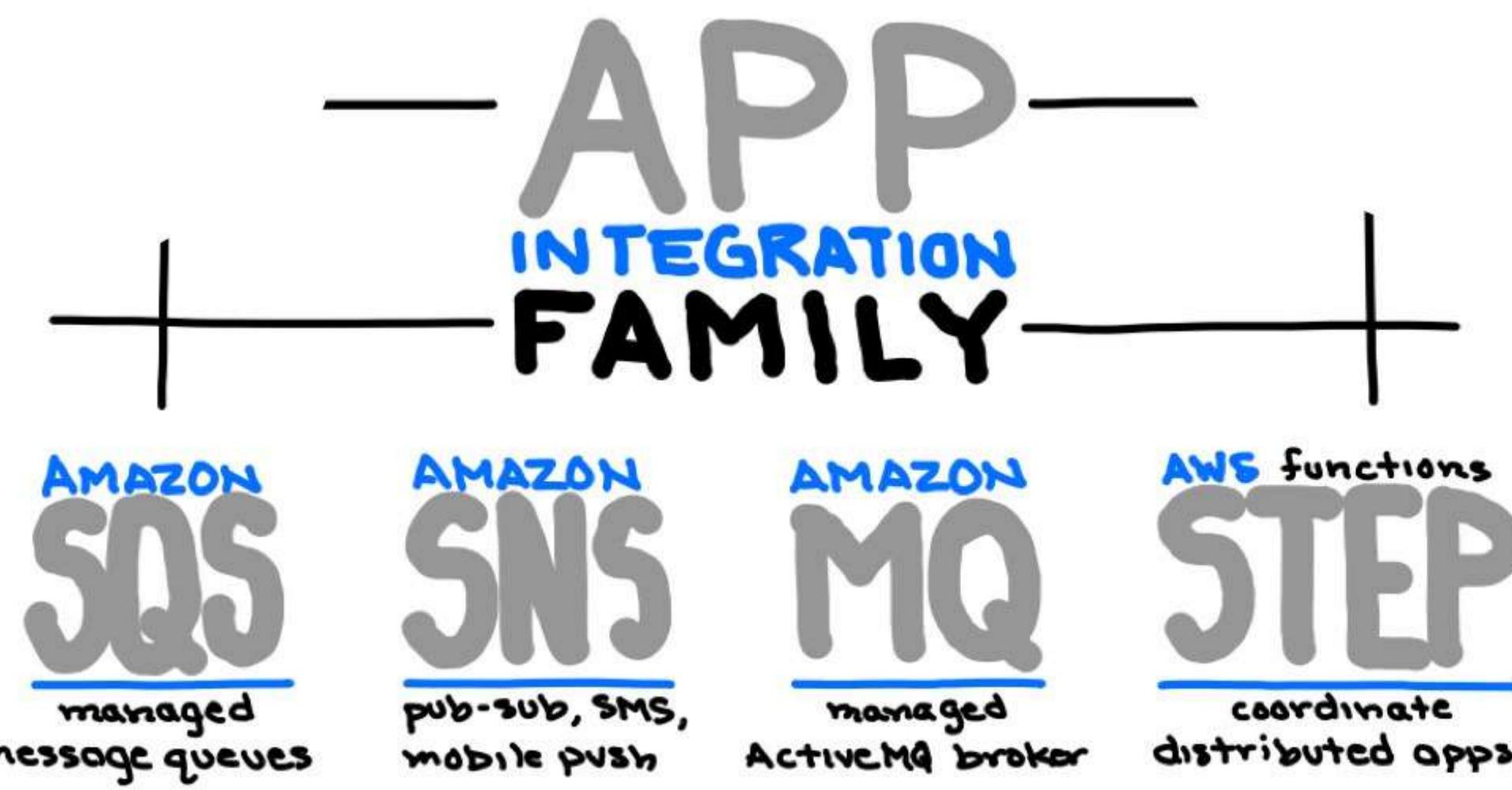


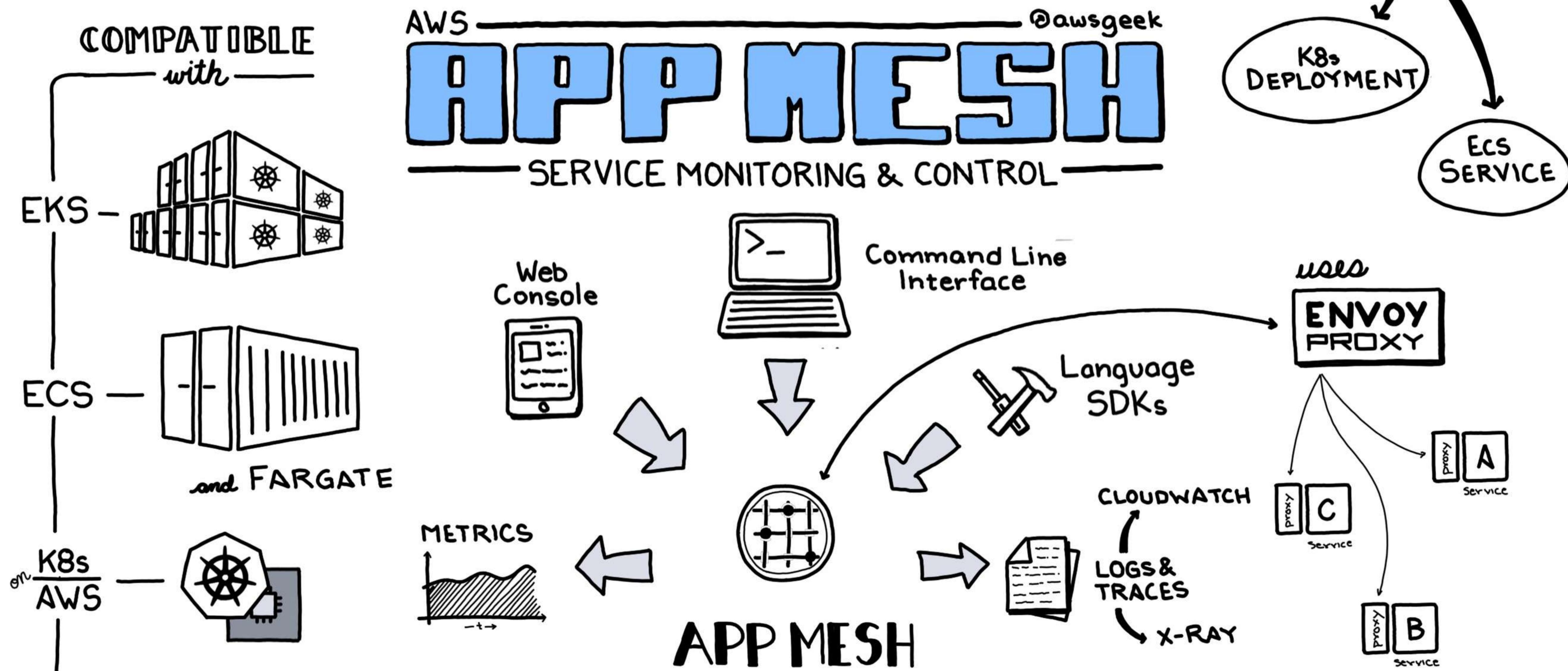
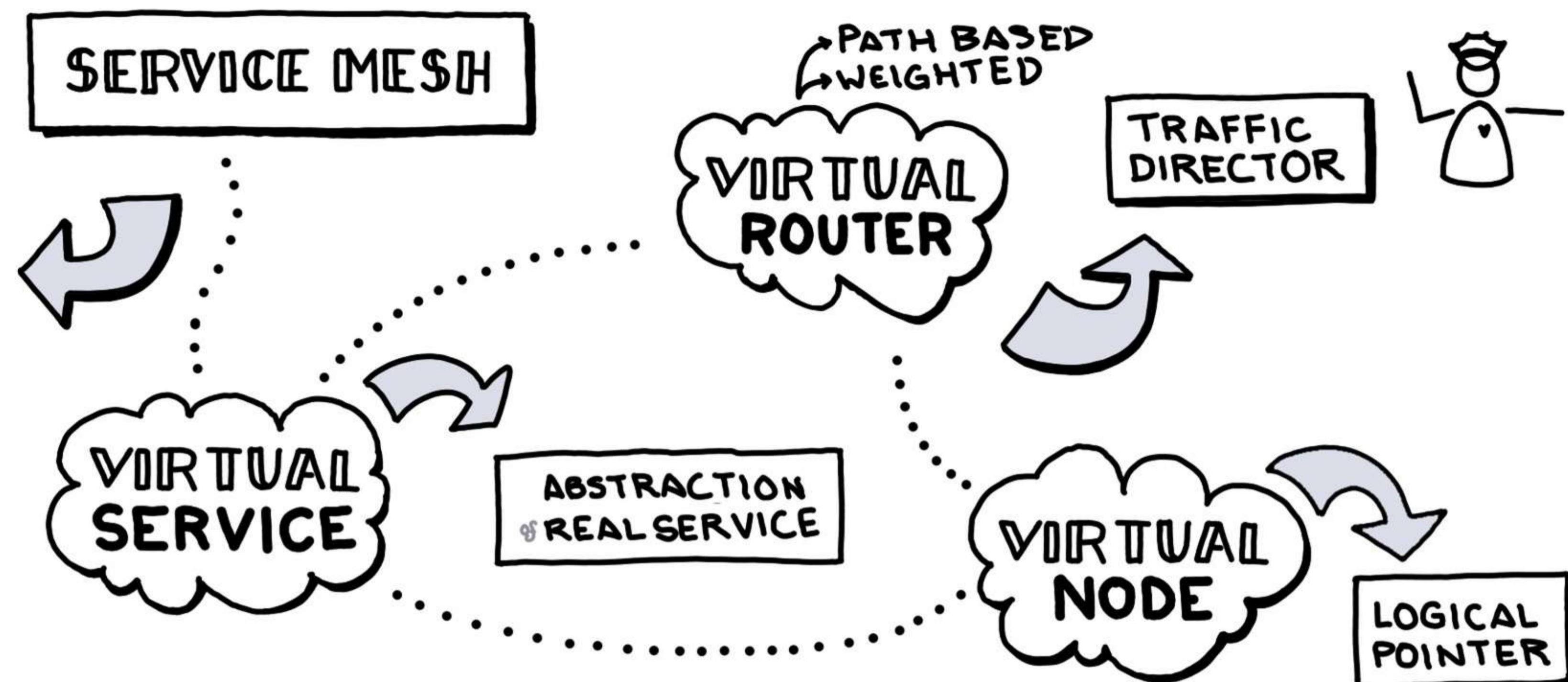
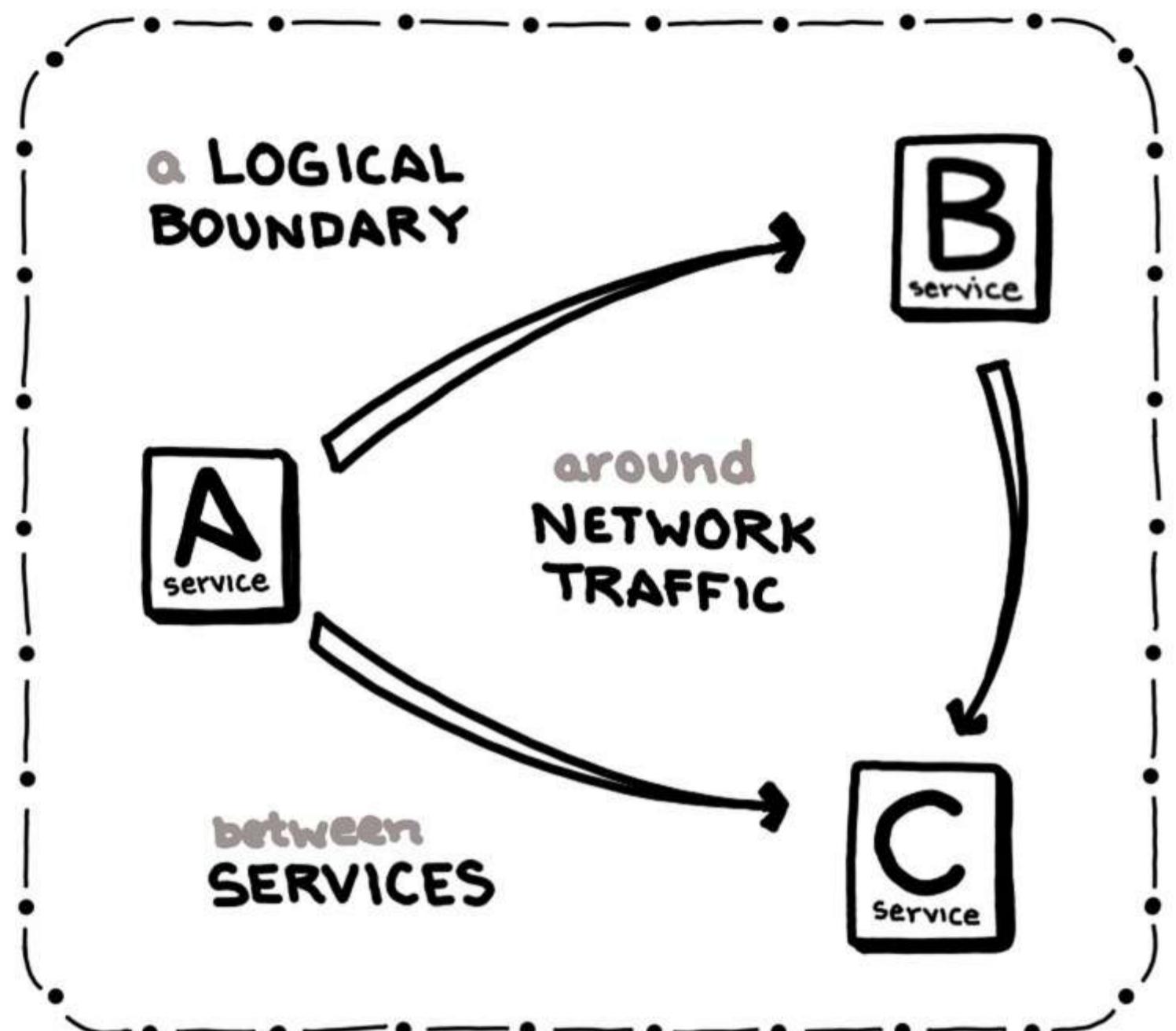
Limits

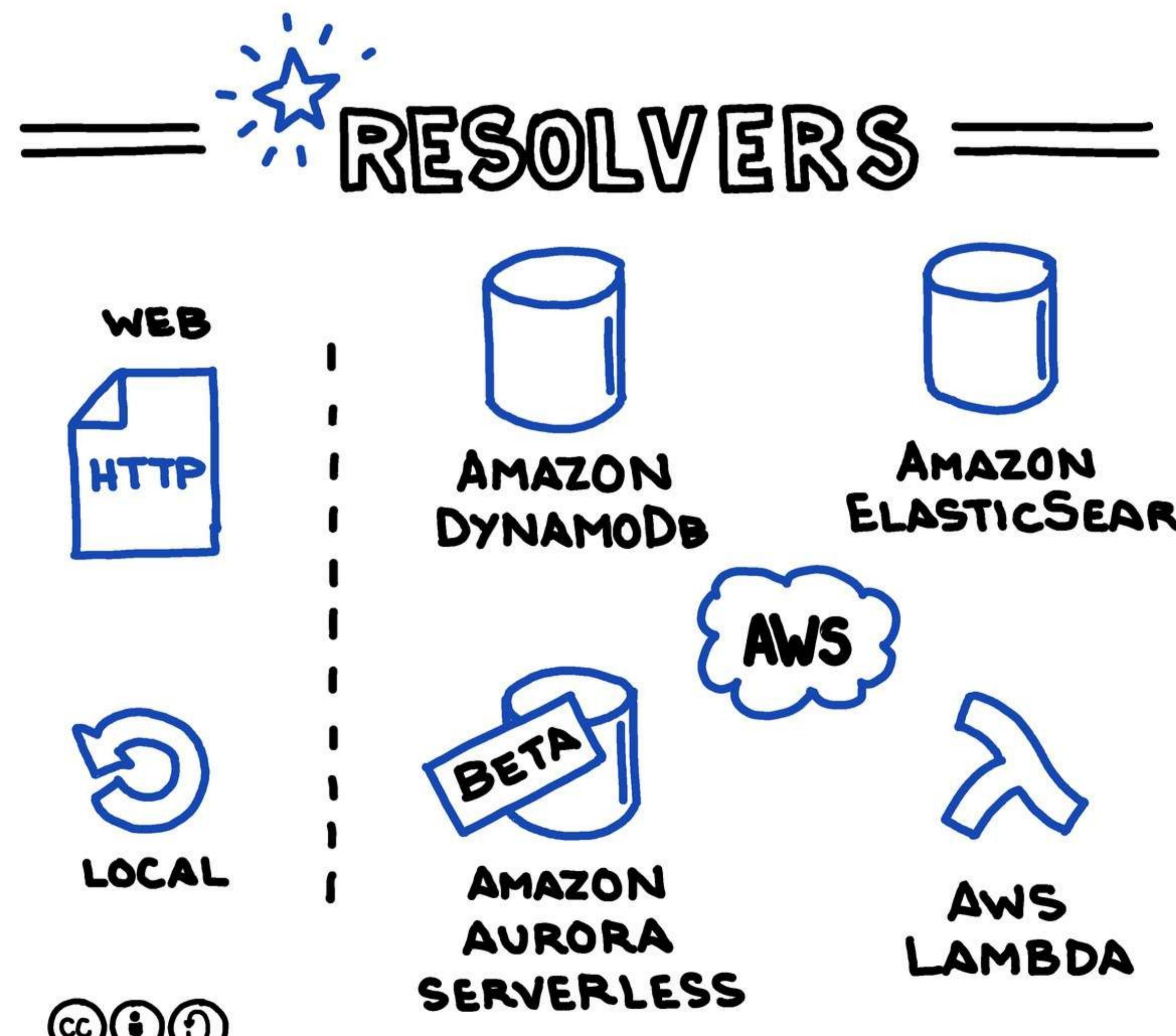
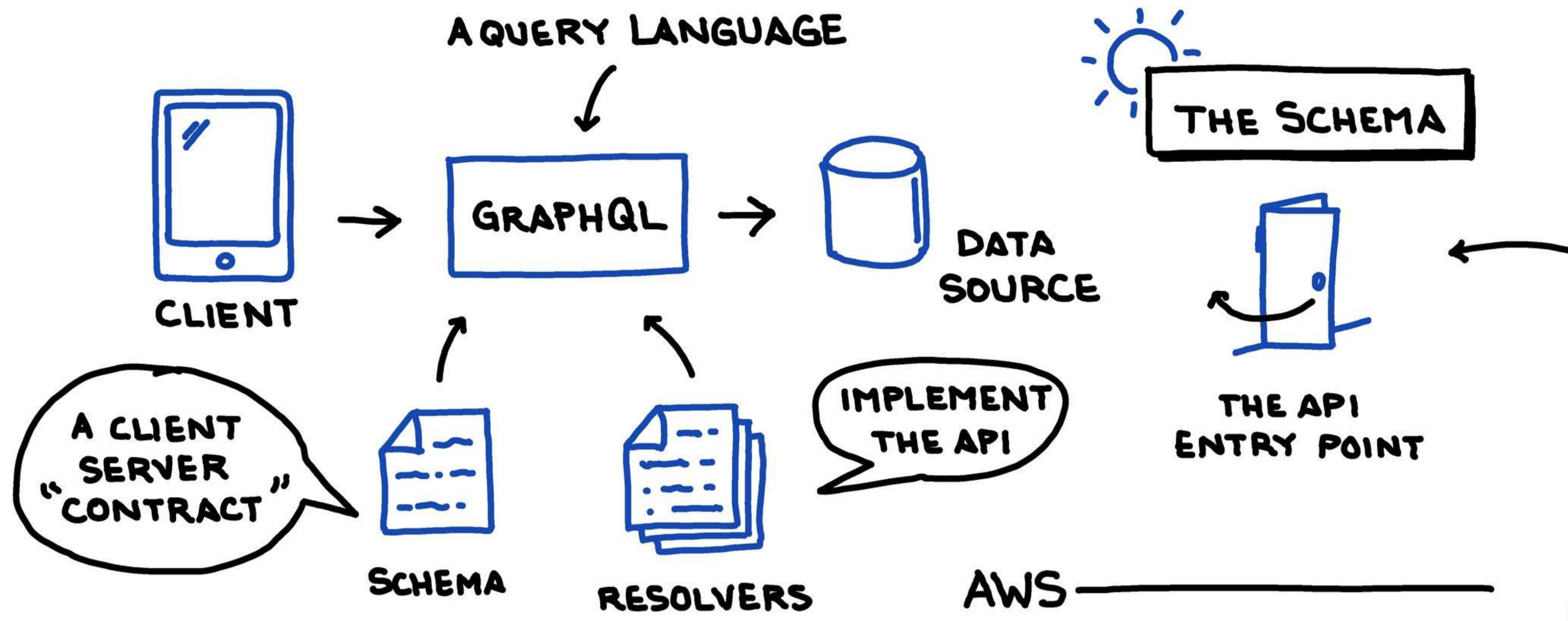
MESSAGE RETENTION PERIOD
MIN: 1 MIN MAX: 14 DAYS

MAXIMUM MESSAGE SIZE
MIN: 1 KB MAX: 256 KB

MAXIMUM INFLIGHT MESSAGES
STD: 120K FIFO: 20K







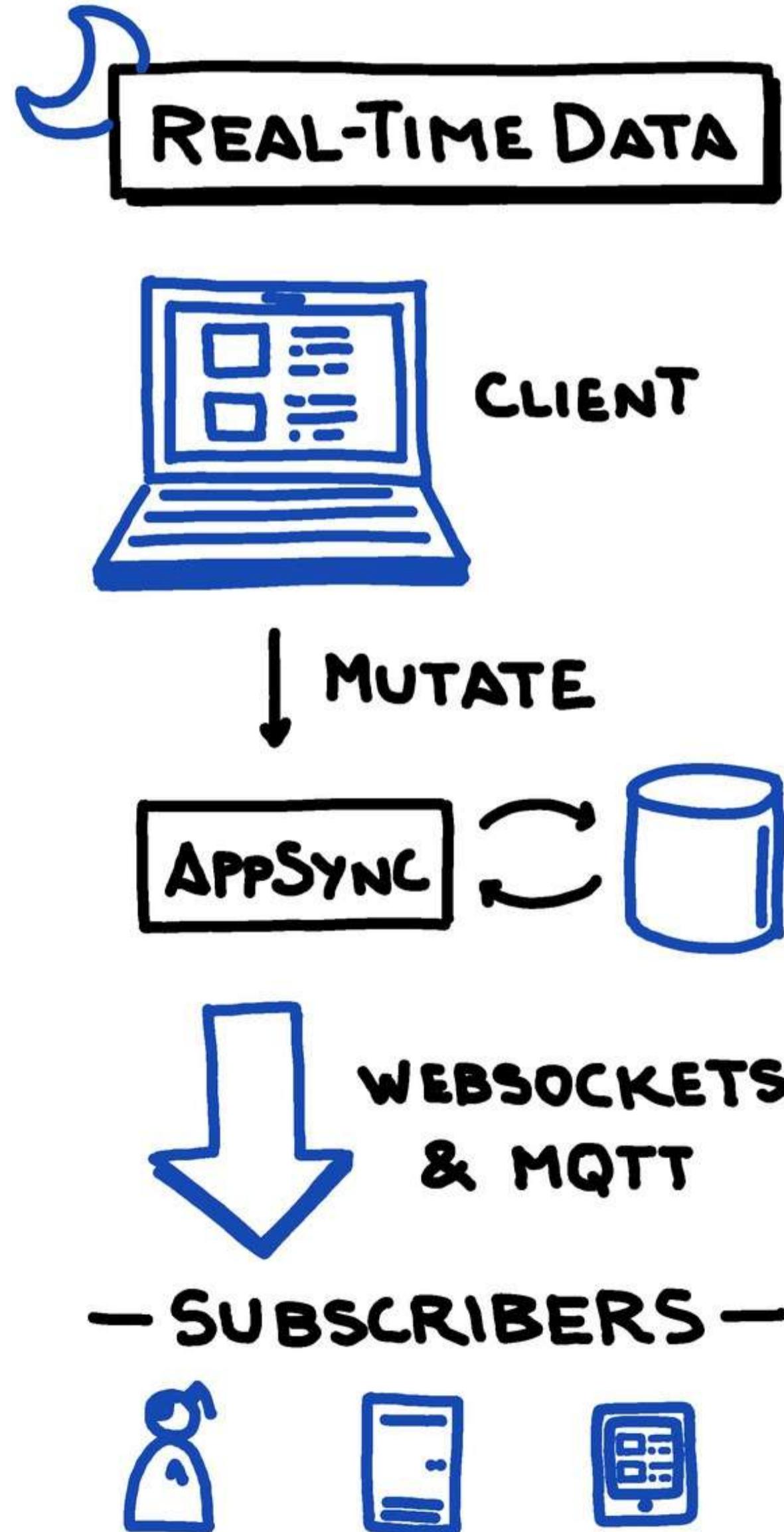
AWS — APPSYNC
MANAGED • GRAPHQL

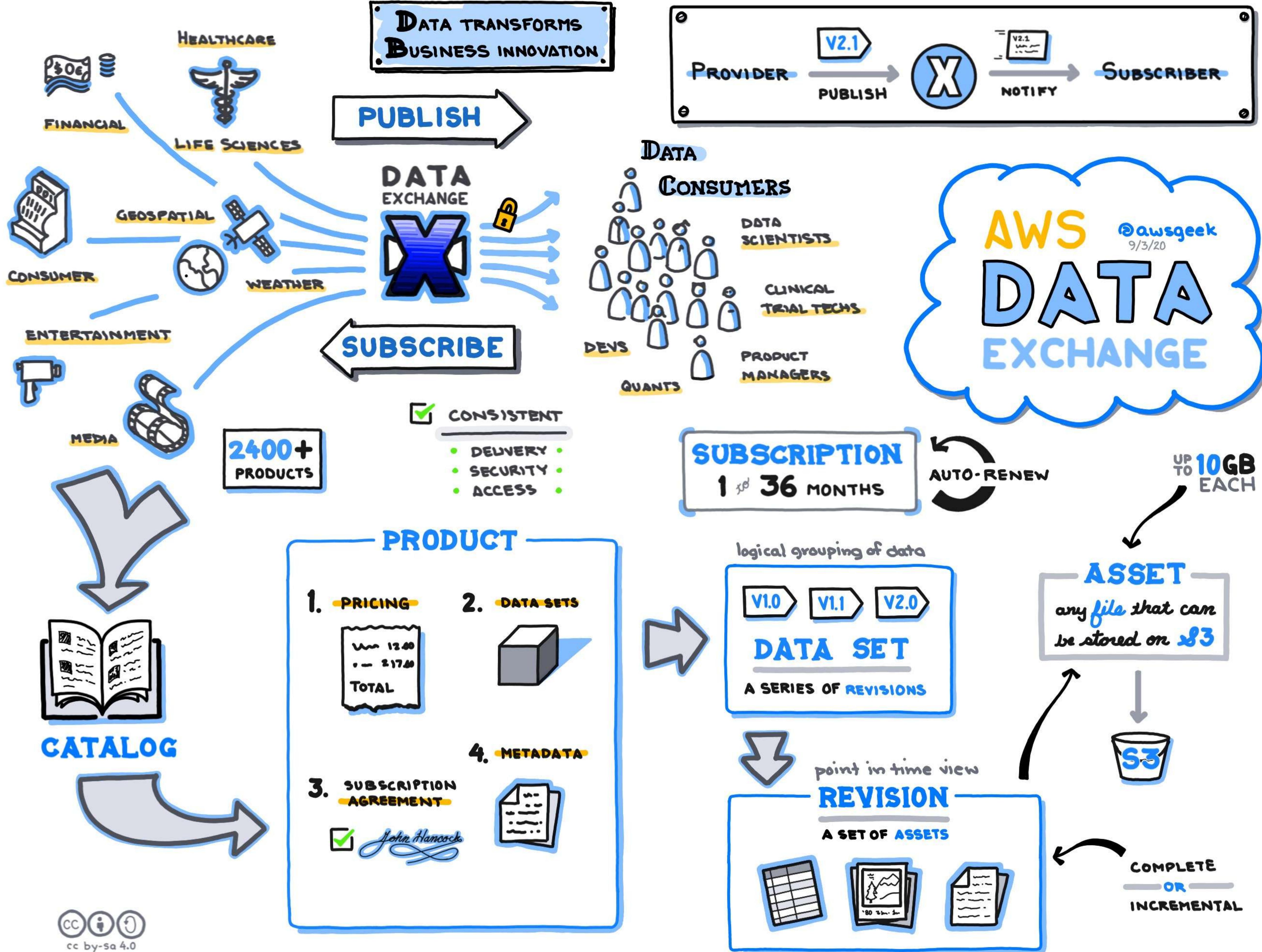
1/23/19

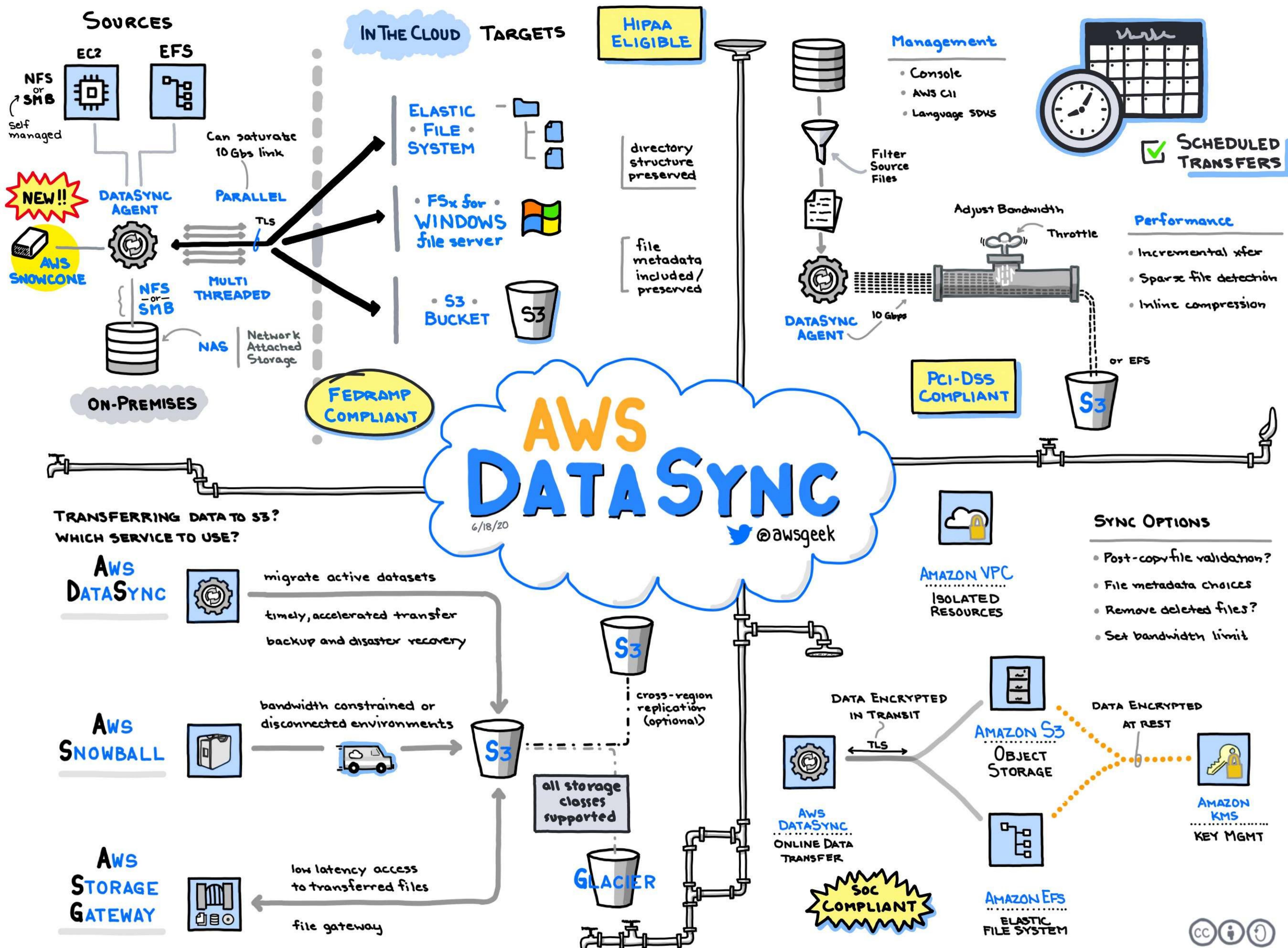
@awsgeek

OFFLINE DATA ACCESS

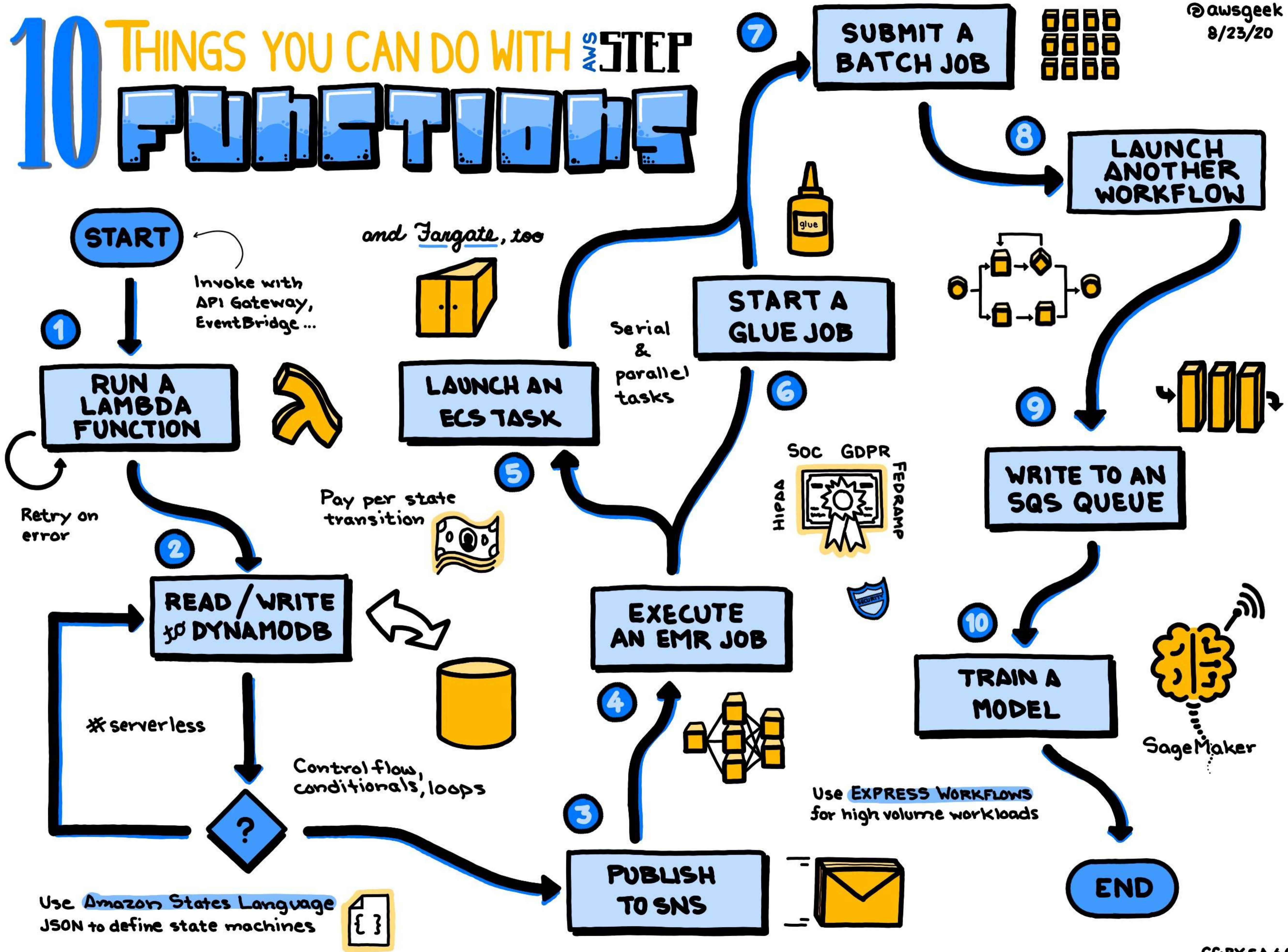
- ① MUTATE OFFLINE
 - ② UPLOAD CHANGES
 - ③ RESOLVE CONFLICTS
- APP SYNC

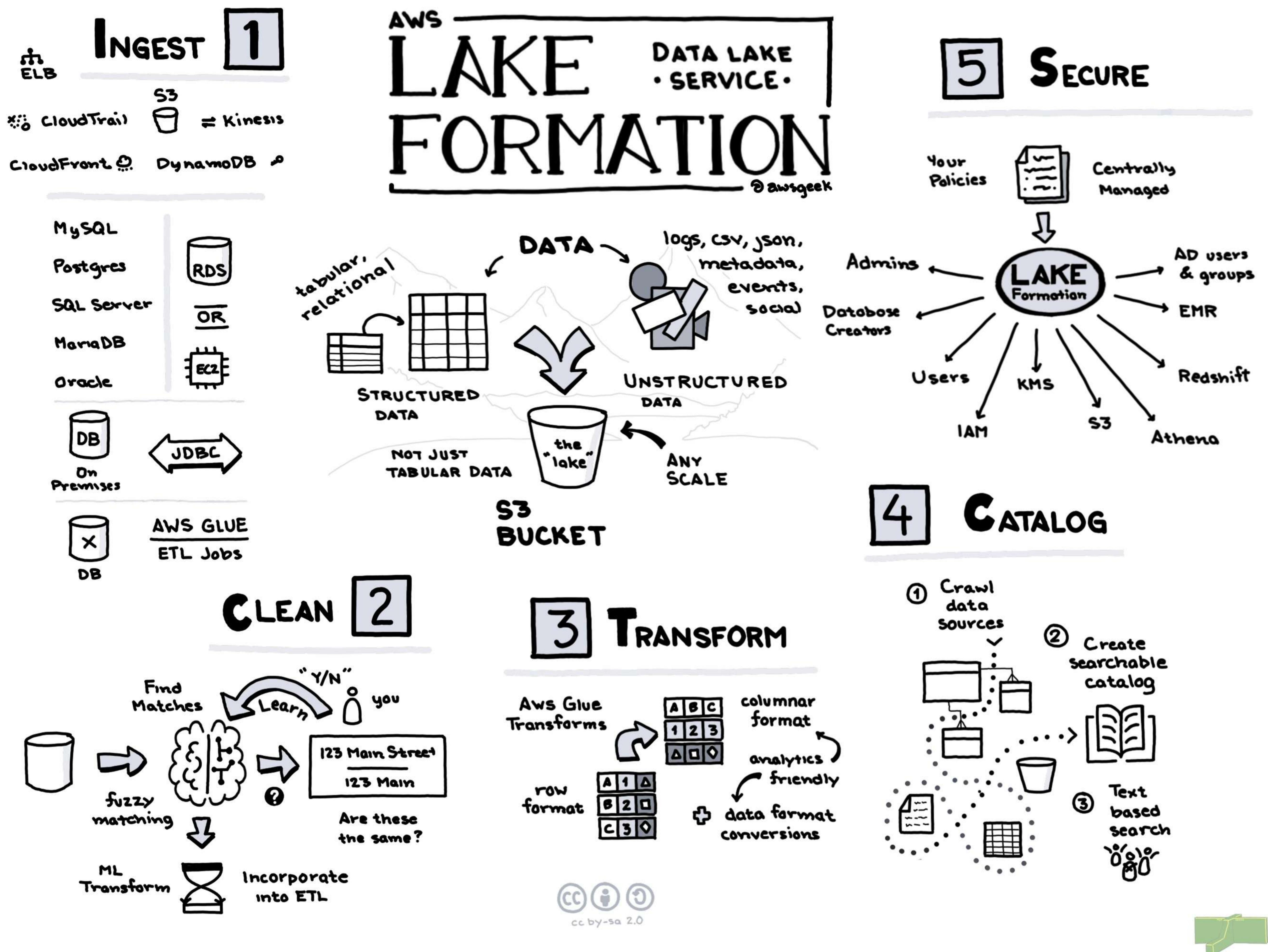






10 THINGS YOU CAN DO WITH AWS STEP FUNCTIONS





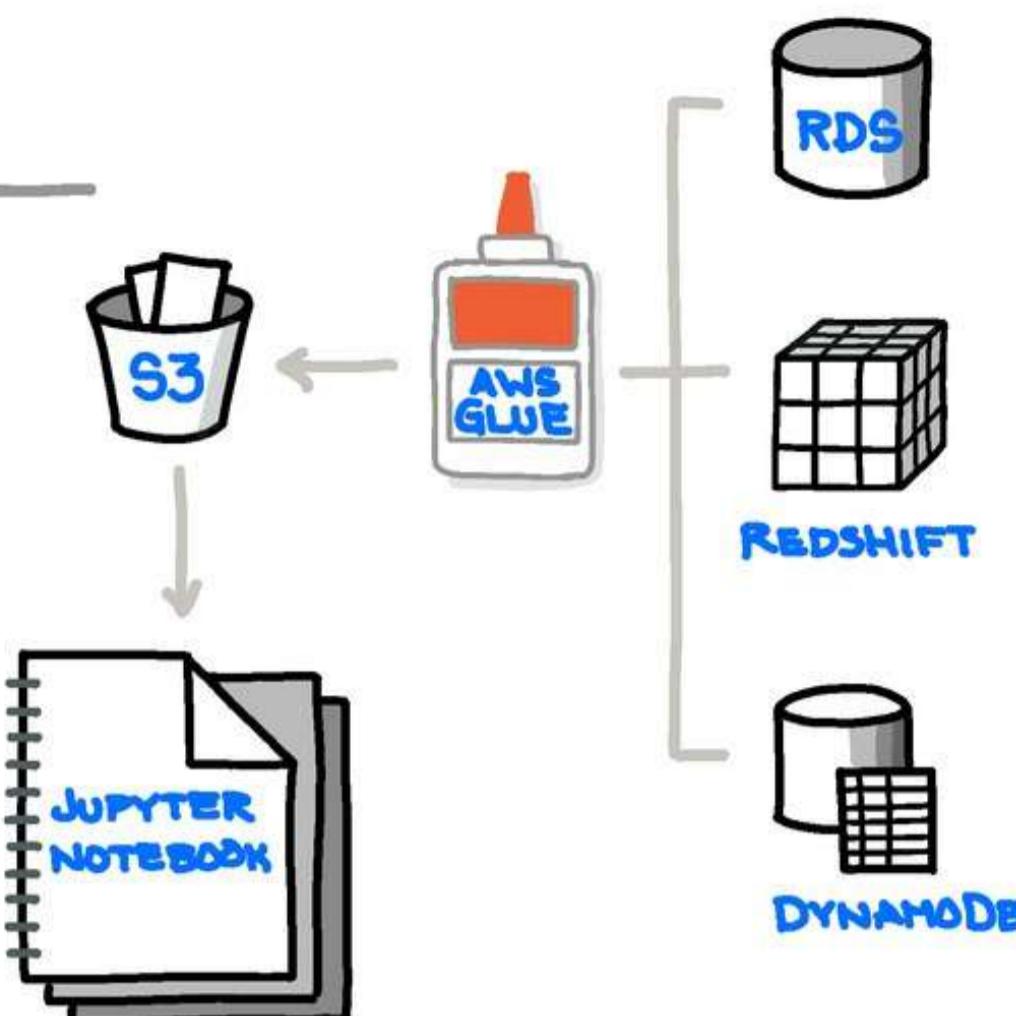
BUILD

COMMON TEMPLATES

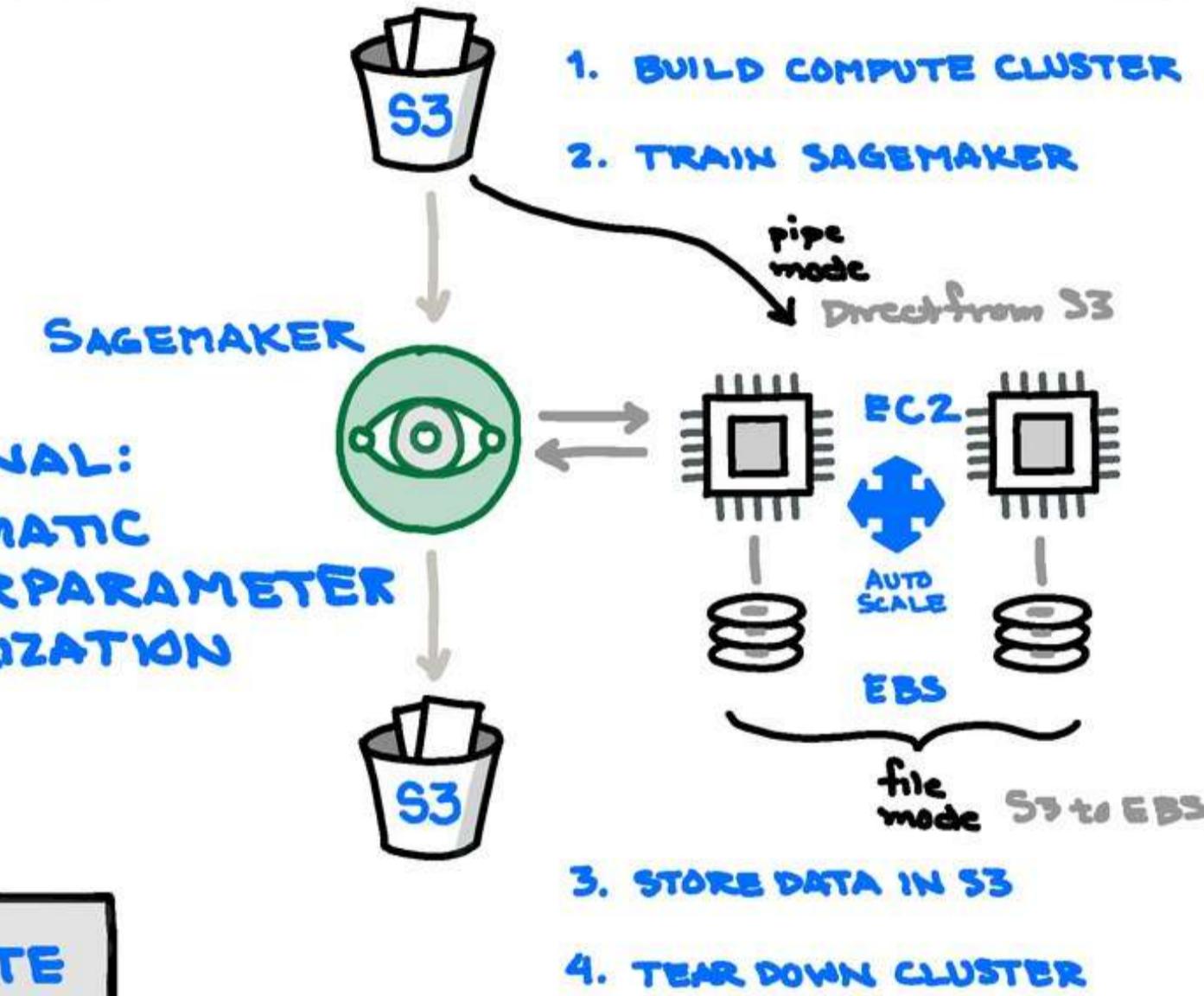
- TIME SERIES FORECAST
- DIRECT MARKETING TARGETS
- PREDICT CUSTOMER CHURN

ADV. TEMPLATES

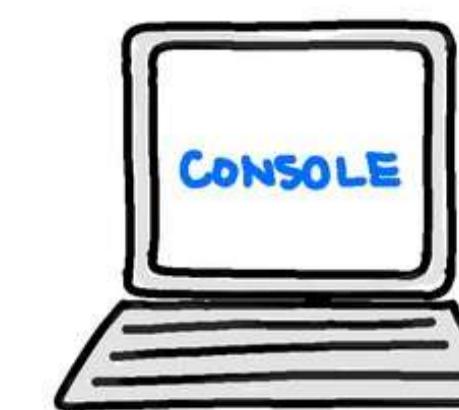
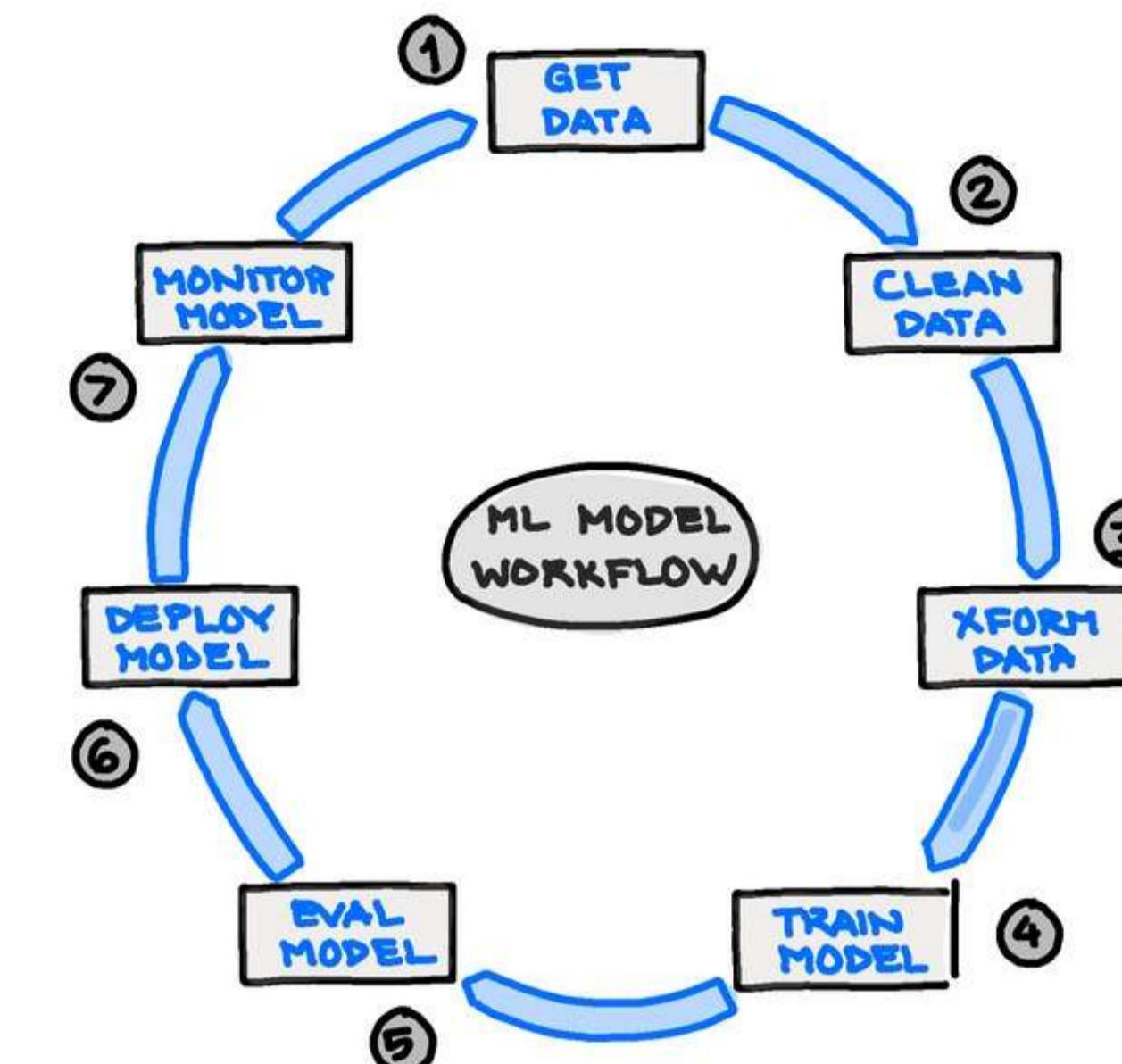
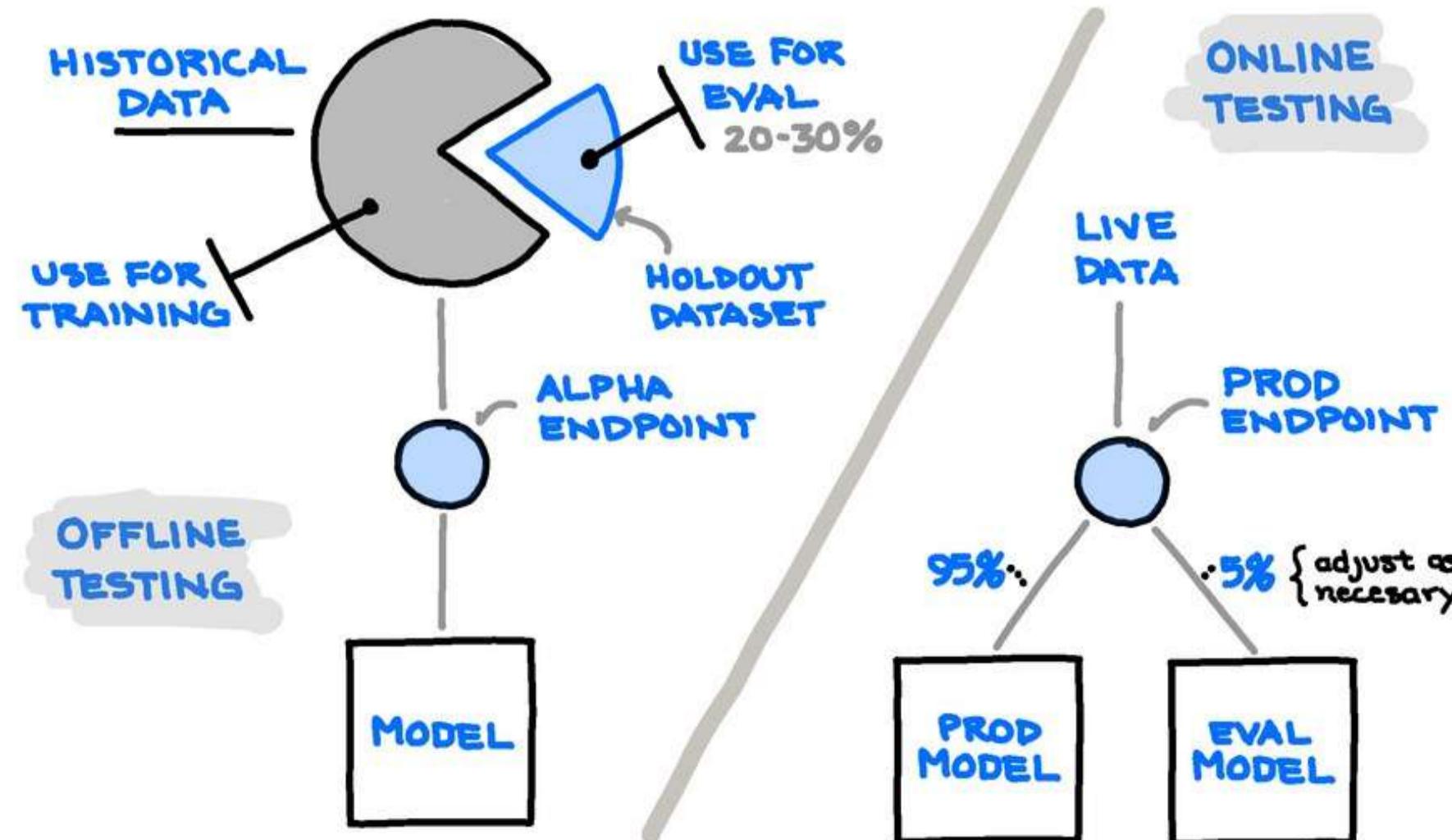
- BYO TENSORFLOW & MXNET CONTAINERS
- BYO SCIKIT OR R.ALGO



TRAIN



EVALUATE



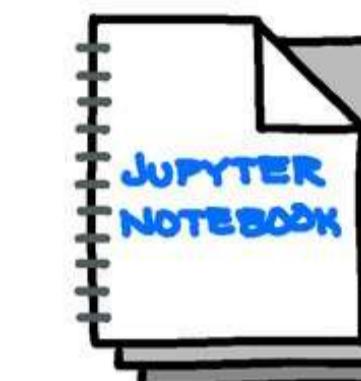
USE THE UI

PROGRAMMING MODEL

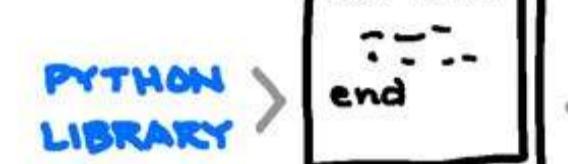
INTEGRATE v2.1.1 & v2.2.0



WRITE YOUR OWN MODEL CODE



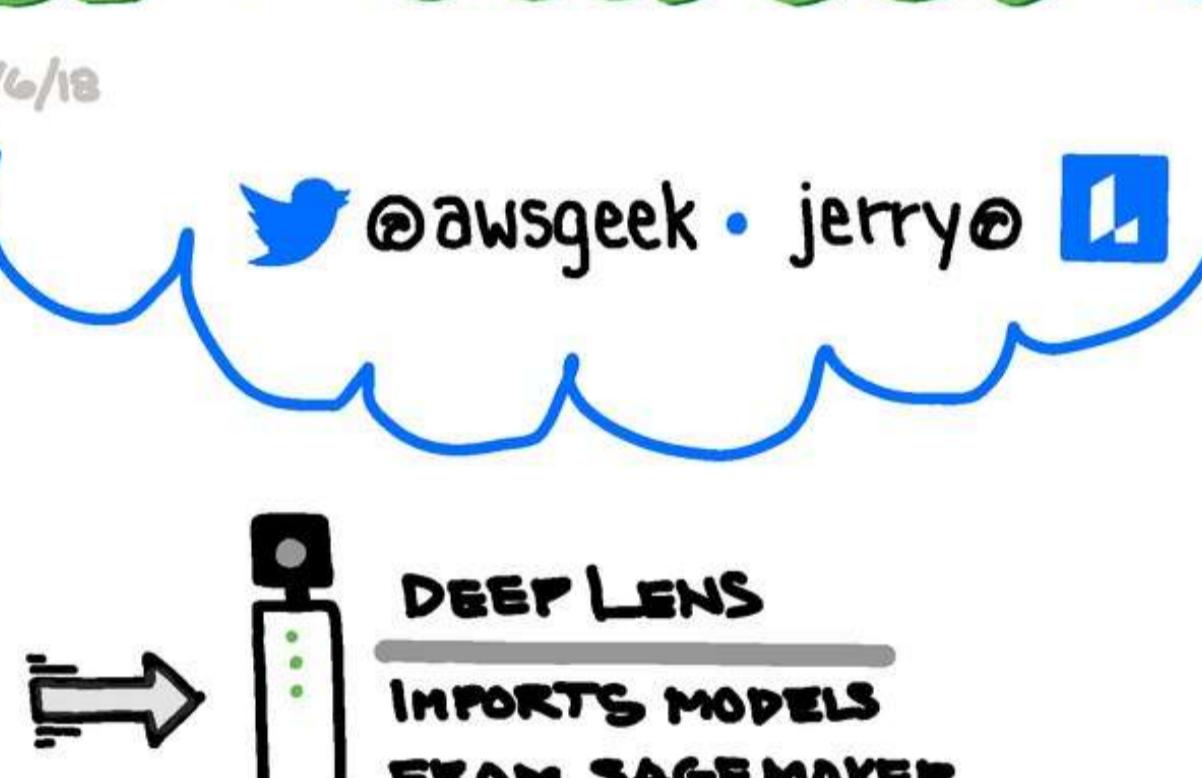
UPDATE EXISTING NOTEBOOKS



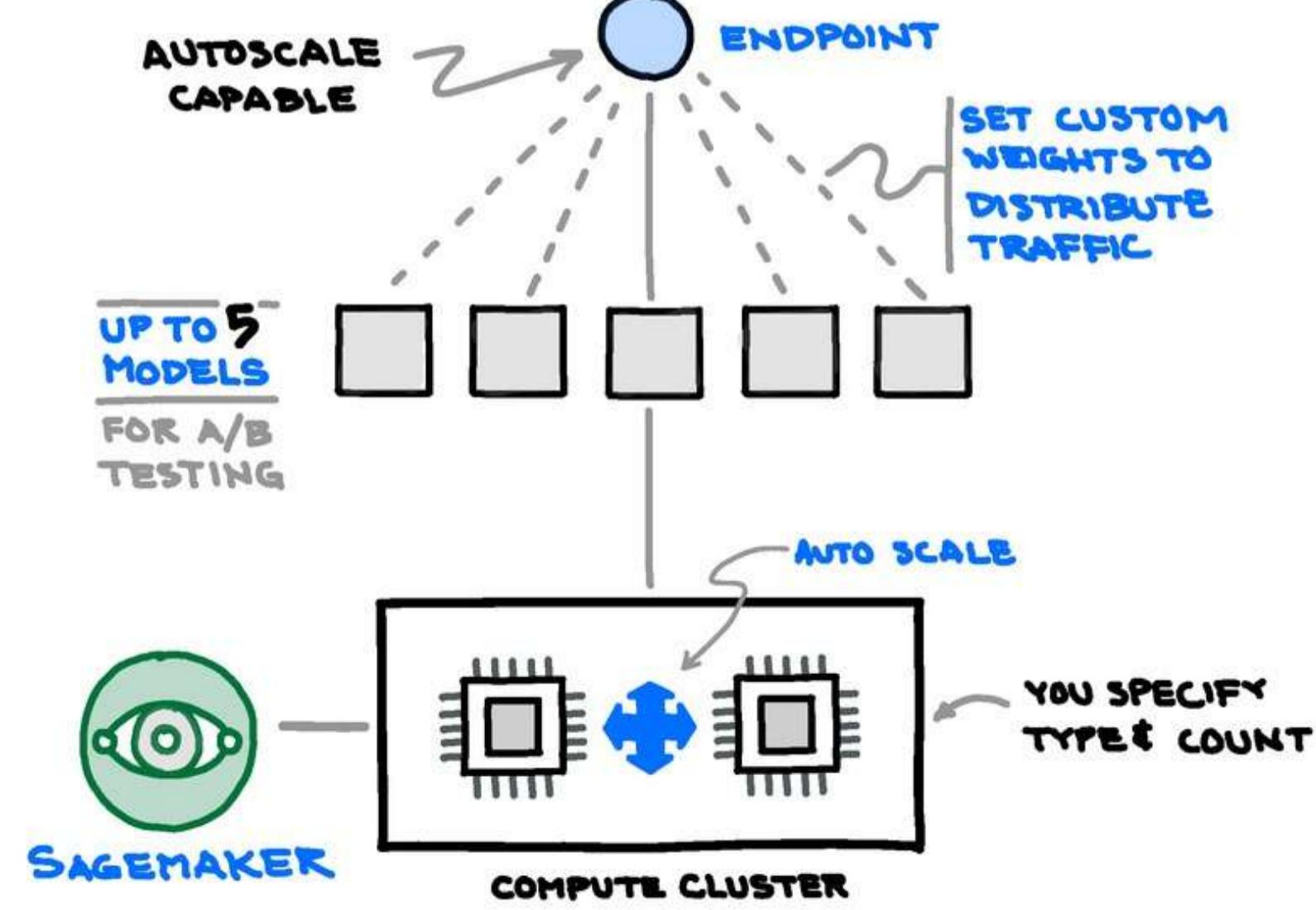
PYTHON LIBRARY > AWS SDKS



SECURITY

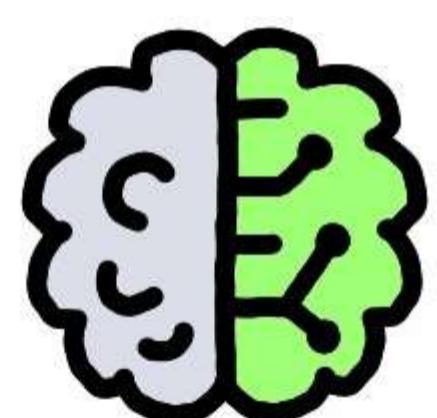
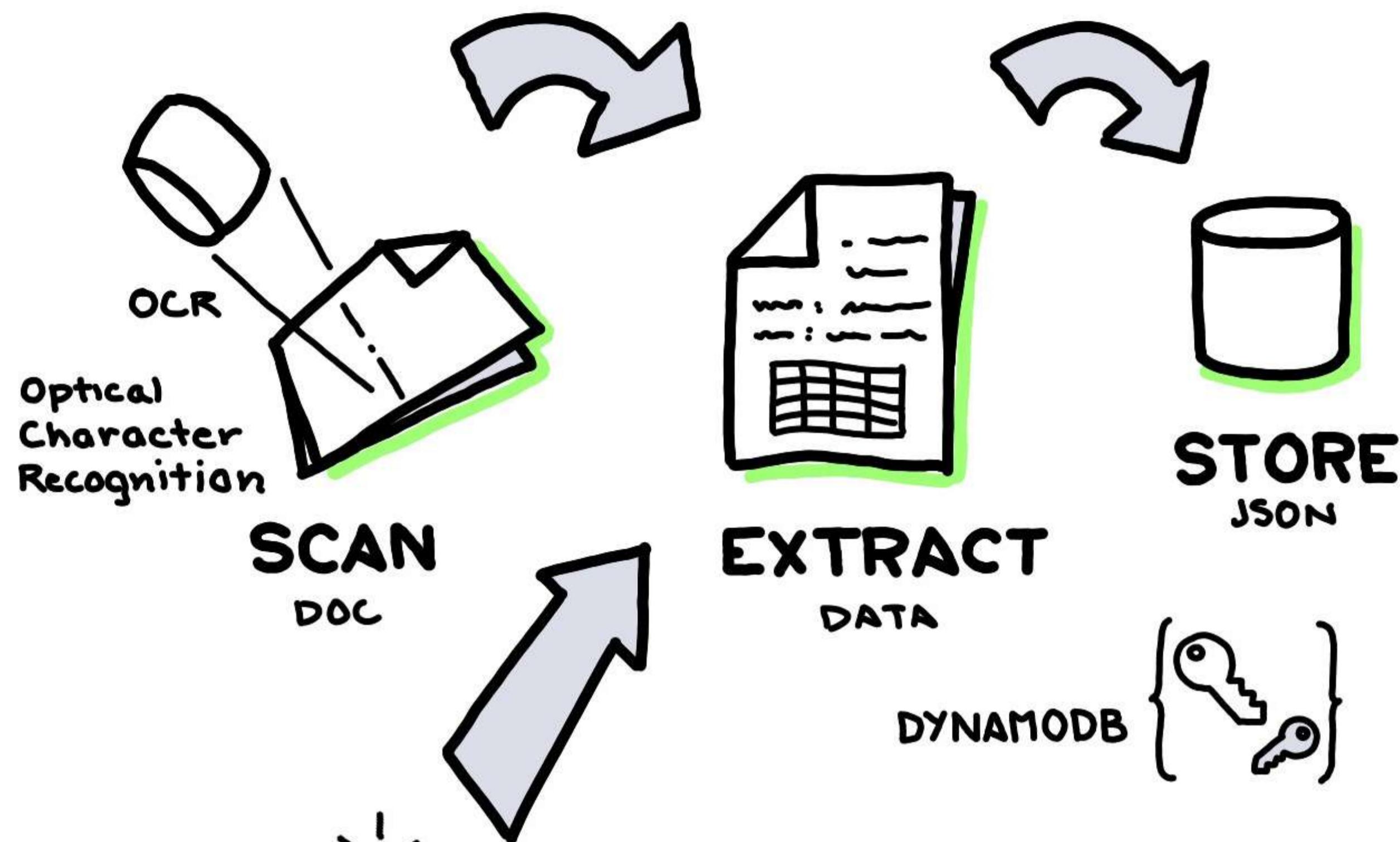


PRICING



NO CODE REQUIRED

No TEMPLATES REQUIRED



AMAZON

TEXTRACT

MACHINE LEARNING

4/9/20

EXTRACT TEXT & DATA

ASYNC PROCESSING



**PAY
PER
USE**

**PER
PAGE**

- TEXT DETECTION
- DOCUMENT ANALYSIS
- FORMS & TABLES

A hand-drawn style icon of a document or file. It features a black outline of a rectangular page with a white interior. Inside the page, there are several horizontal black lines of varying lengths, suggesting text or data entries. A thick, light blue curved arrow points from the top left towards the document.

**SINGLE PAGE
SYNCRONOUS
DETECT & ANALYZE
NEAR REAL-TIME**

A small icon representing a PDF file, consisting of a blue arrow pointing right and the text "PDF only".

MULTI-PAGE ASYNC



Web Console



3 send status

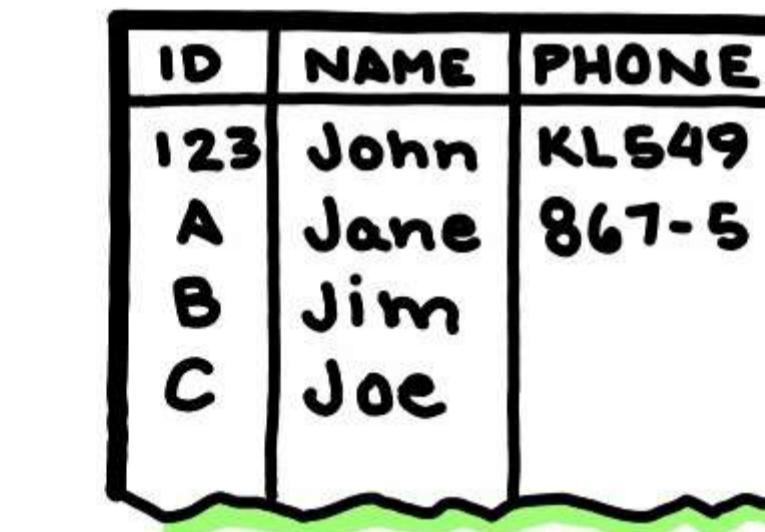
2 TEXT

1 make request

4 act



Command Line Interface



Columns

Tabular Data



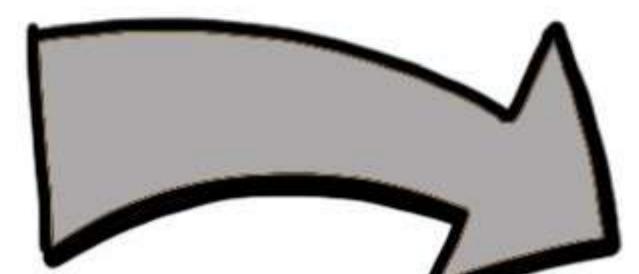
Language SDKs

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

TABLE DATA

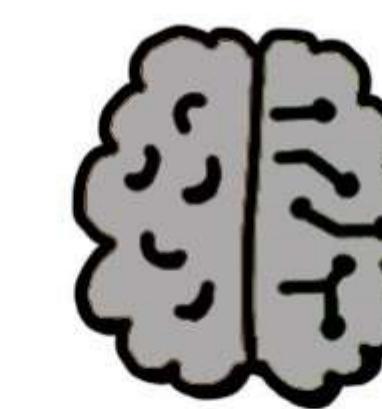
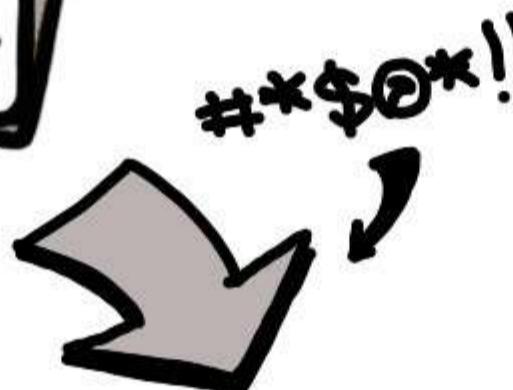
DATA Columns

AUTOMATIC SPEECH RECOGNITION



SPEECH →
← TO TEXT

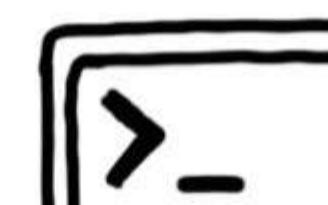
VOCABULARY
FILTERING



DEEP LEARNING PUNCTUATION AND FORMATTING



CLI



WEB

BRING YOUR OWN BYOV VOCABULARY



REAL TIME CLOSE CAPTIONING



LIVE FR...

AMAZON TRANSCRIBE

5/21/20

@awsgeek

CUSTOM VOCABULARIES

STREAMING TRANSCRIPTION



WebSocket

HTTP/2

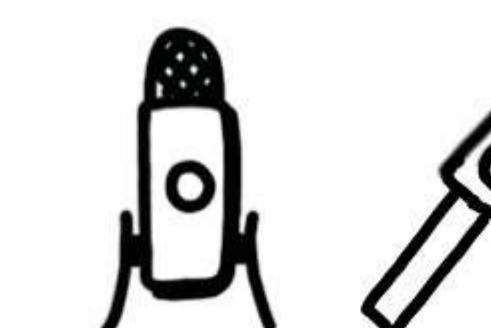


MULTIPLE SPEAKER • IDENTIFICATION •

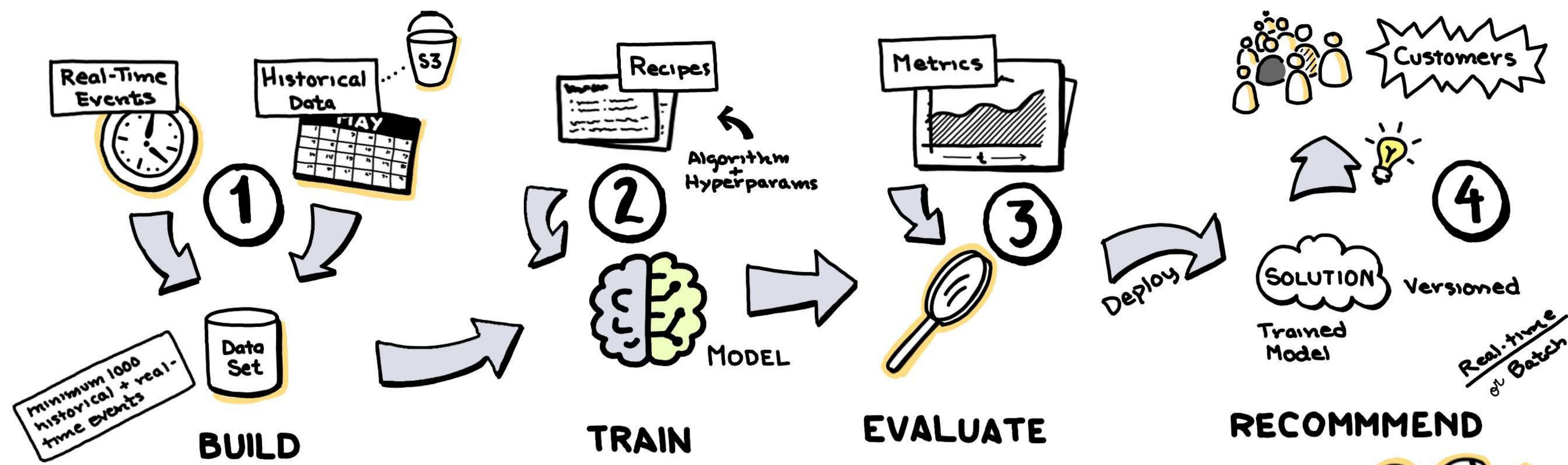
"DIARIZATION"



CHANNEL ID



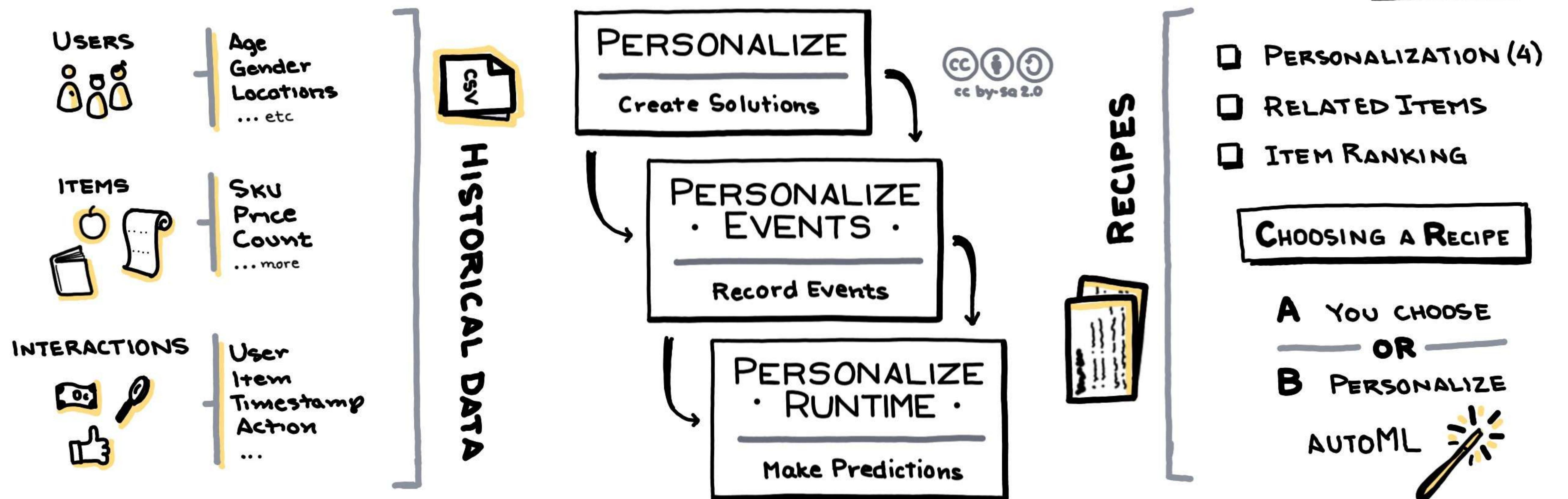
CC BY-SA 4.0

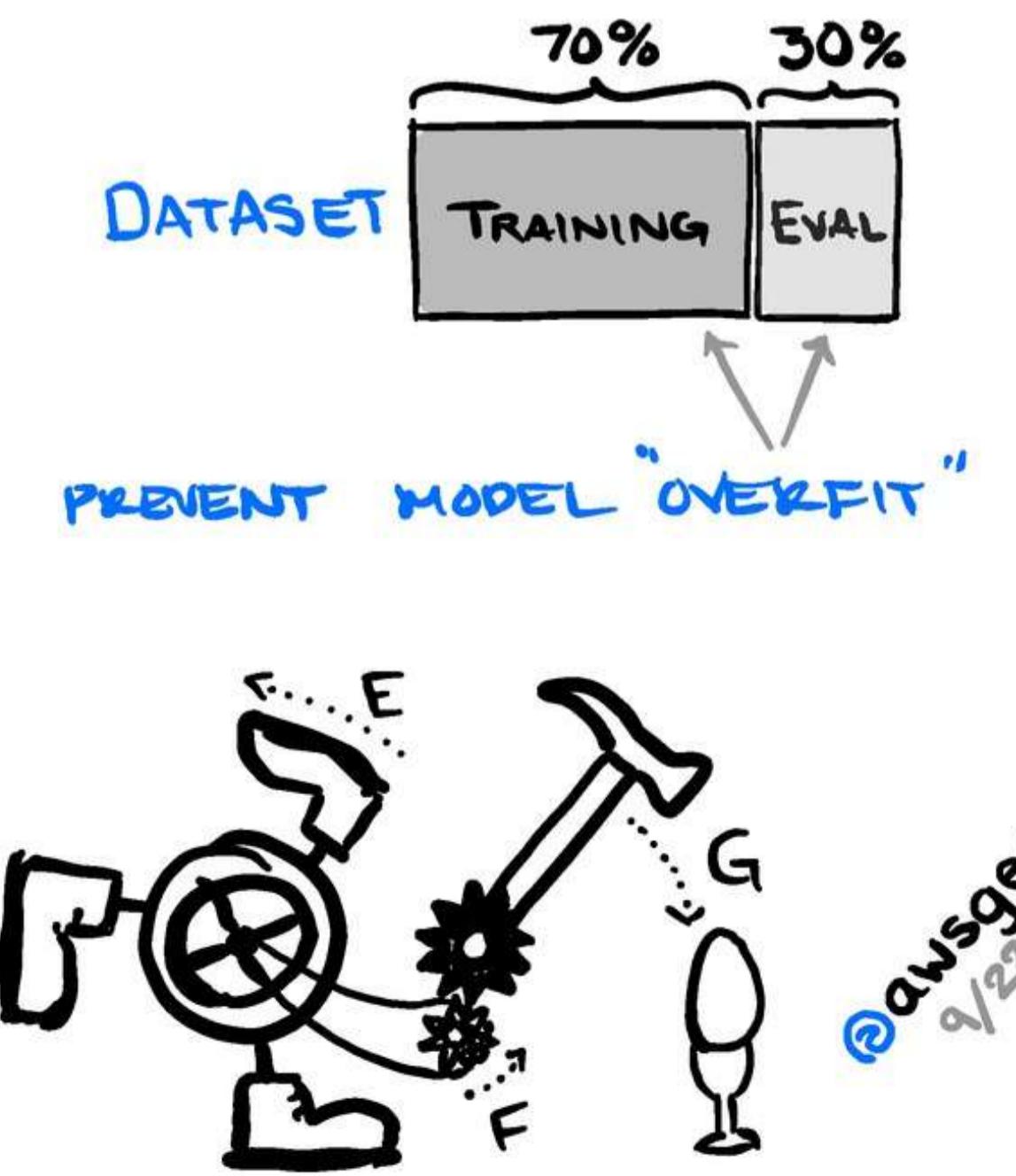
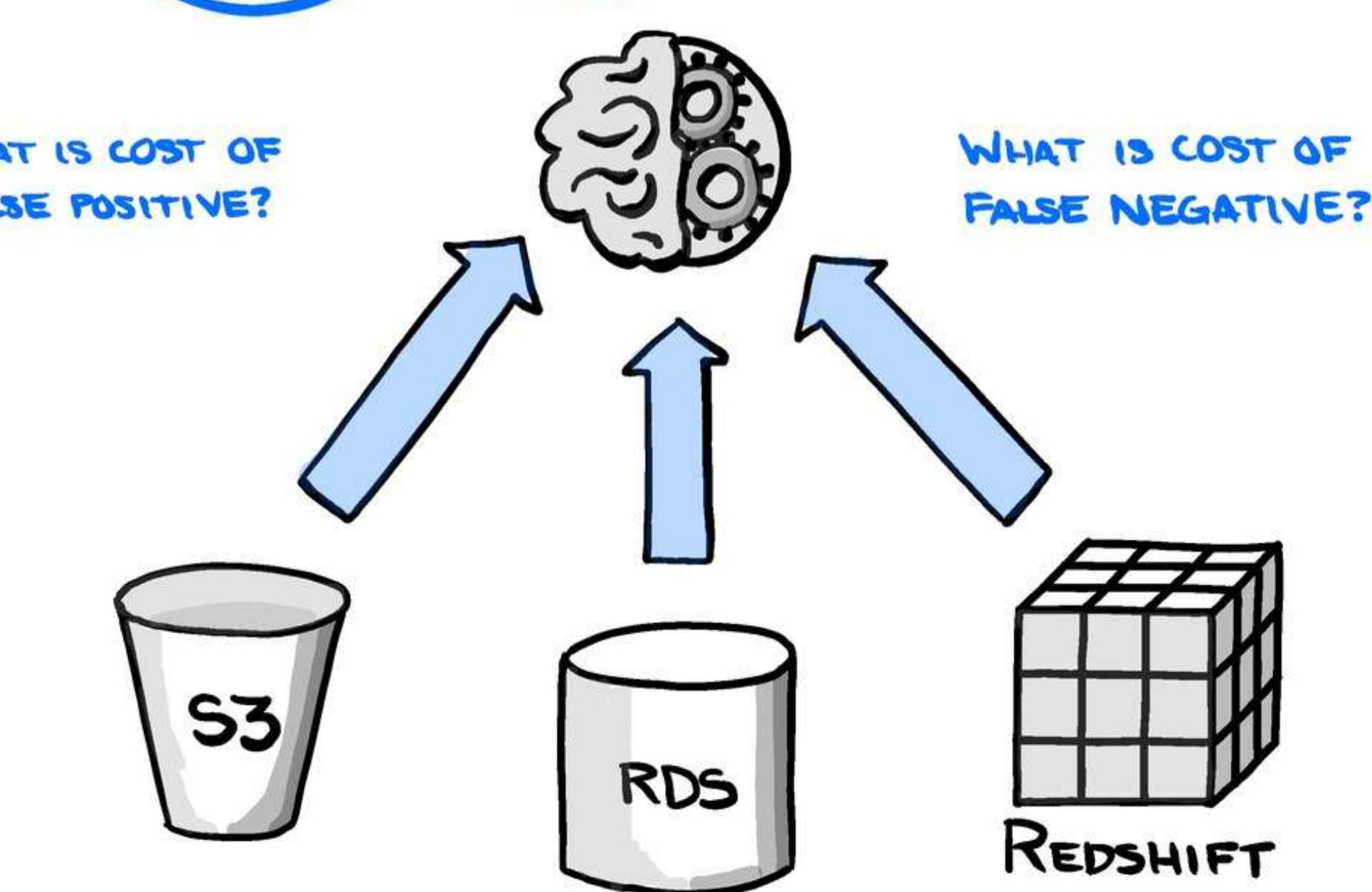
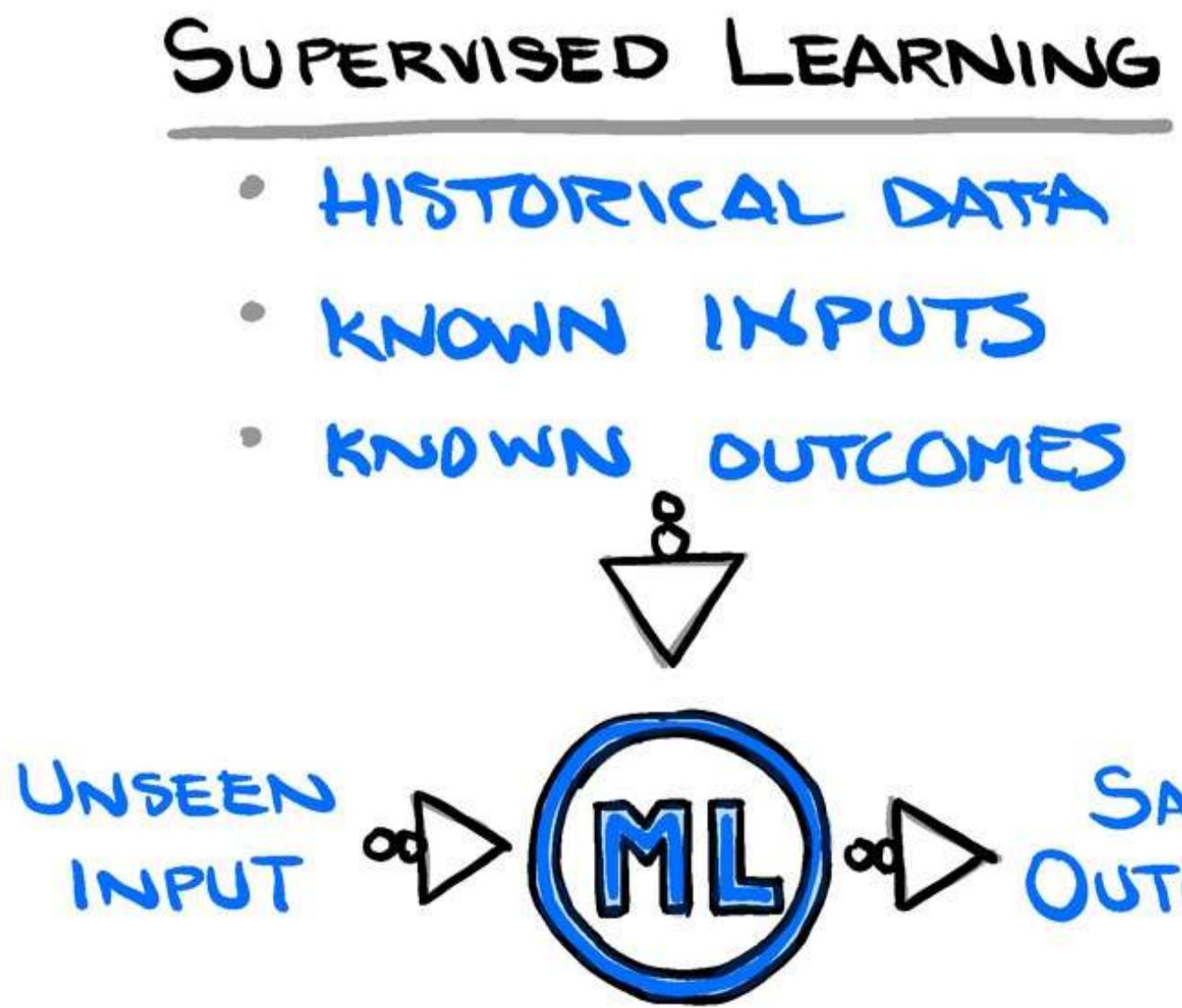
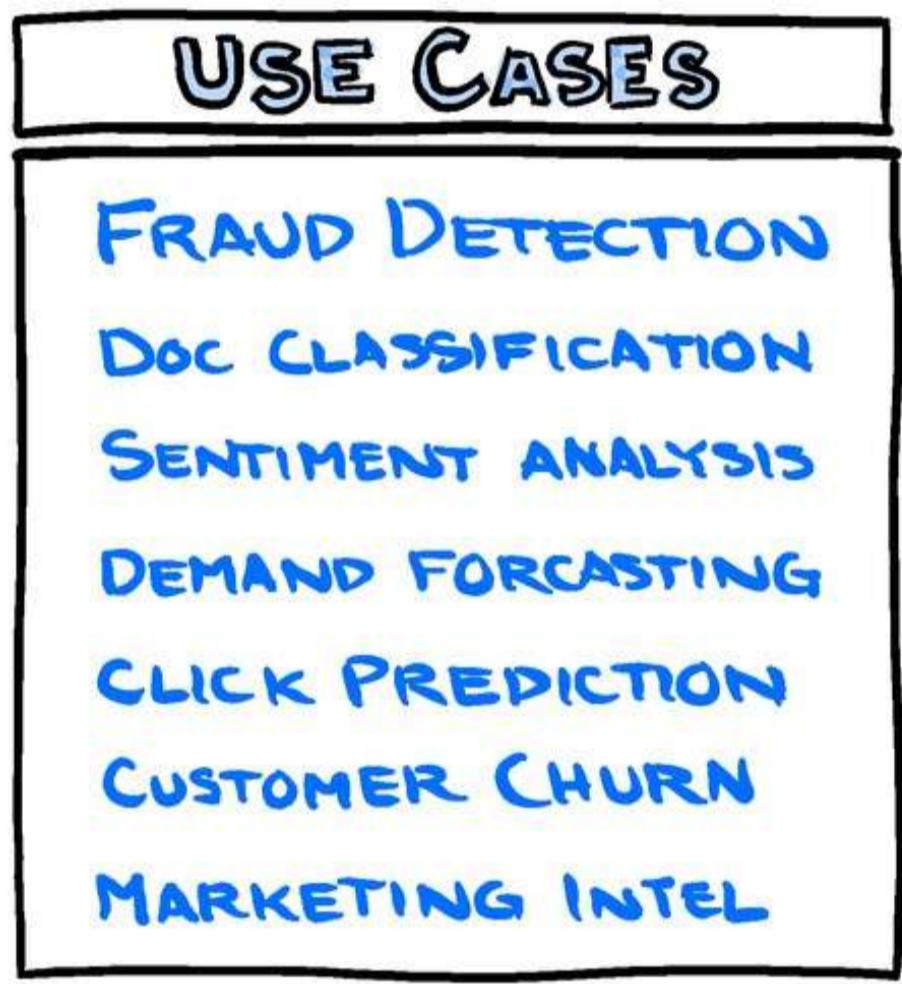
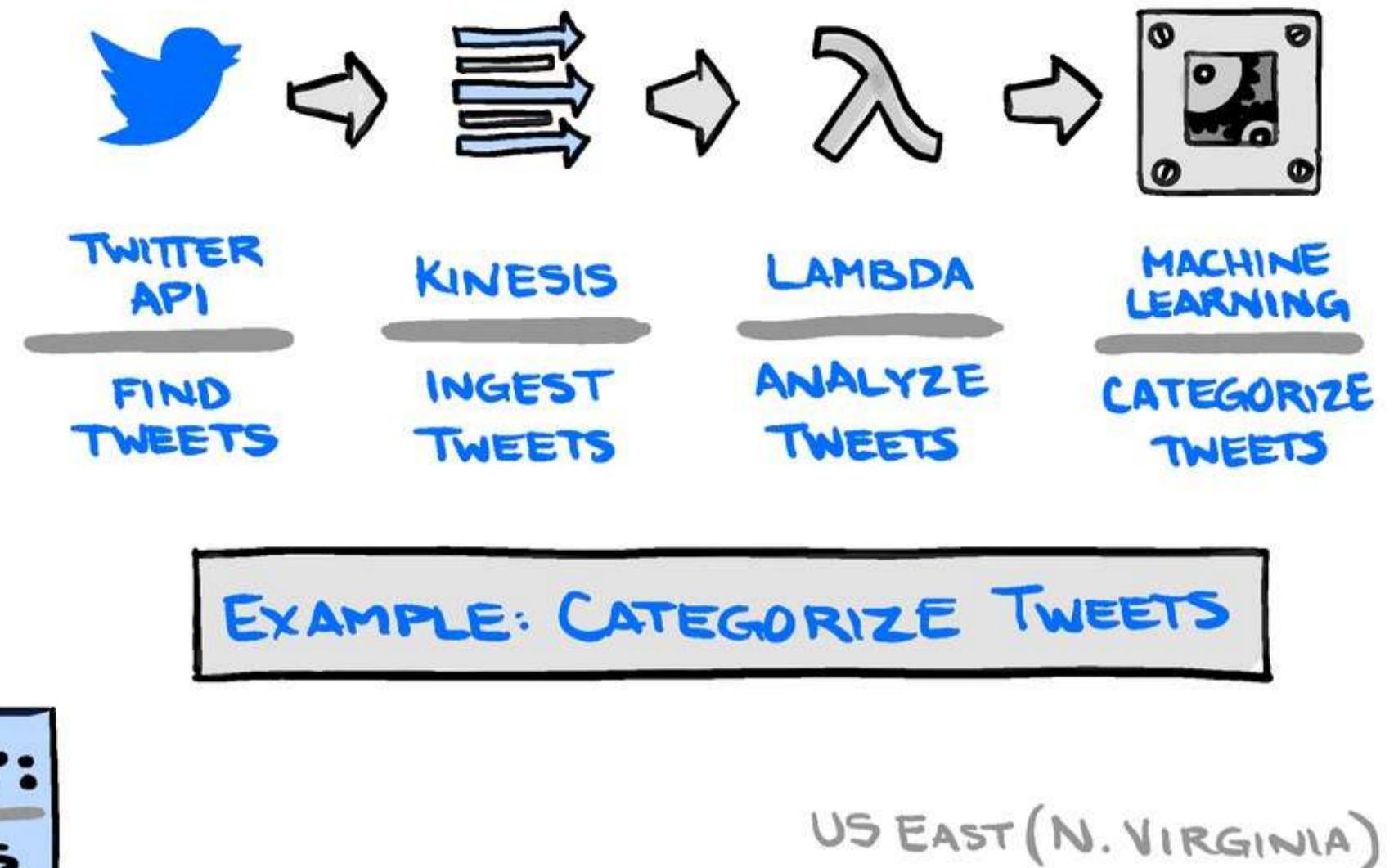
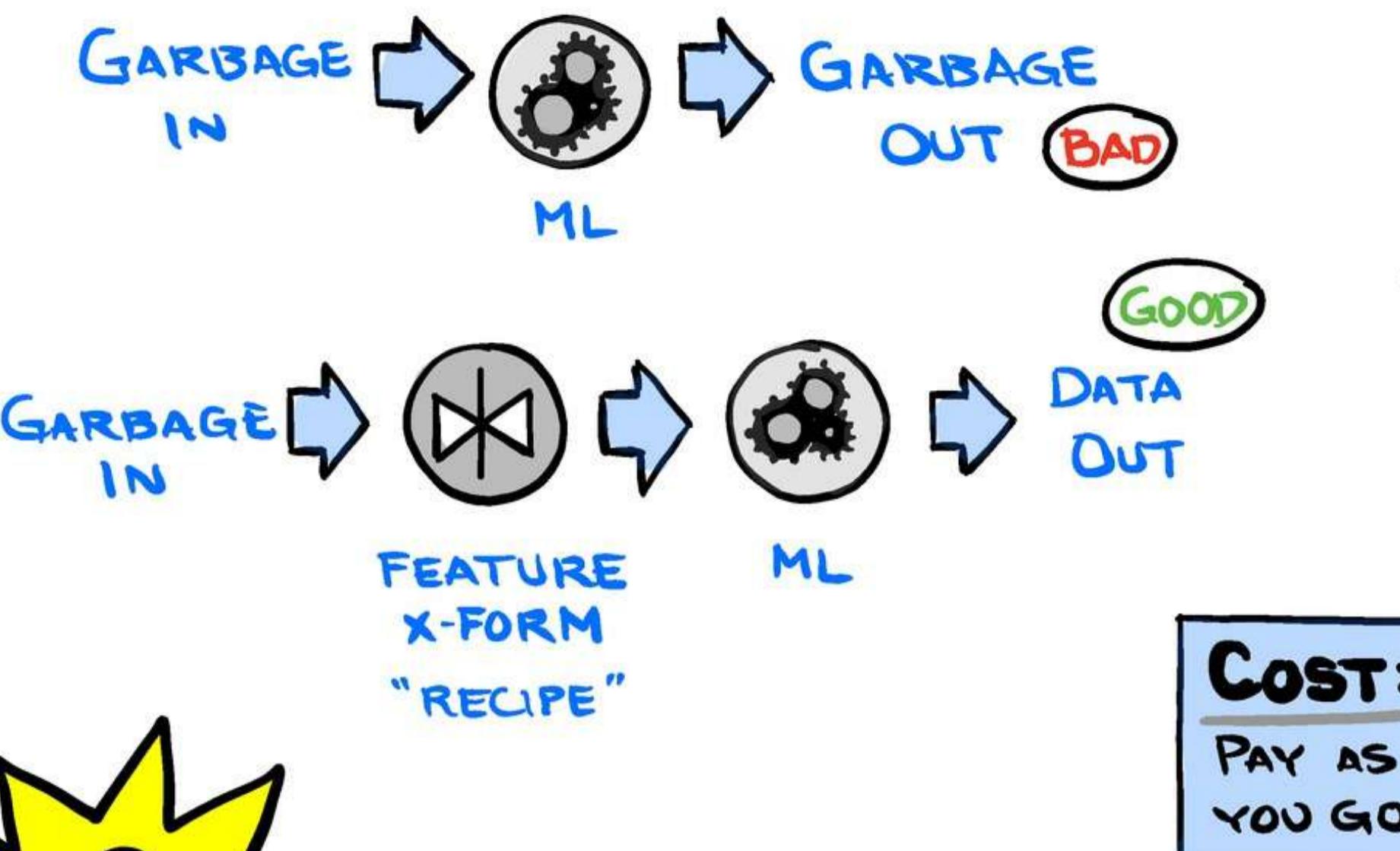
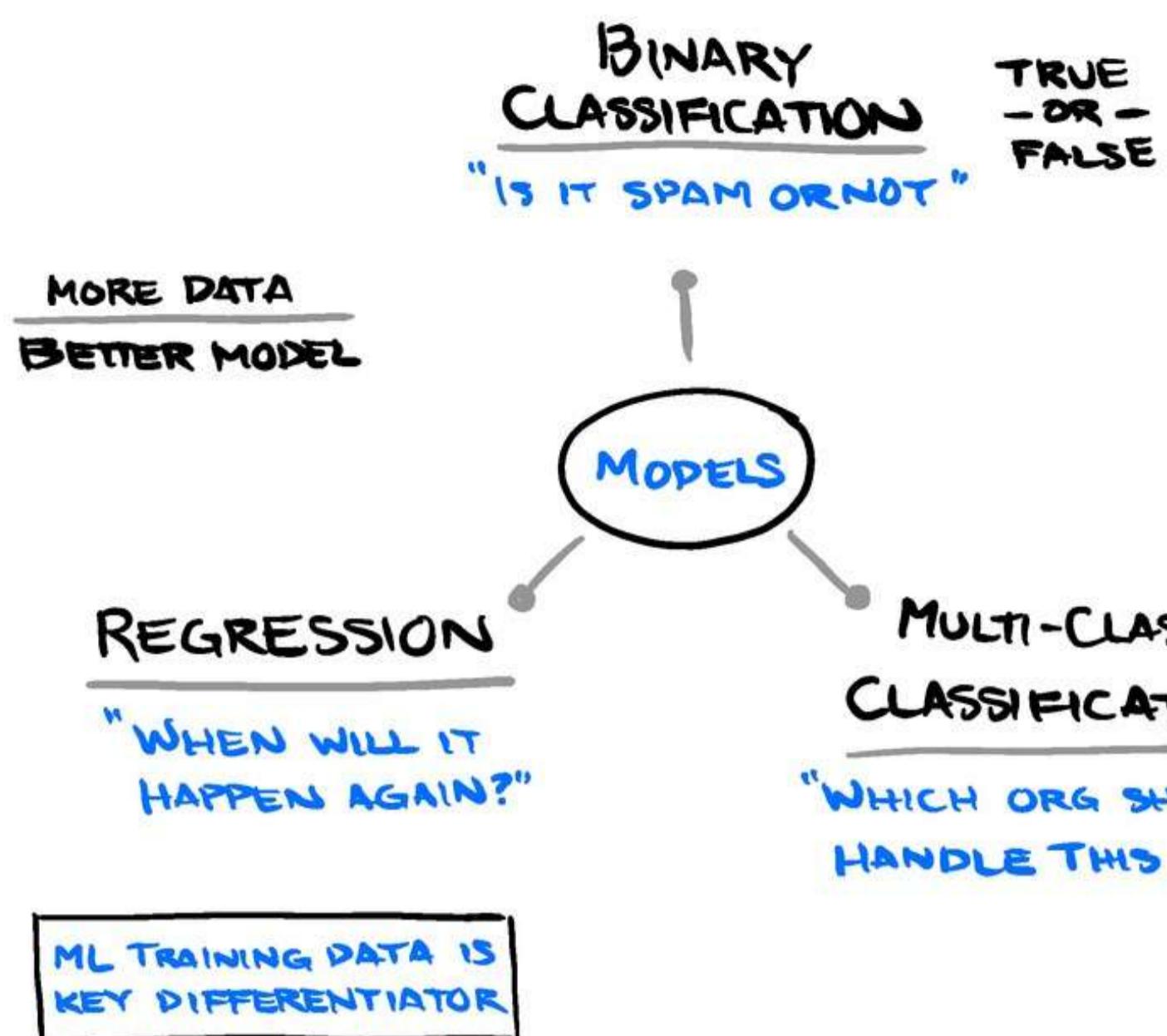


AMAZON PERSONALIZE

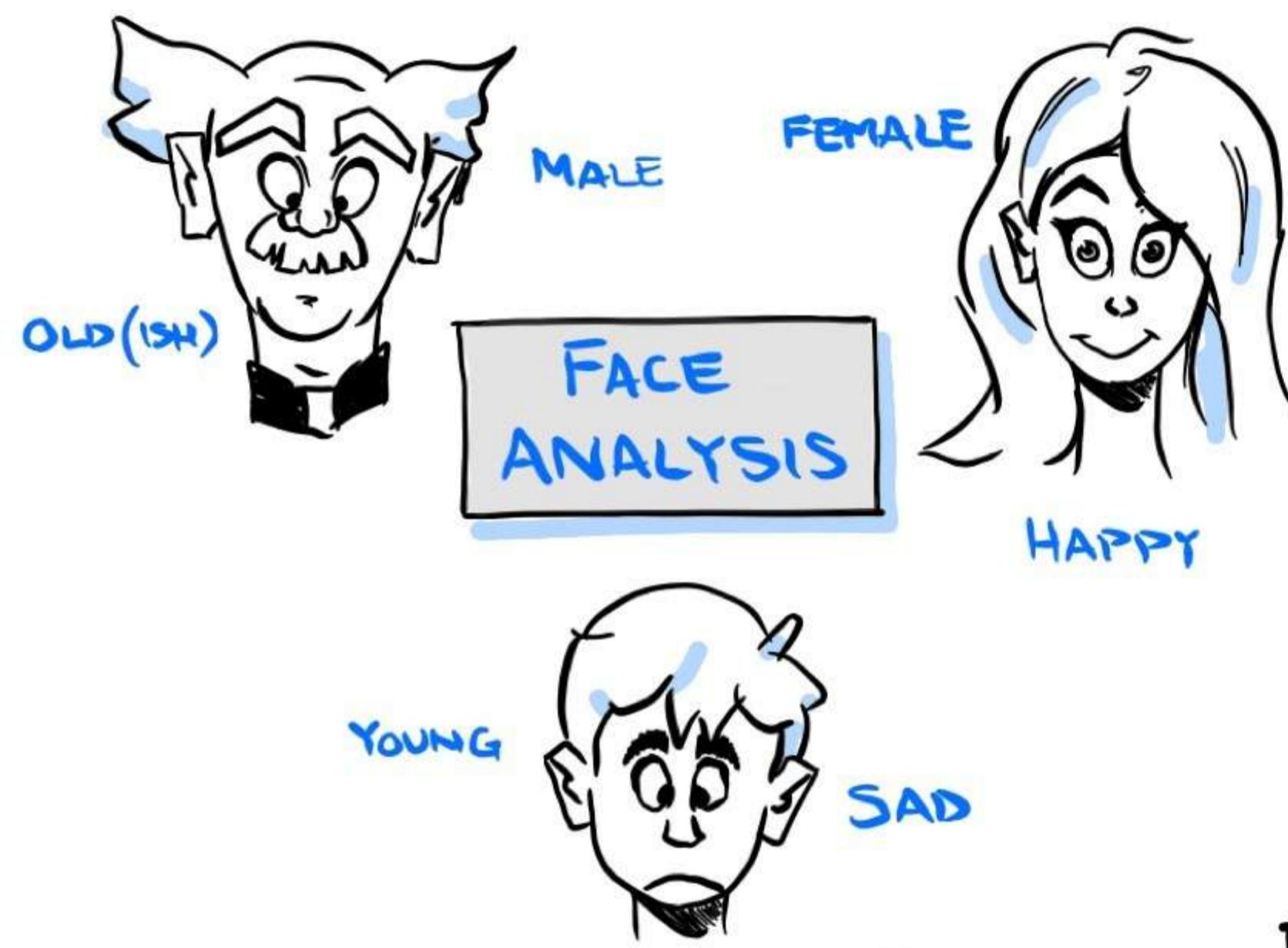
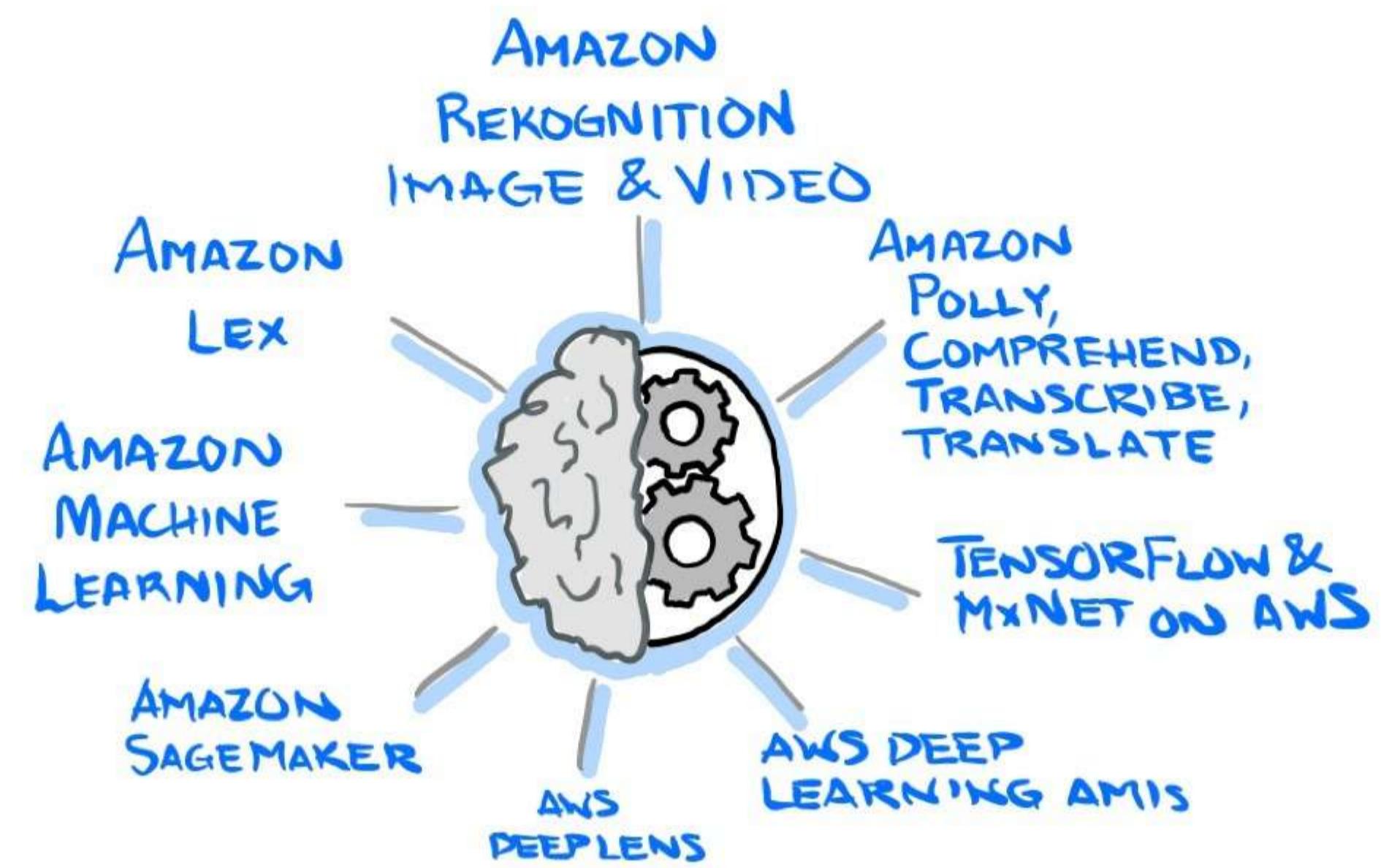
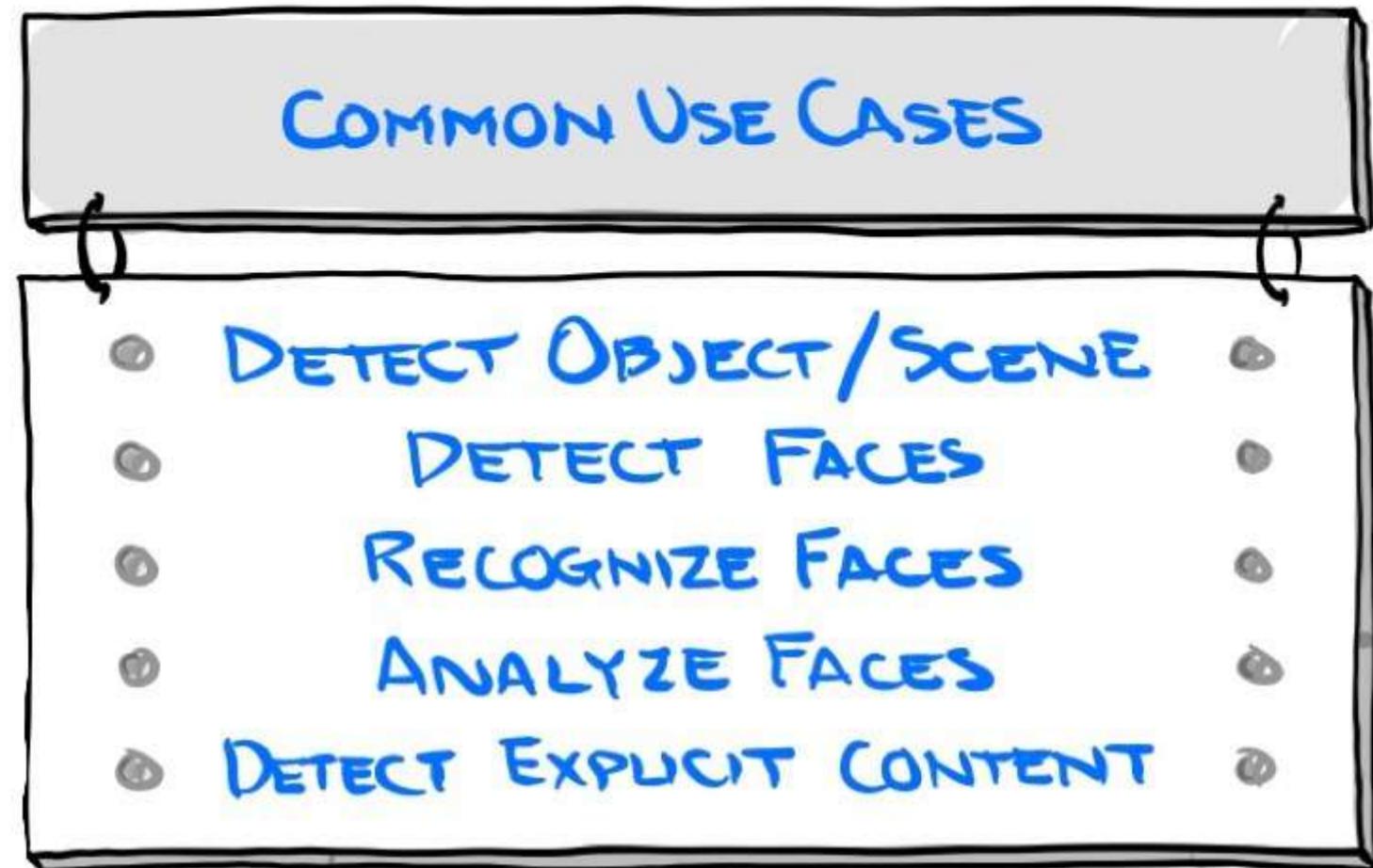
REAL-TIME RECOMMENDATIONS

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

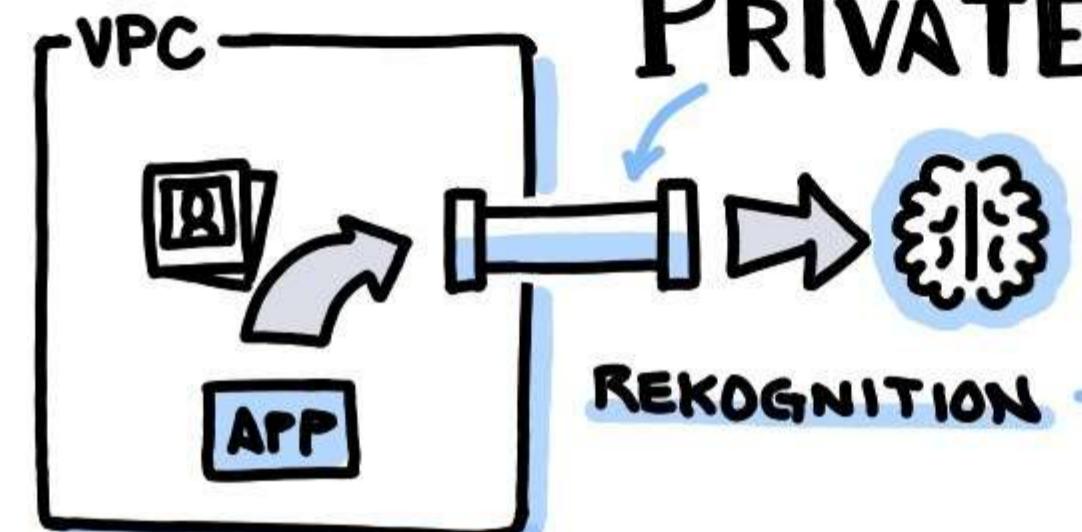


amazon REKOGNITION

11/2/19



PRIVATELINK



TREES /
HIERACHICAL
METADATA /
OUTDOORS

MOUNTAINS

BOUNDING BOXES !!

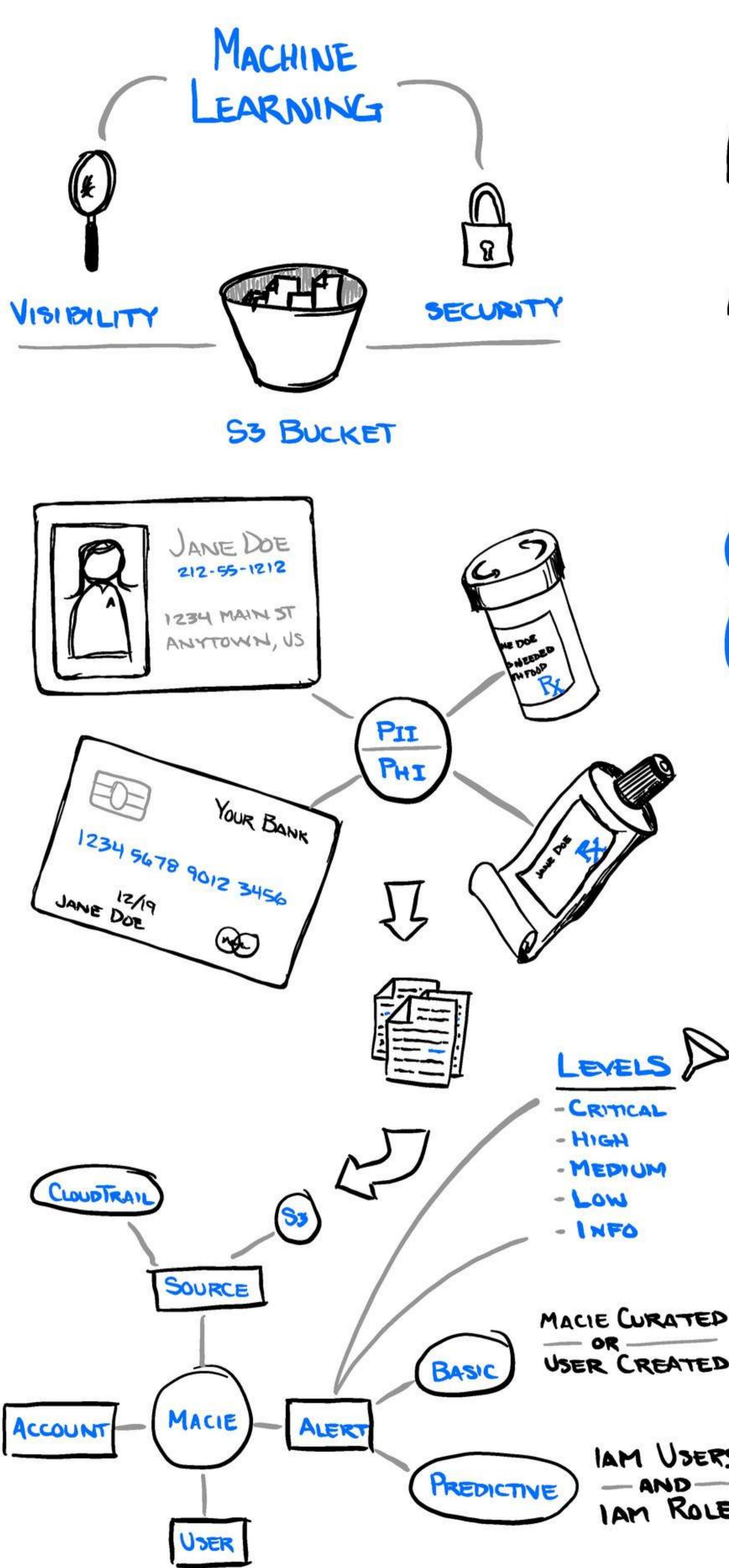
BIRDS

BOB

TEXT "BOB"

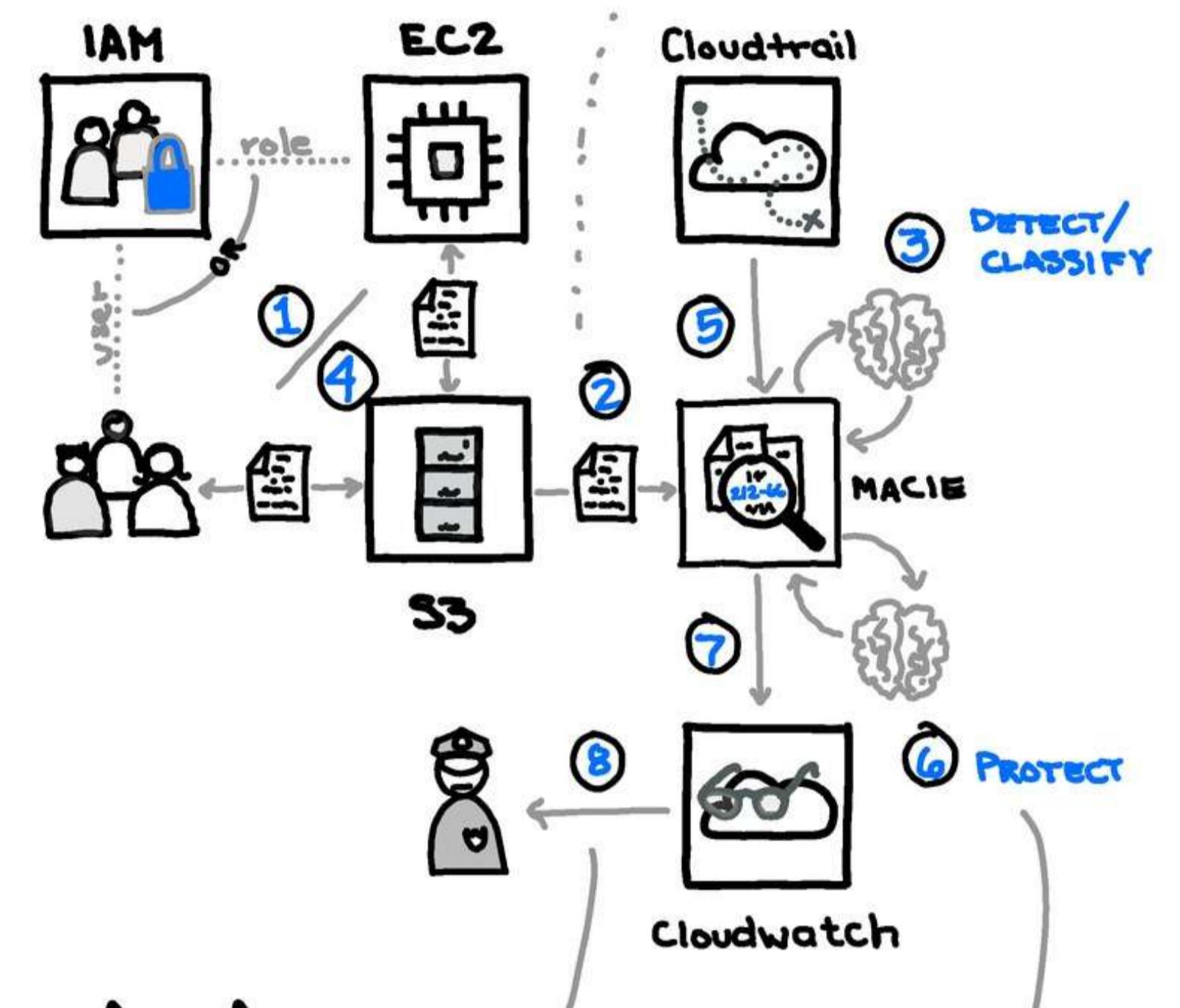
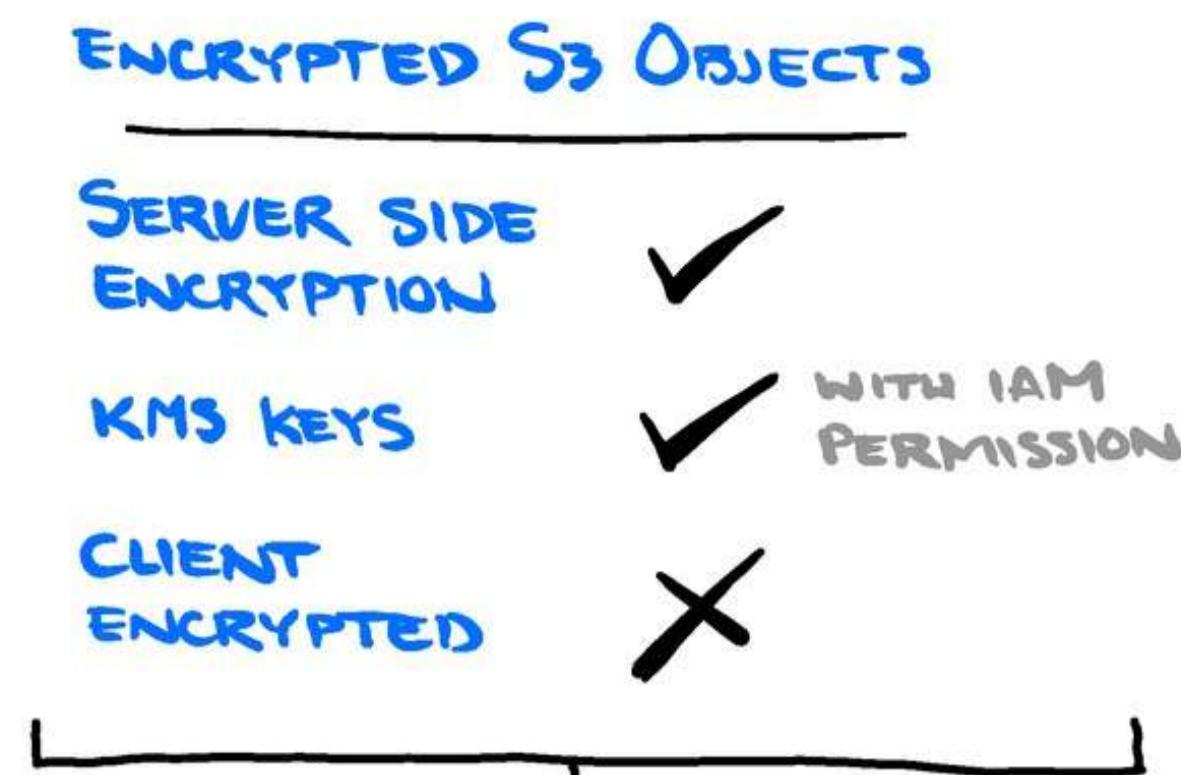
BOB IS NAKED

PERSON



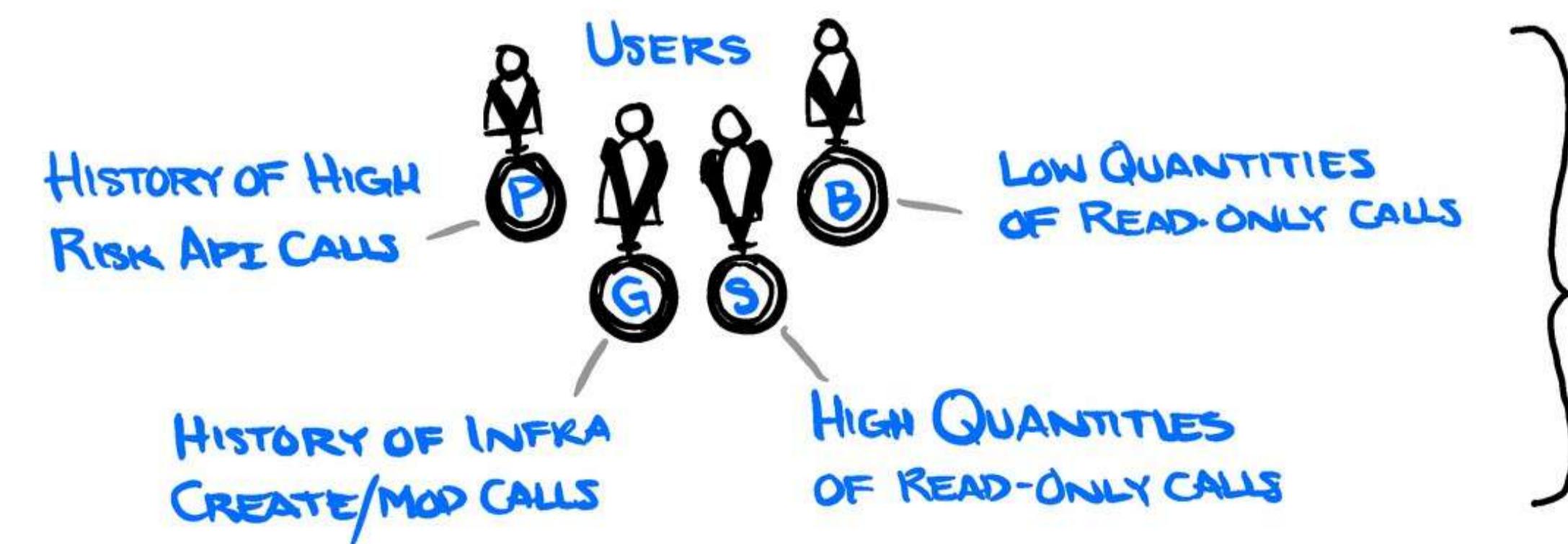
- ## As EASY As:

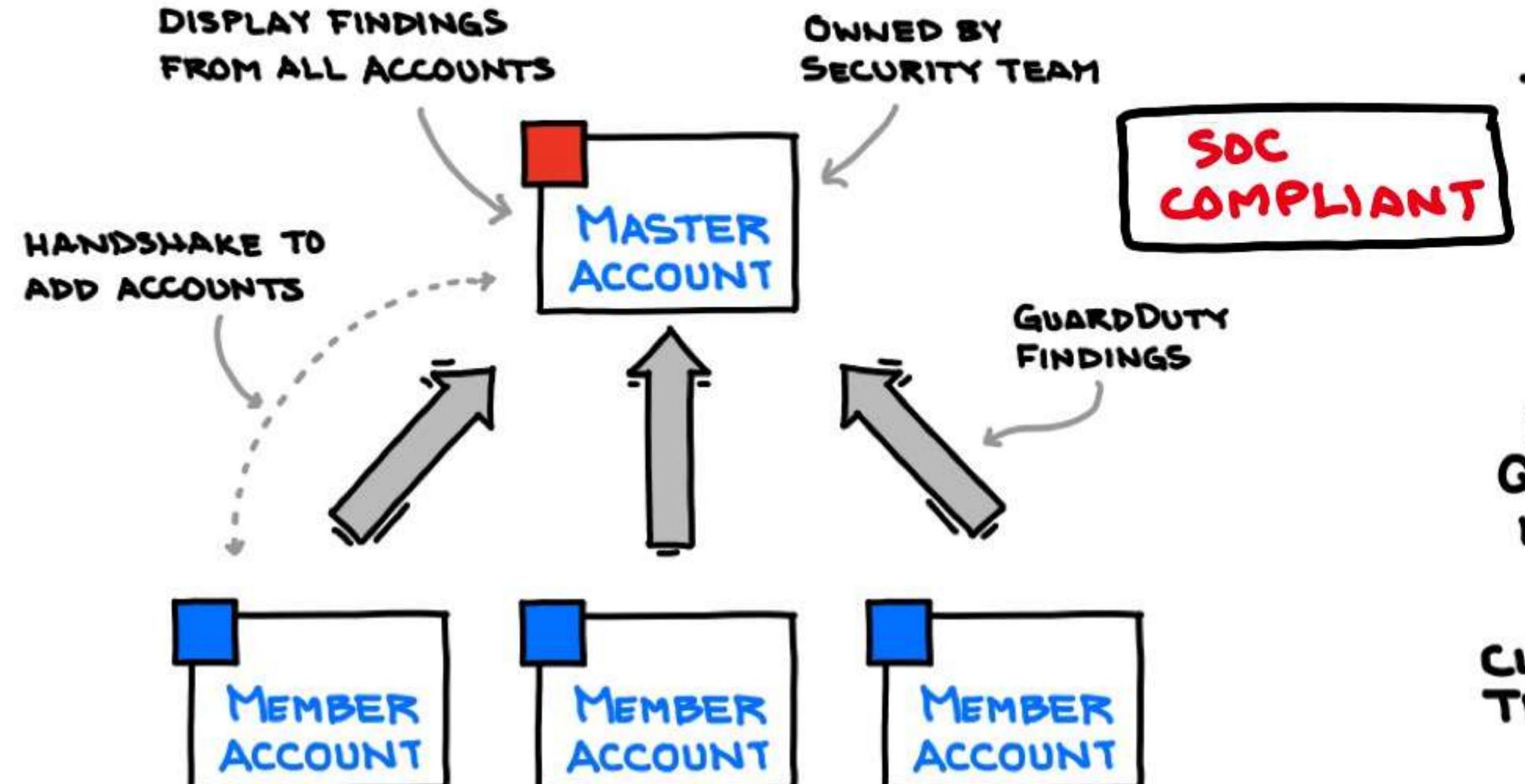
- 1 ENABLE MACIE
 - 2 SELECT S3 BUCKETS
 - 3 REVIEW ALERTS



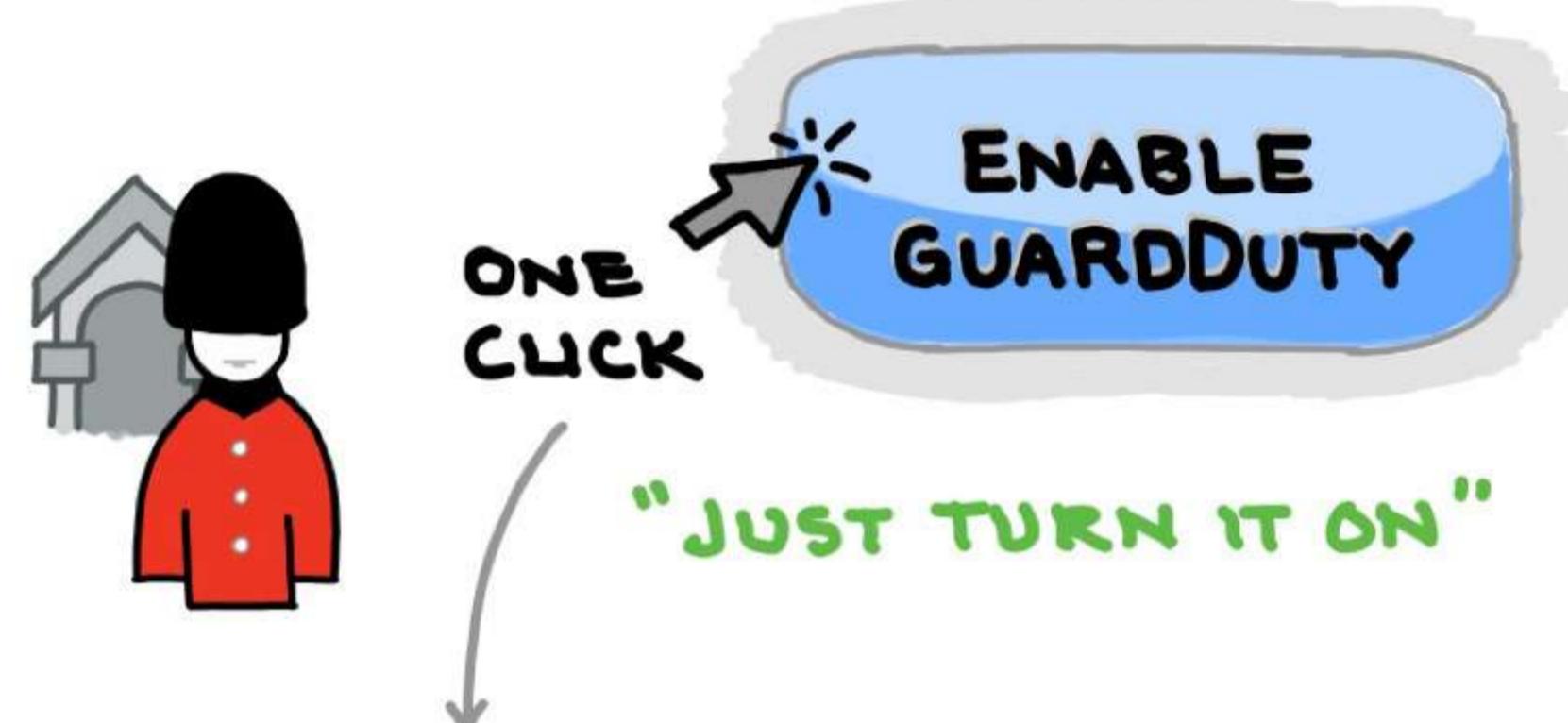
AN ALERT:

- SEVERITY
 - TIME STAMP
 - CATEGORY
 - S3 BUCKET/
OBJECT
 - COMMENTS
 - # VIEWS
 - AWS REGION
 - # RESULTS





CENTRALIZED THREAT DETECTION



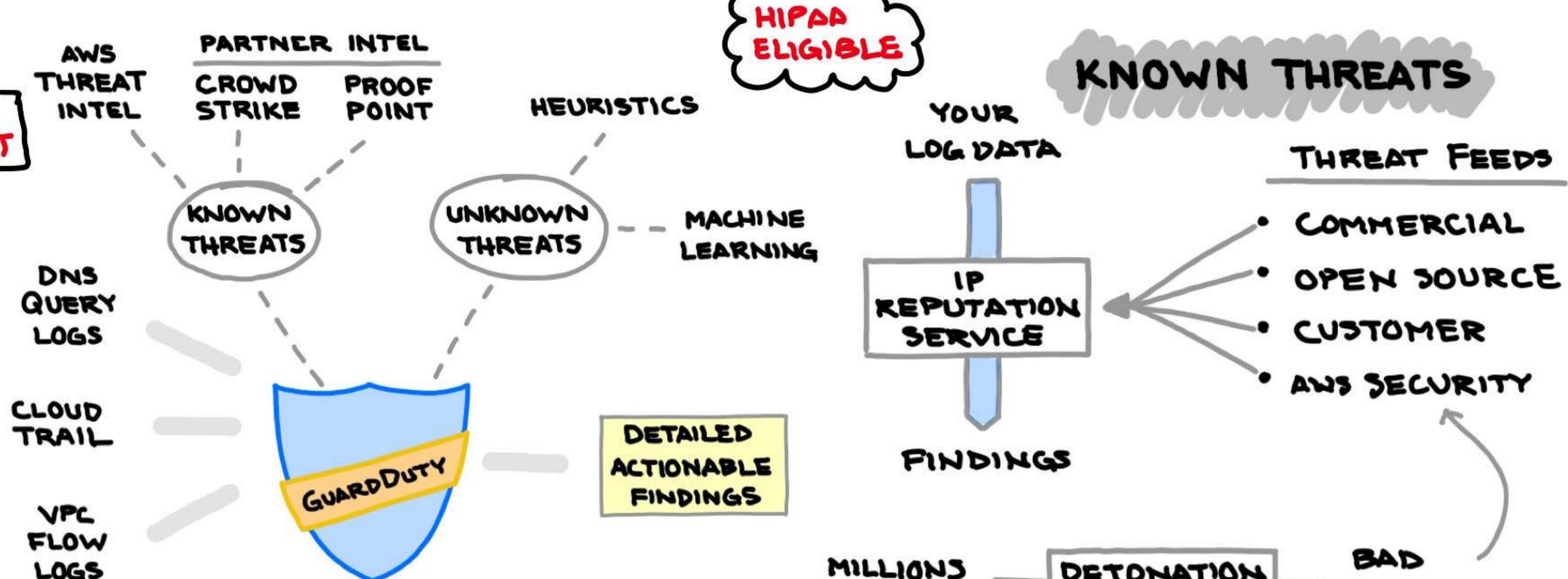
GIVES AWS ACCESS TO
YOUR CLOUDTRAIL, VPC
FLOW, & DNS QUERY LOGS

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

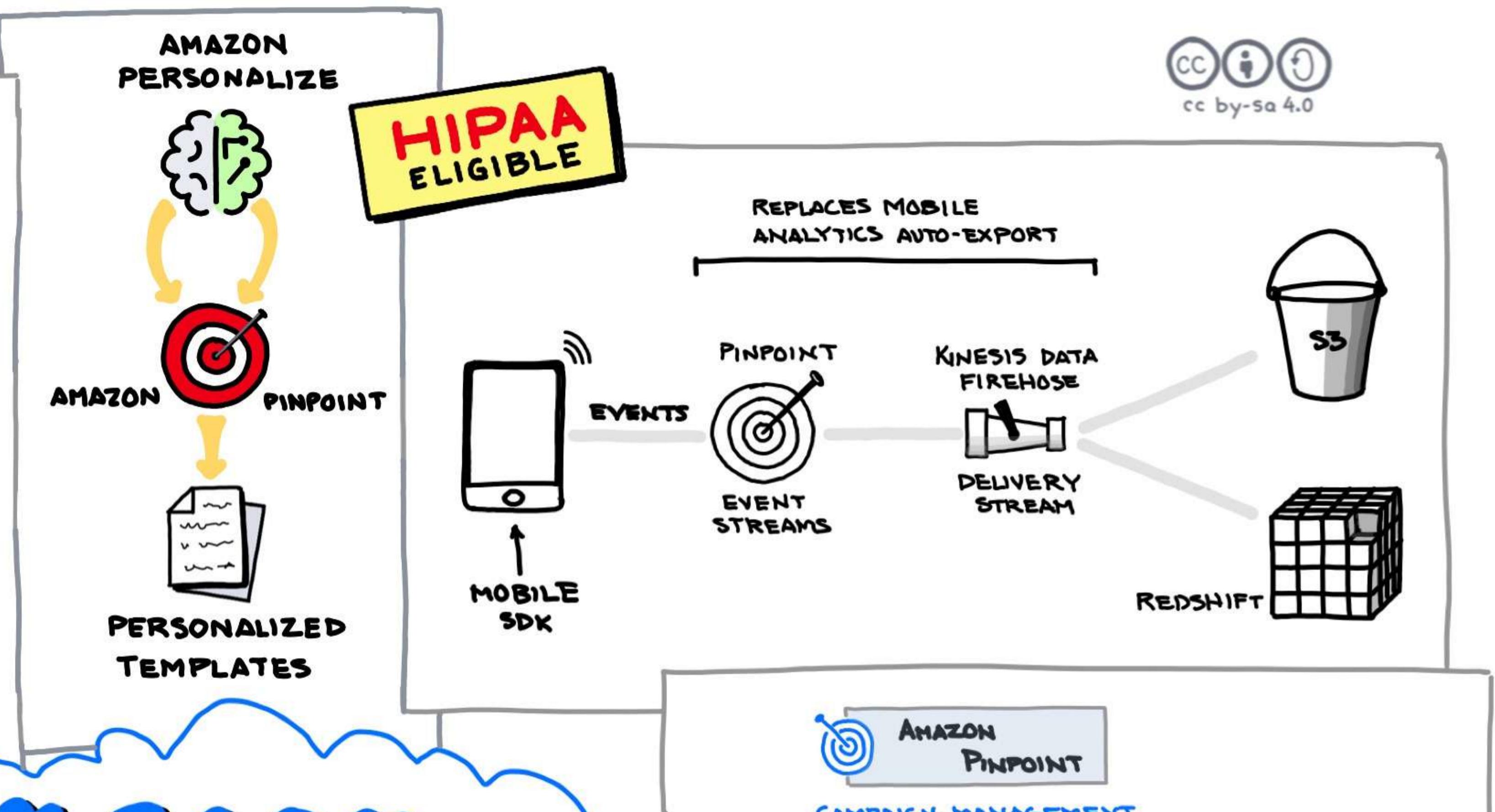
DETECTION CATEGORIES

- 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

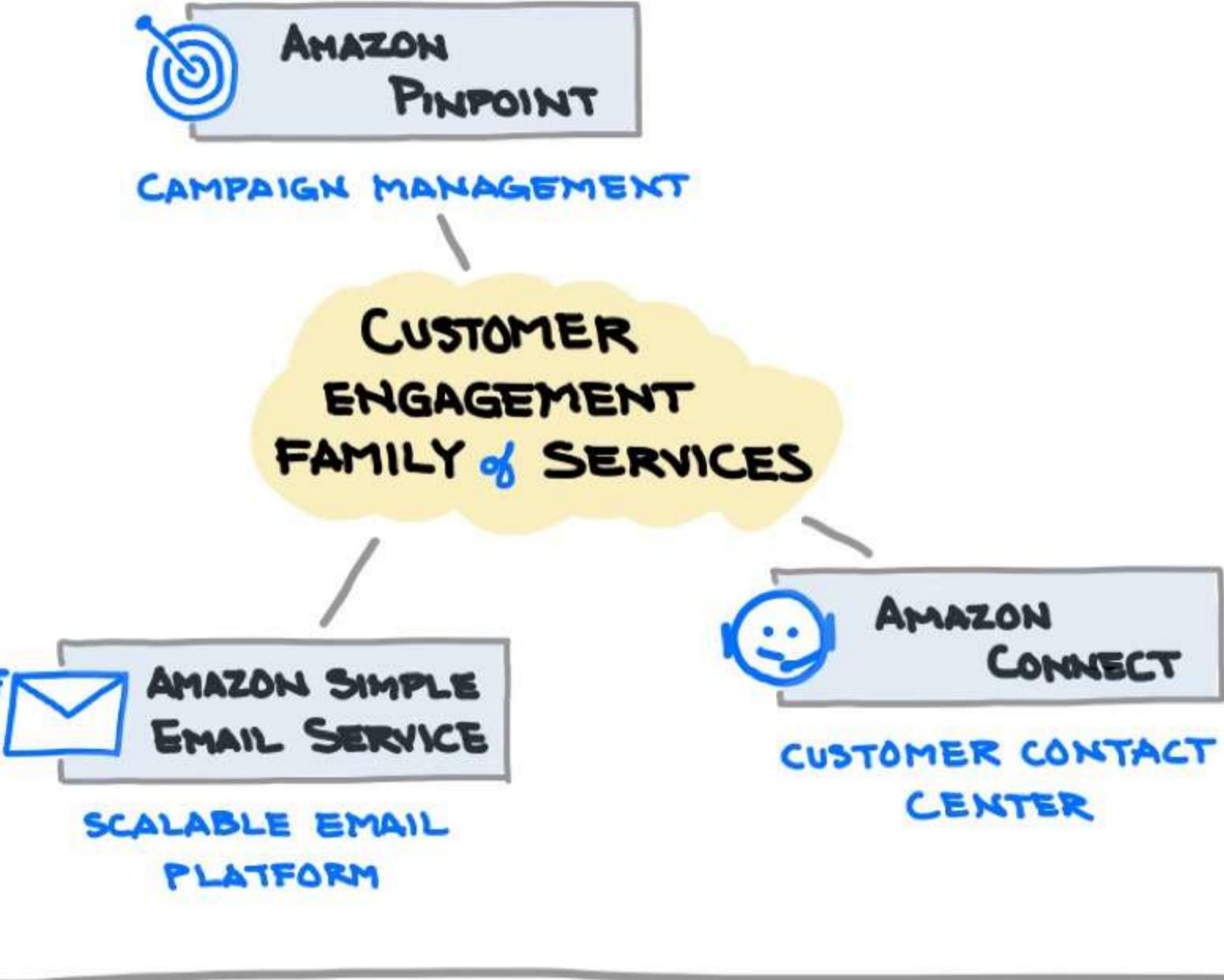


CUSTOMER ENGAGEMENT

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

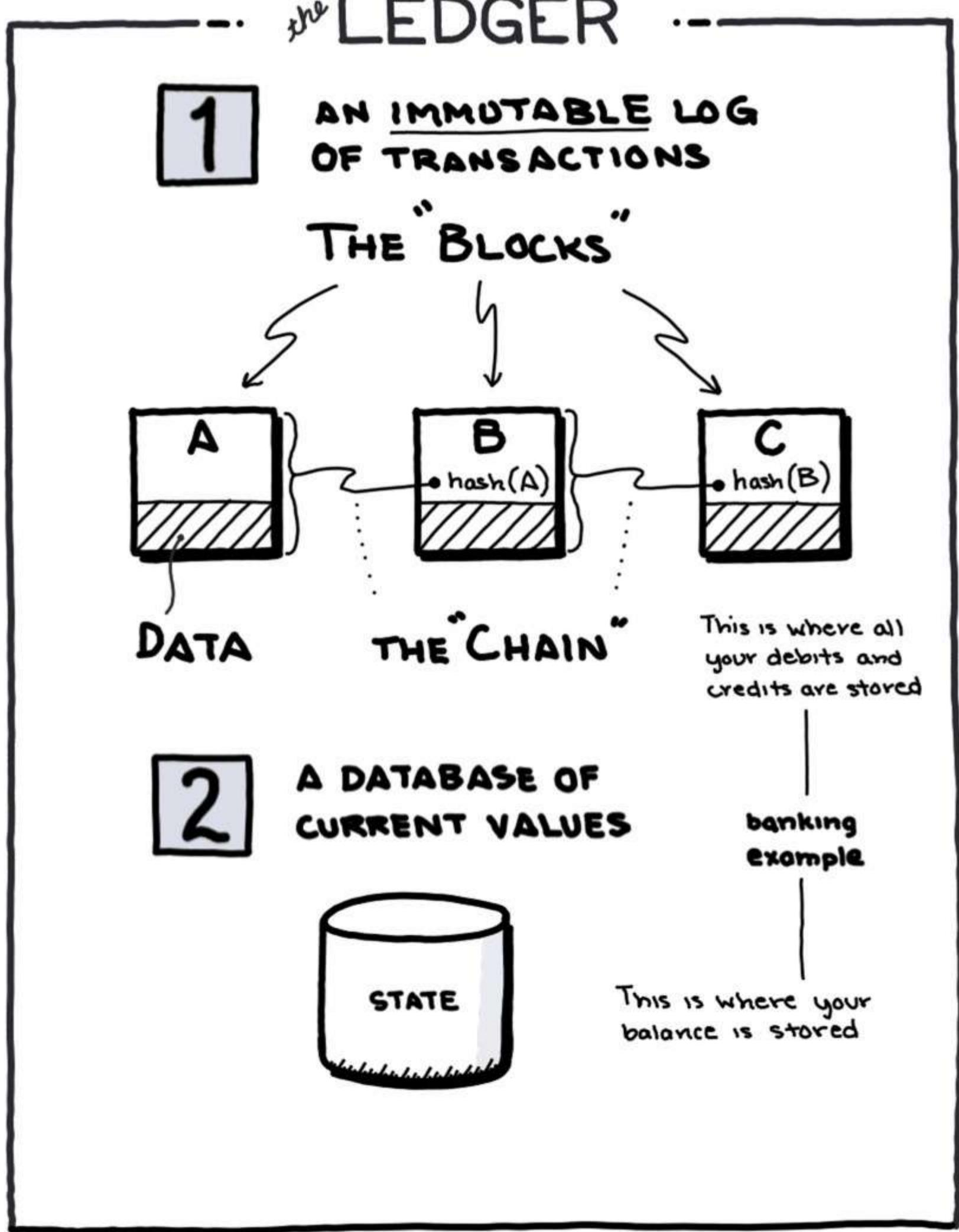
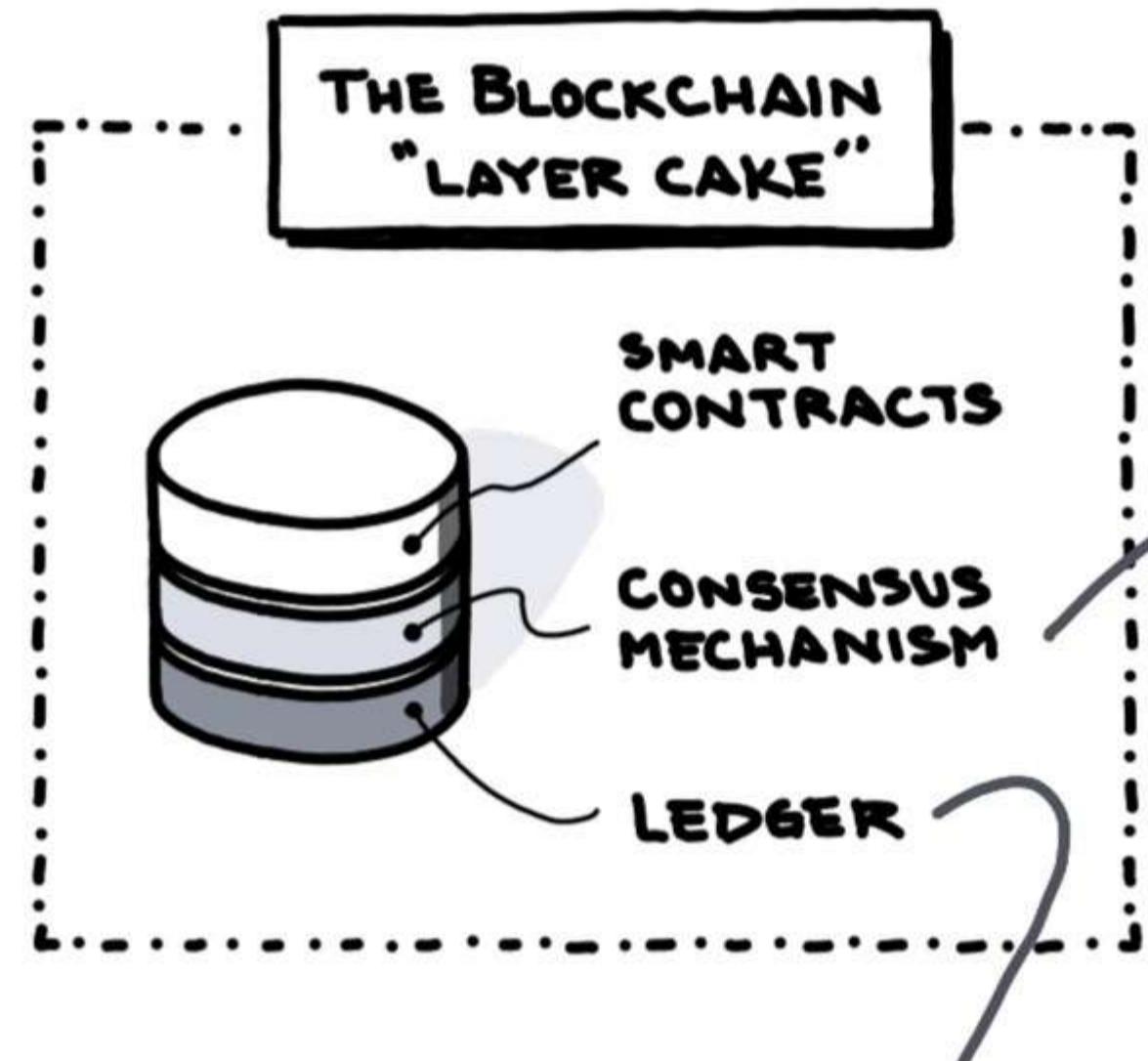
AMAZON MANAGED

BLOCKCHAIN

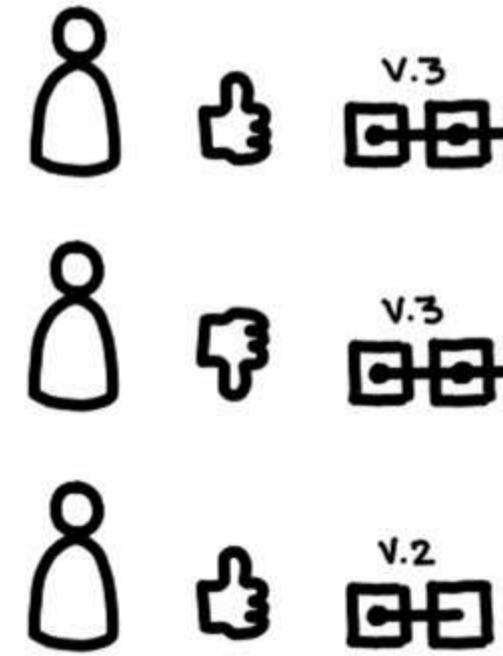
@awsgeek

23 AUG 2019

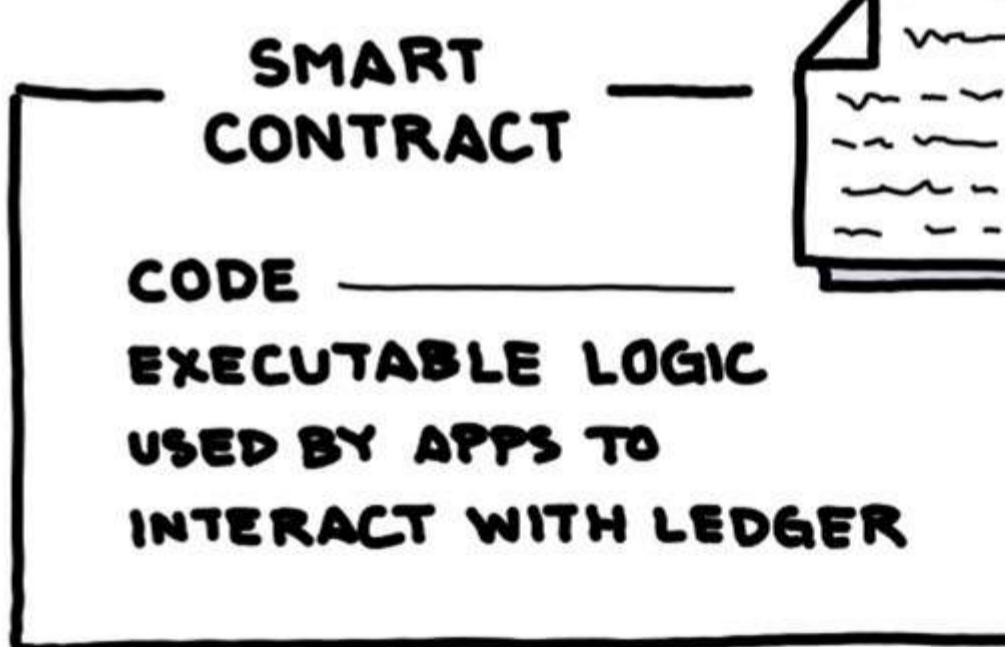
SCALABLE BLOCKCHAIN NETWORKS



CONSENSUS mechanism

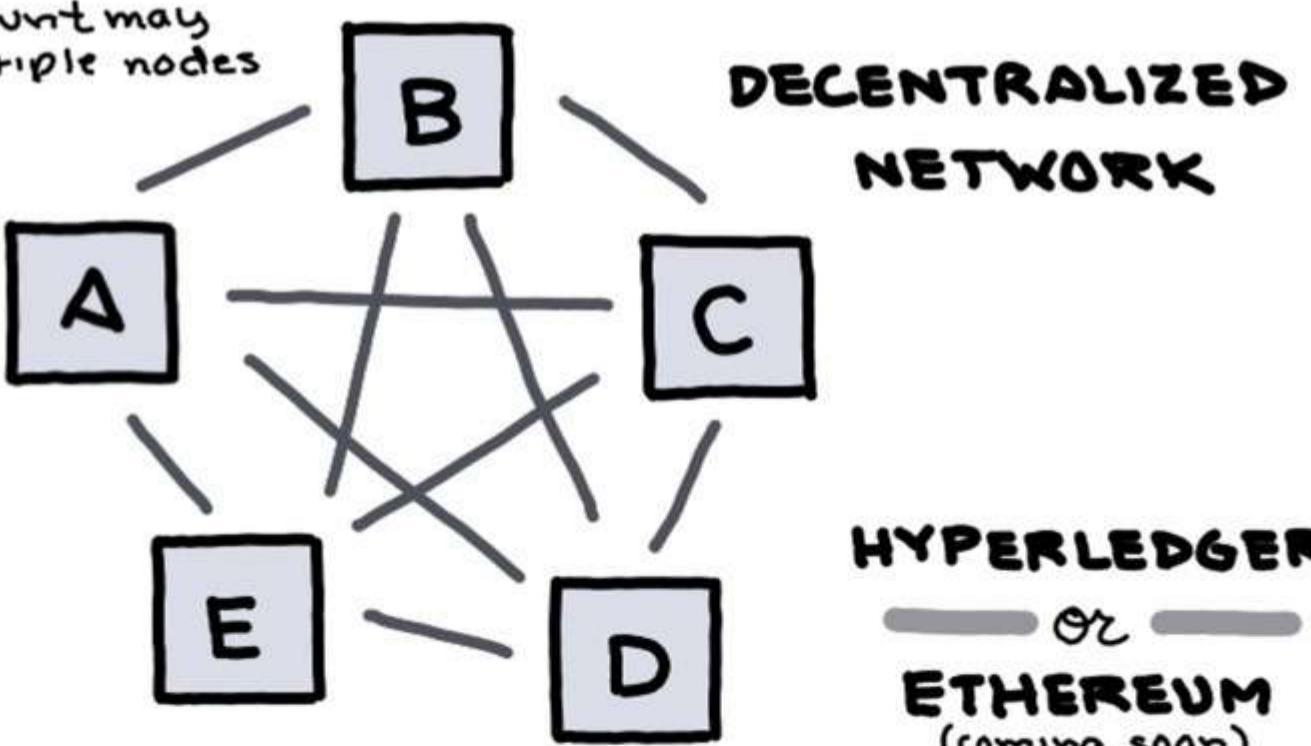


- Do the right members endorse the transaction?
- Does everyone have the right ledger?
- etc, ...

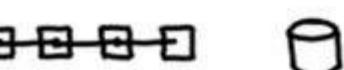


AMAZON MANAGED BLOCKCHAIN

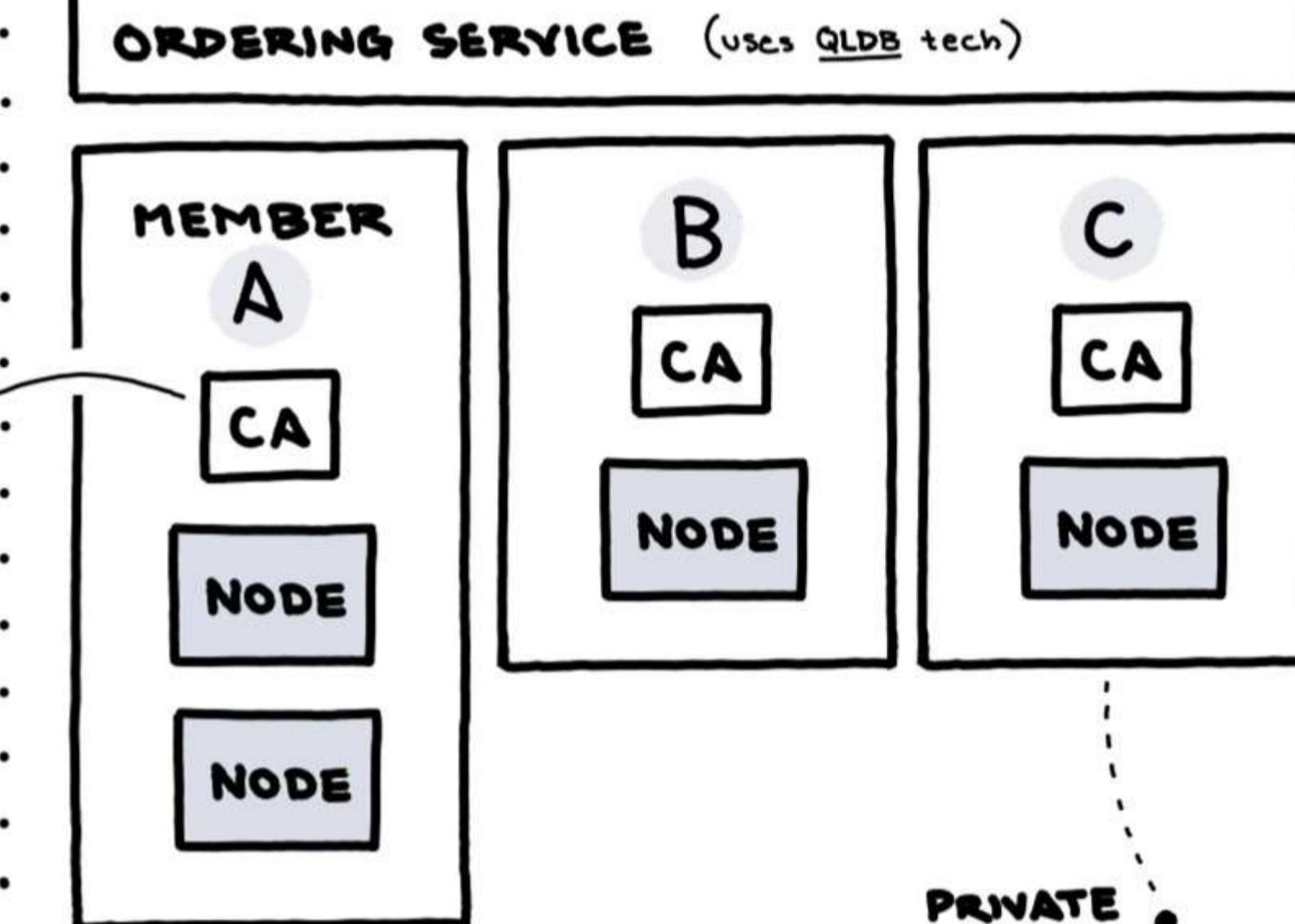
One account may have multiple nodes



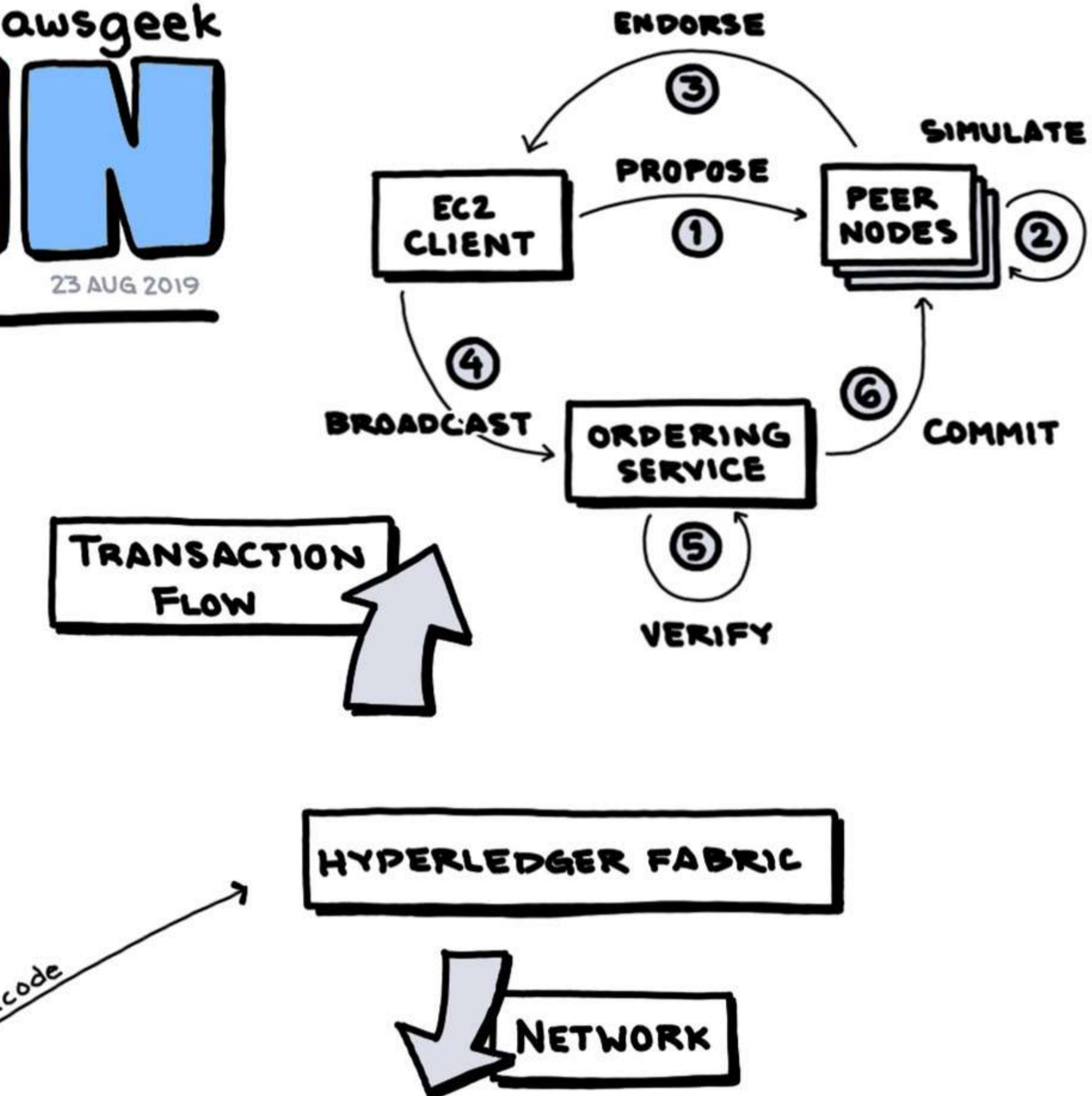
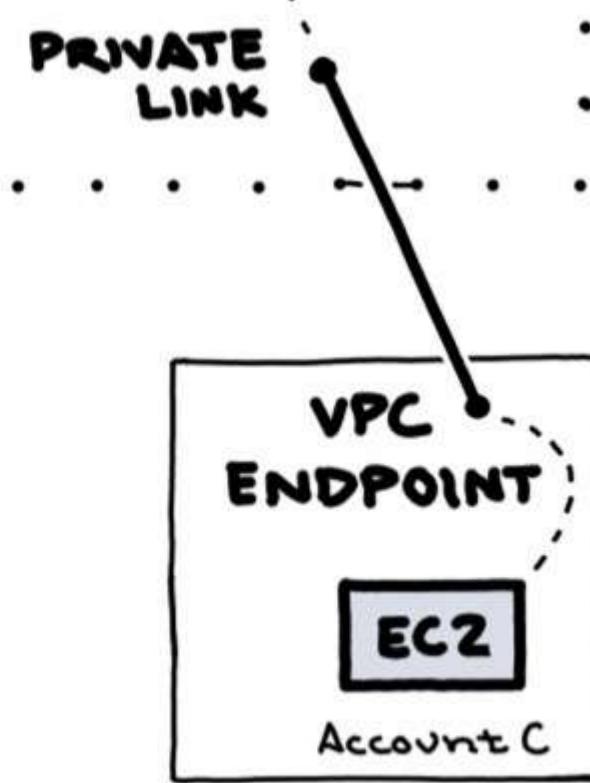
EACH NODE HAS A COPY OF THE LEDGER



CERTIFICATE AUTHORITY
USES KMS



**A CREATES BUT
DOESN'T OWN NETWORK**



Thanks



Content: awsgeek.com

Curated By:  him431