

Spotify's Reliable Event Delivery System

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Software Engineer





Search Sara Chin

MAIN
Browse
Activity
Radio

YOUR MUSIC
Songs
Albums
Artists

PLAYLIST
Discover Weekly
Your weekly mix of discoveries and deep cuts, picked just for you. Updated every Monday, so save your favourites!
Created by: Spotify • 30 songs, 2 hr 04 min

PLAY FOLLOWING

FOLLOWERS

Filter

SONG	ARTIST	ALBUM
+ All My Friends	Dylan Kelly	All My Friends
+ Can't Deny My Love	Brandon Flowers	Can't Deny My Love
+ 1000	Ben Khan	1000
+ Fly (FKJ Remix)	June Marleezy	Fly (Remixes) - Single
+ Eventually	Tame Impala	Eventually
+ Abrasive	Ratatat	Abrasive
+ You Hear Me Knocking - Alternate Ver...	The Rolling Stones	Can't You Hear Me Knocking
+ ...	Tyler, The Creator	Cherry Bomb
+ ...	Oddisee	That's Love - Single

PLAYING FROM PLAYLIST
Discover Weekly

What You Want
Toro Y Moi

1:40

⏮ ⏪ ⏩ ⏭

SAMSUNG 12:00

Discover Weekly

FOLLOWING BY SPOTIFY

SHUFFLE PLAY

Available Offline

All My Friends
Dylan Kelly • All My Friends

Can't Deny My Love

What You Want
Toro Y Moi

09:06

Discover Weekly

FOLLOWING BY SPOTIFY

SHUFFLE PLAY


Available Offline

All My Friends
Dylan Kelly • All My Friends

Can't Deny My Love
Brandon Flowers • Can't Deny My Love

1000

09:06



Discover Weekly

FOLLOWING
BY SPOTIFY

▶ SHUFFLE PLAY

Available Offline

All My Friends
Dylan Kelly • All My Friends

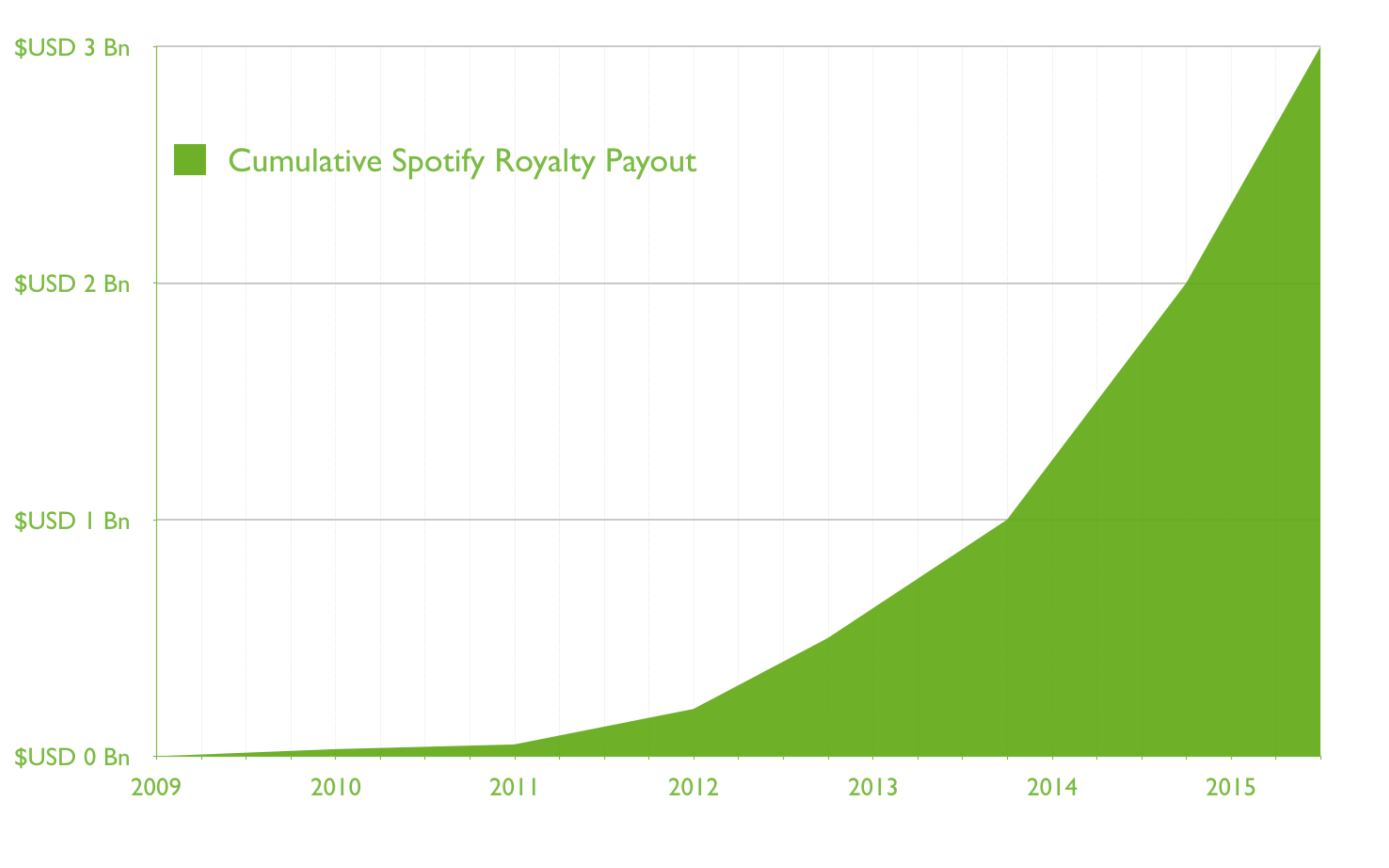
Can't Deny My Love
Brandon Flowers • Can't Deny My Love

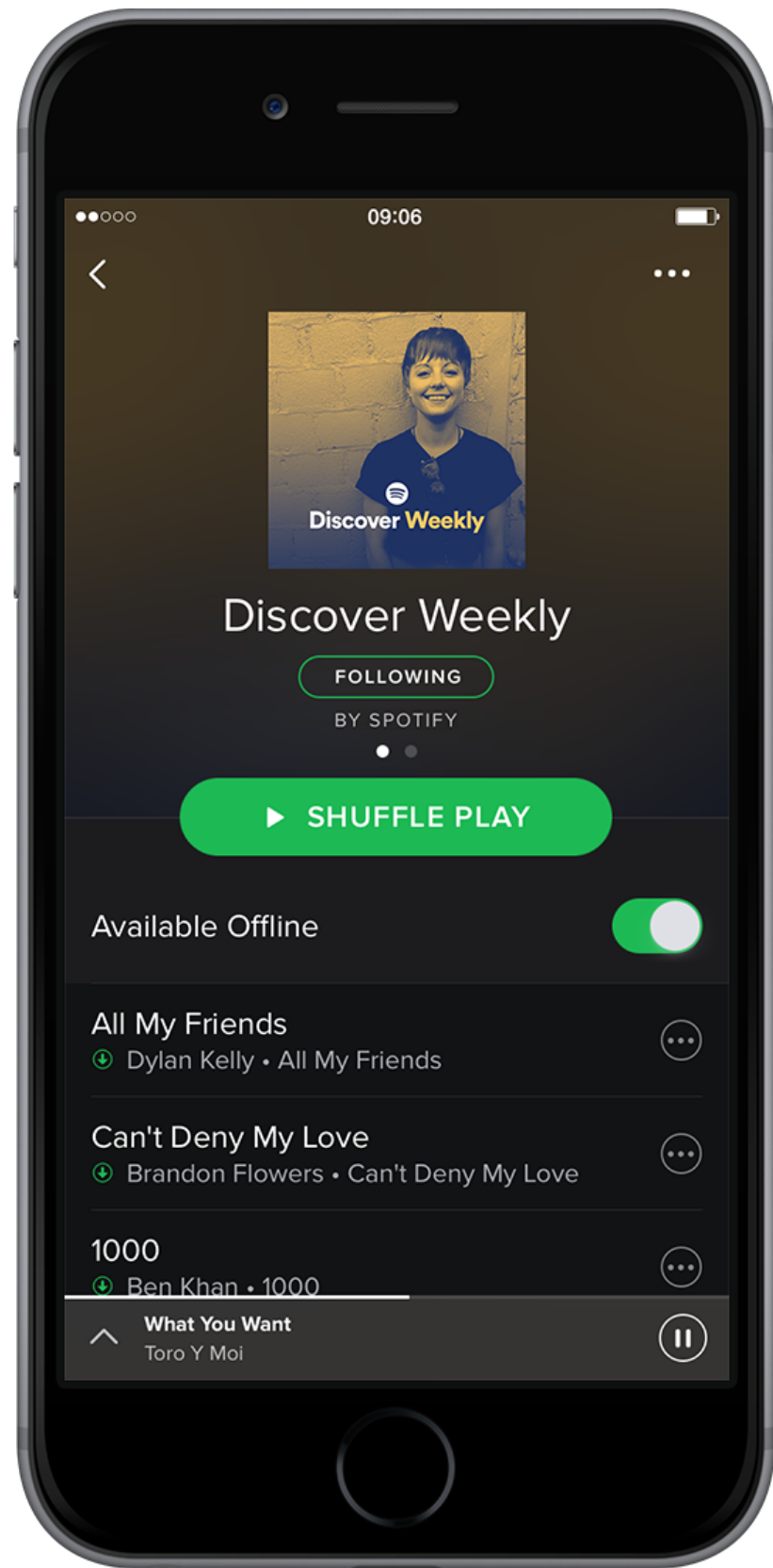
1000
Ben Khan • 1000

What You Want
Toro Y Moi



FRESH FIND





Recommendation
Features

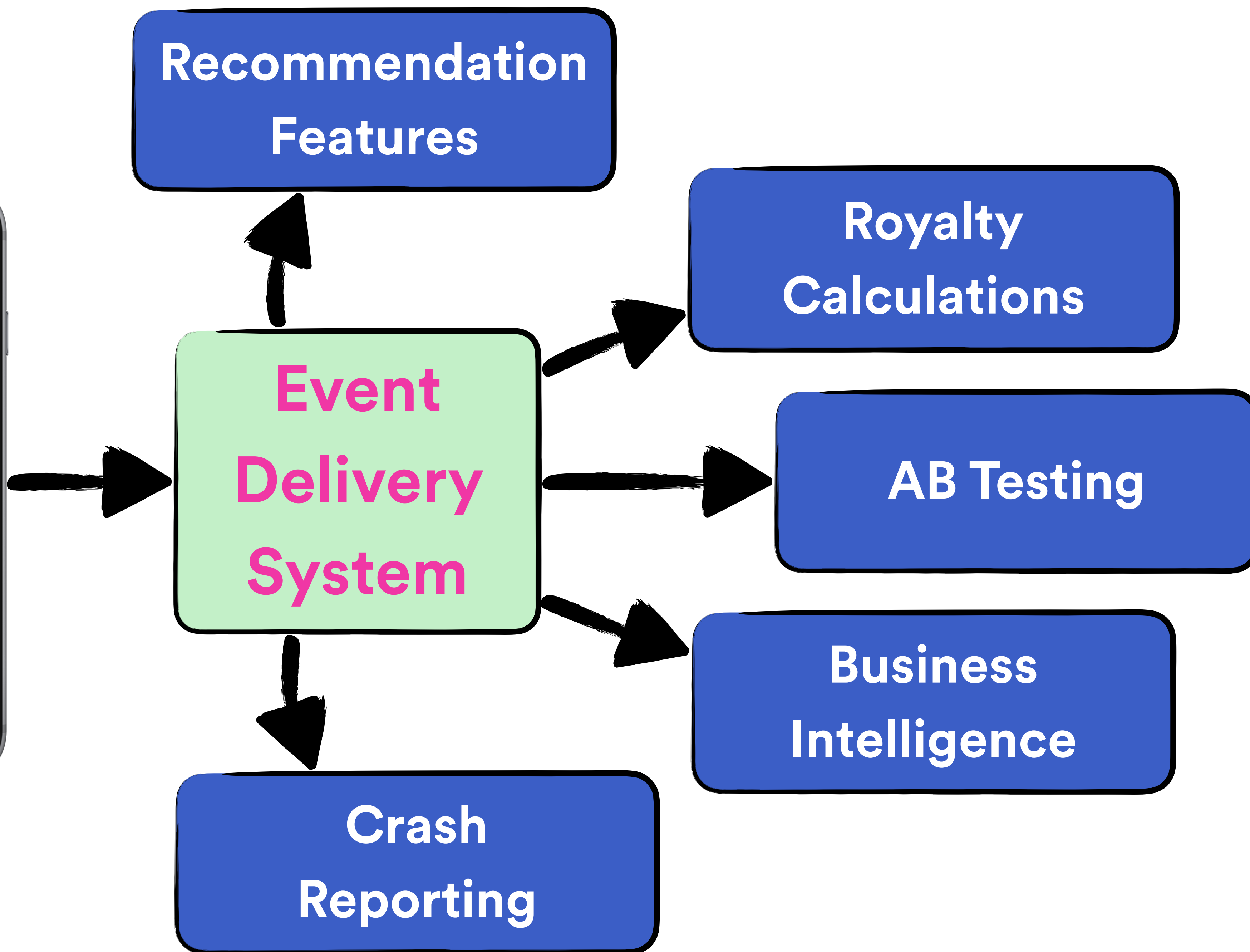
Royalty
Calculations

AB Testing

Business
Intelligence

Event
Delivery
System

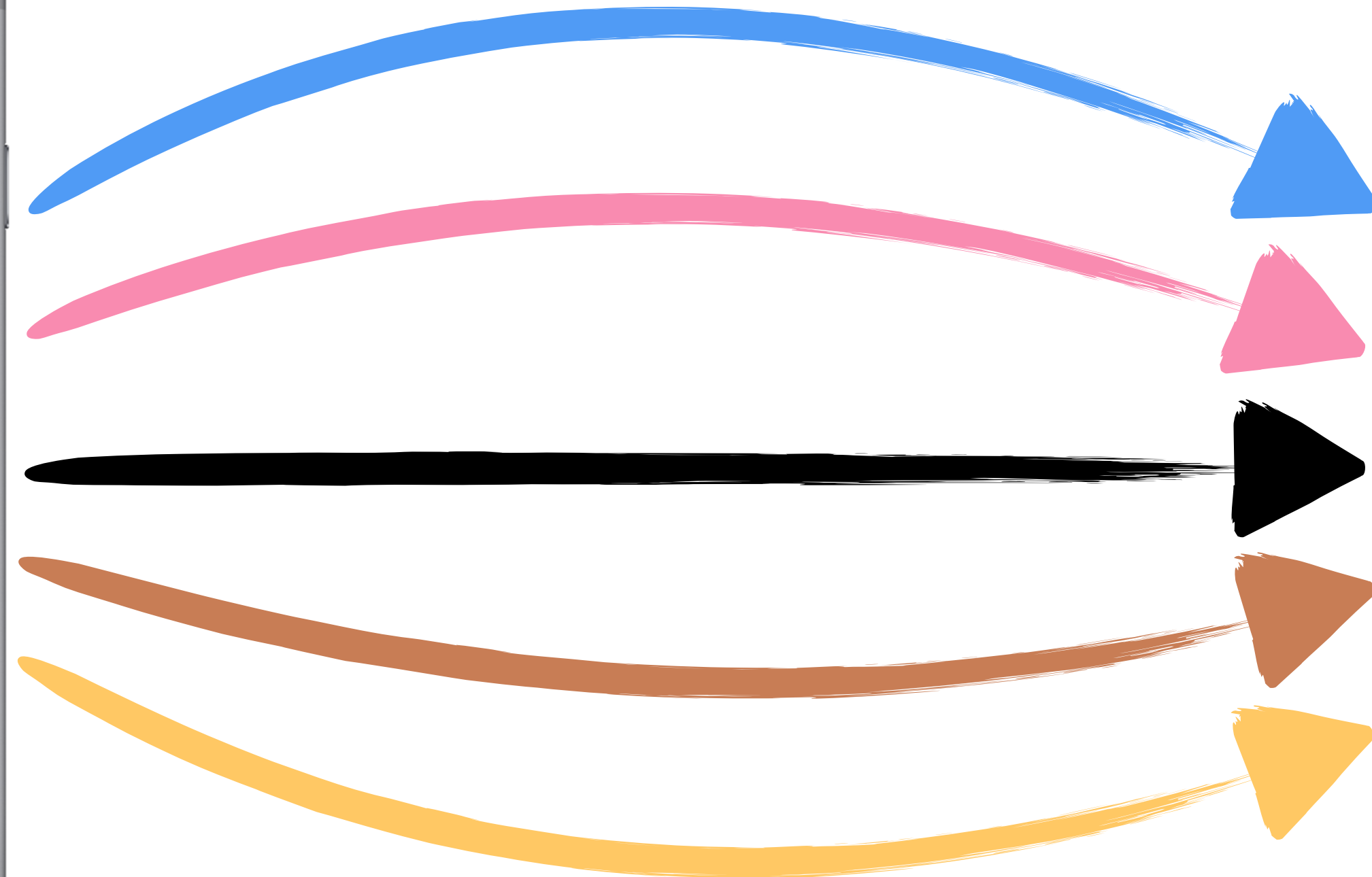
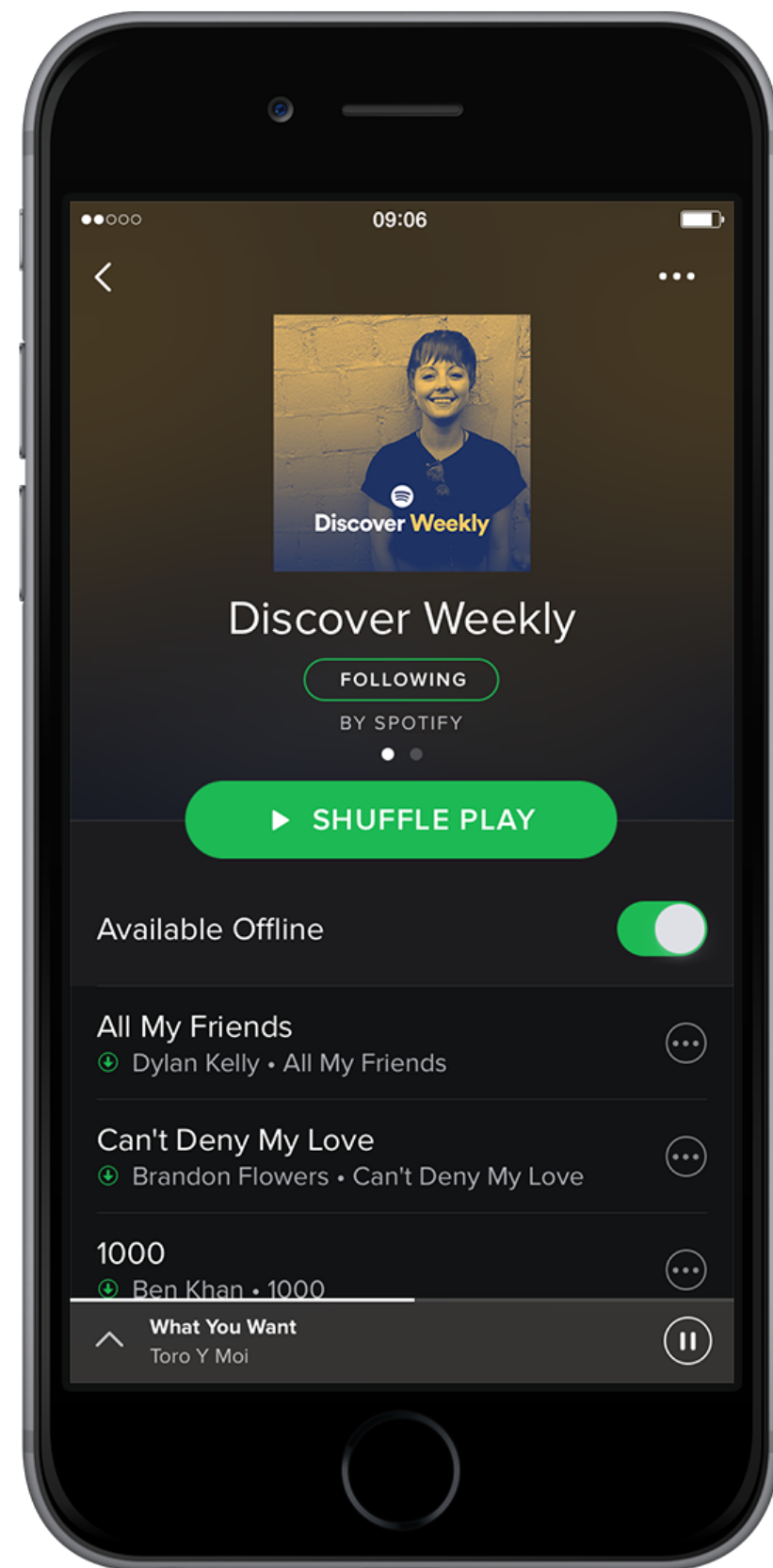
Crash
Reporting



High Level Overview

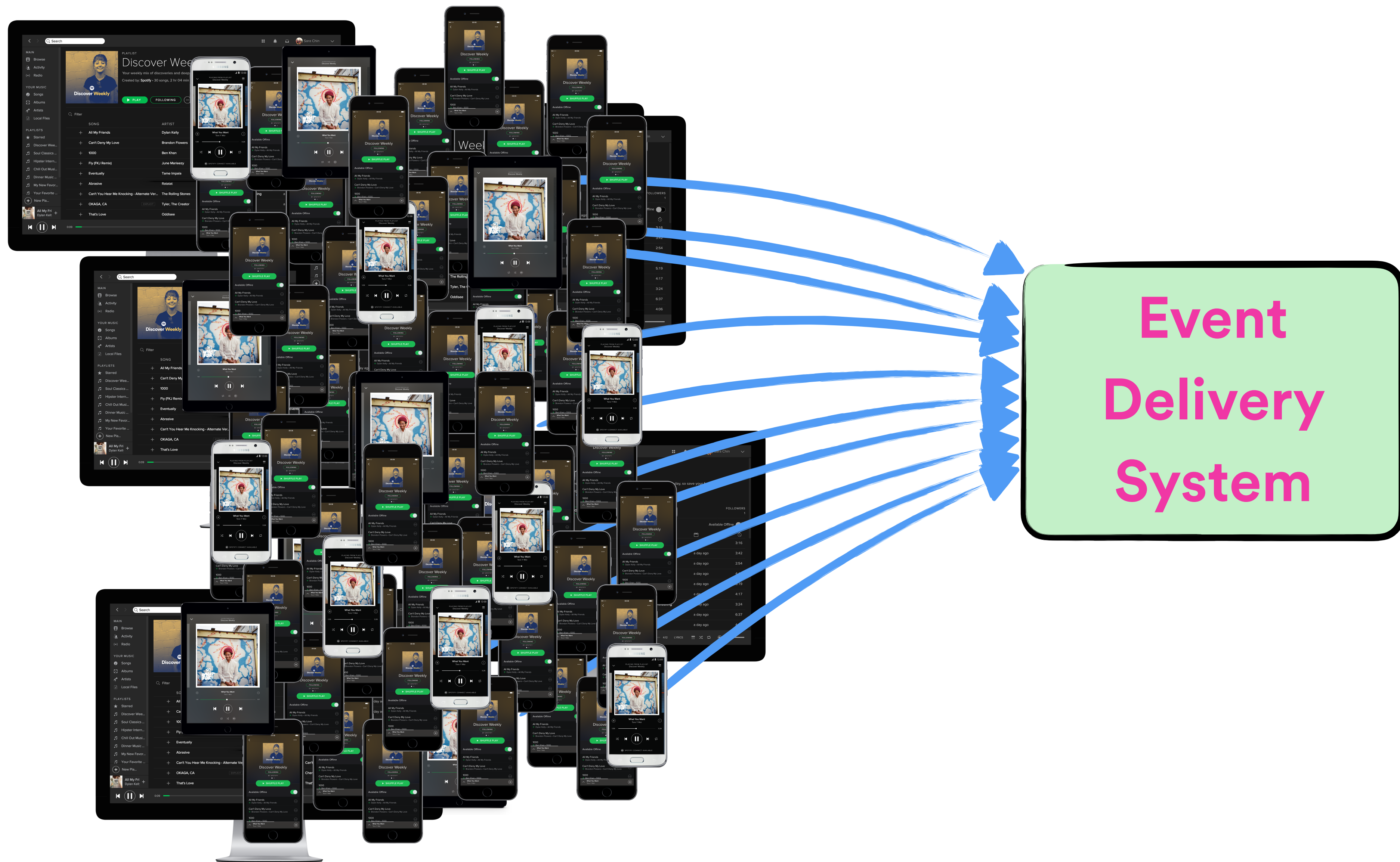


>250 Unique Event Types



**Event
Delivery
System**

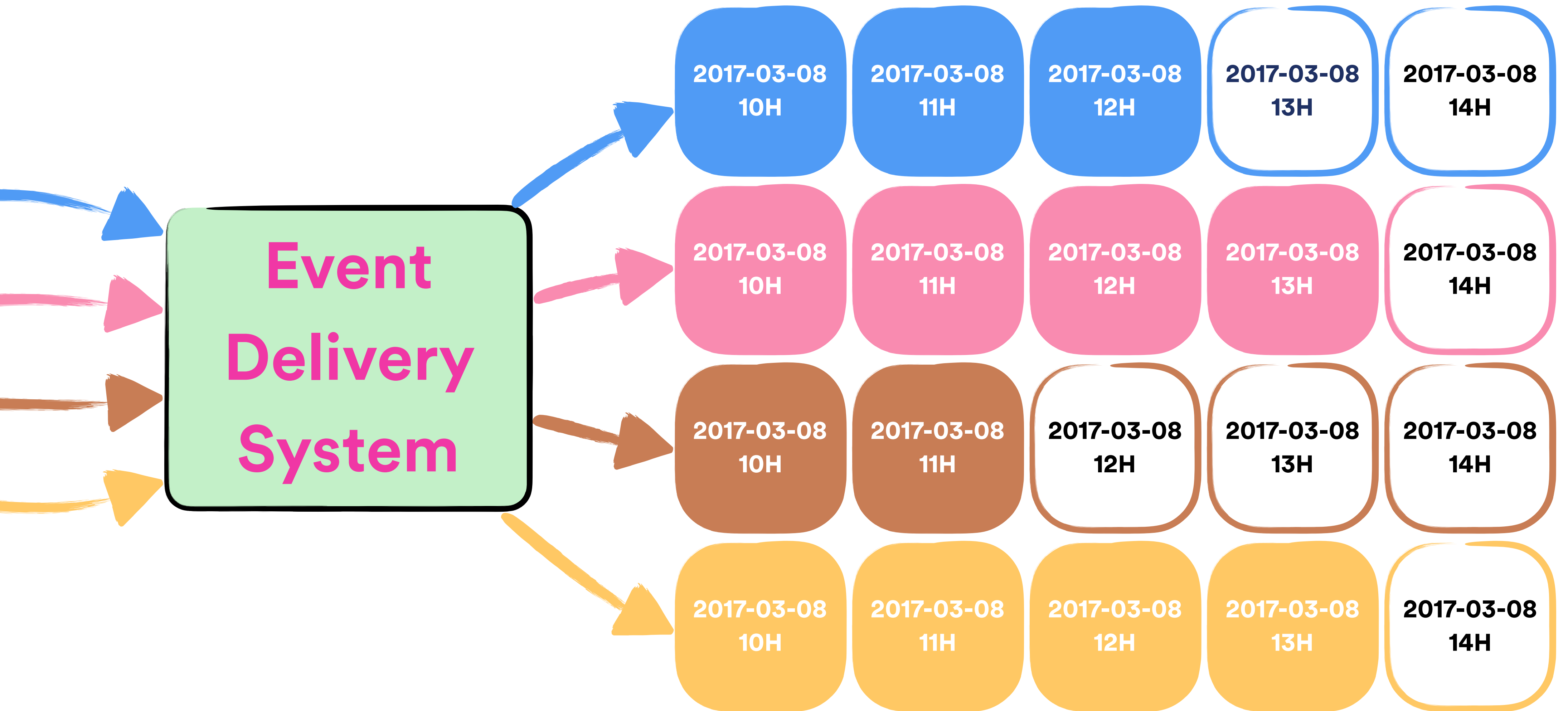
> 100M Monthly Active Users



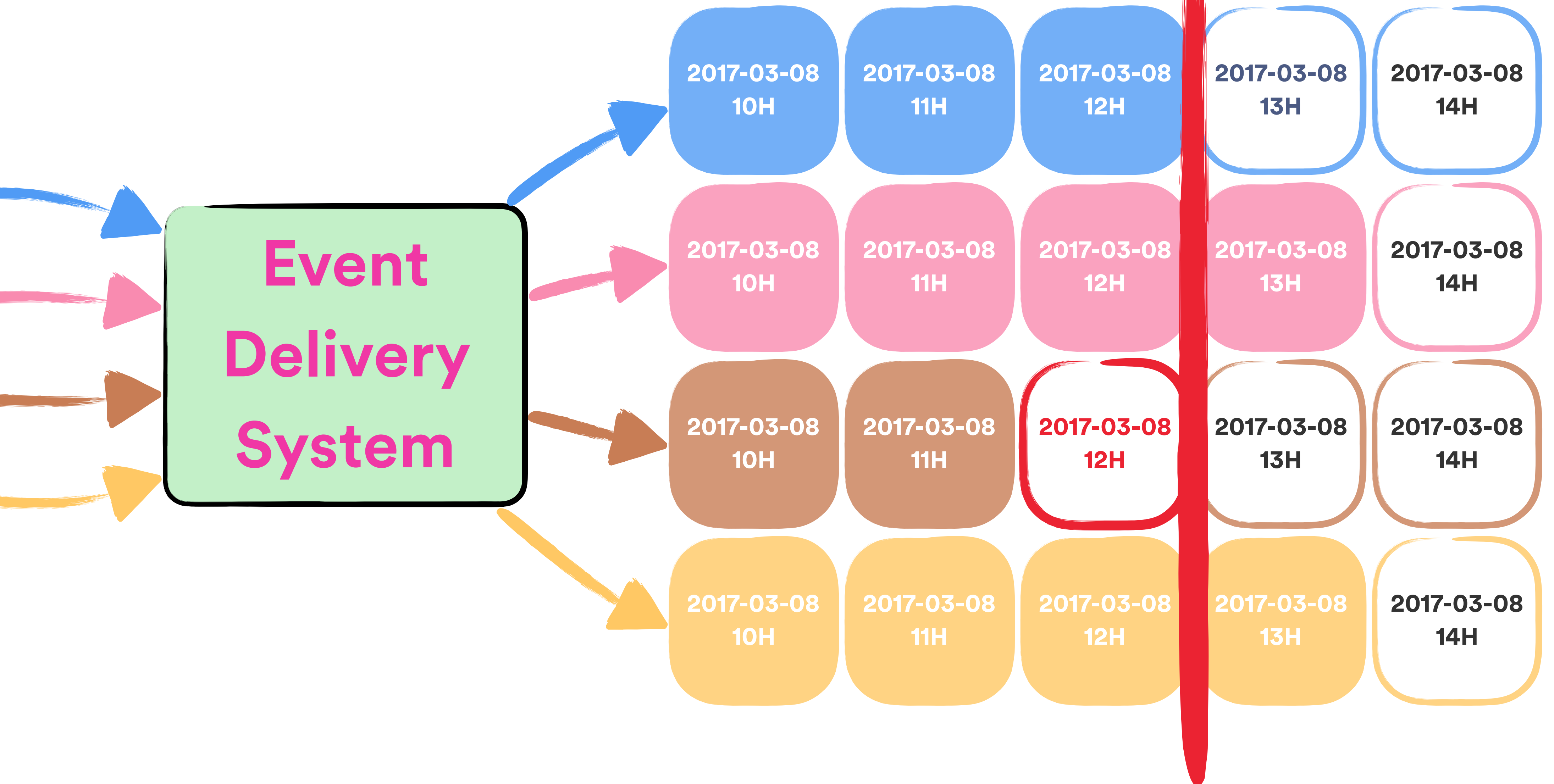
Cloud Powered



Hourly Buckets



Timely Delivery

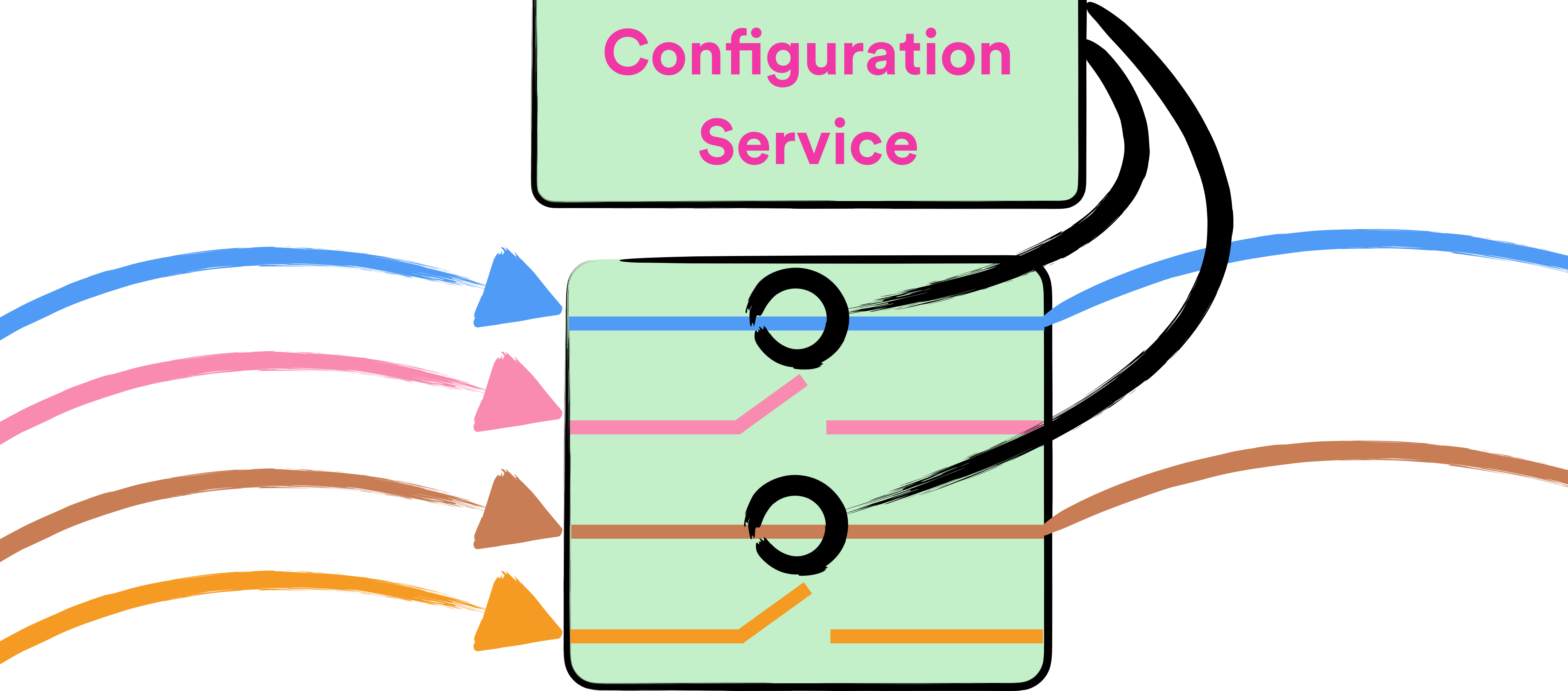


Minimal Downtime

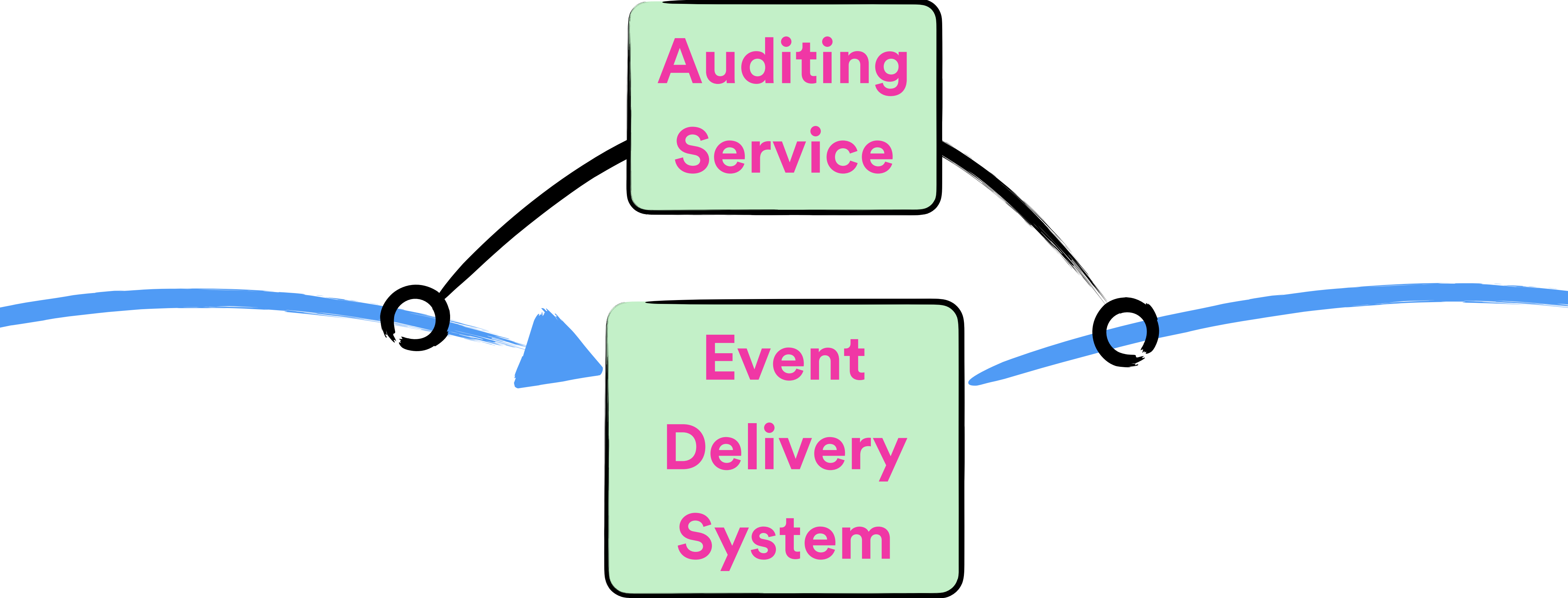


Customer Centric

Distributed
Configuration
Service



No Data Loss



Monitoring



System Monitoring

Data Monitoring

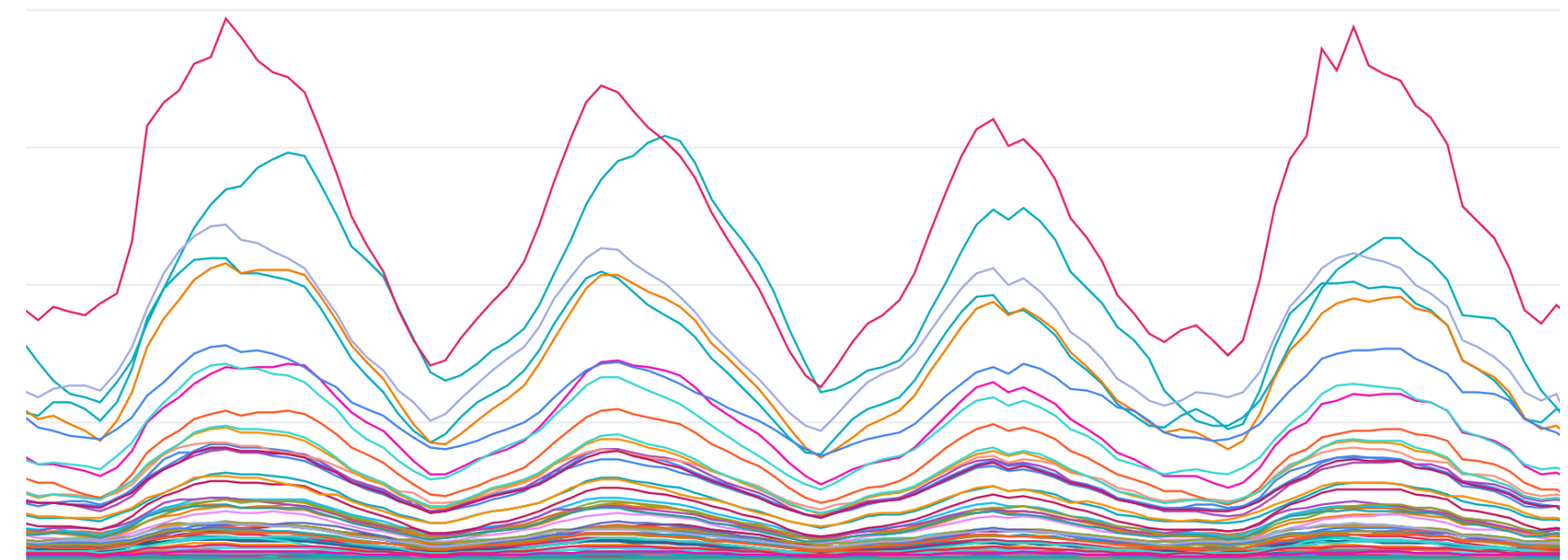
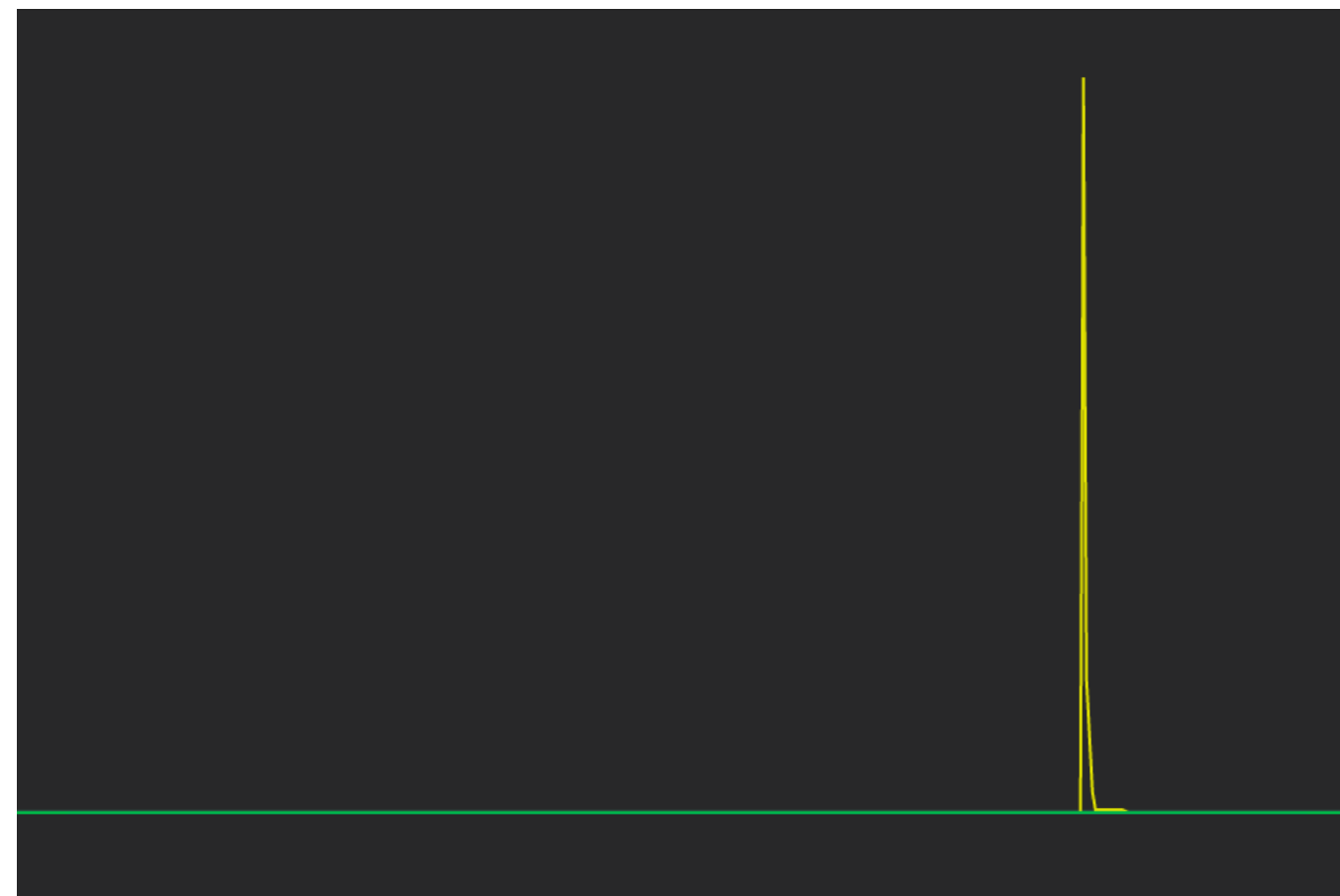
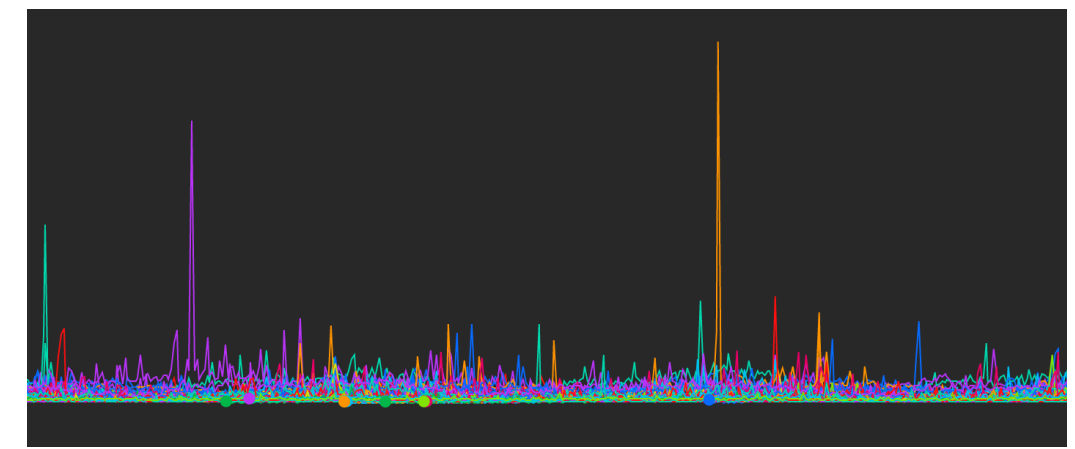
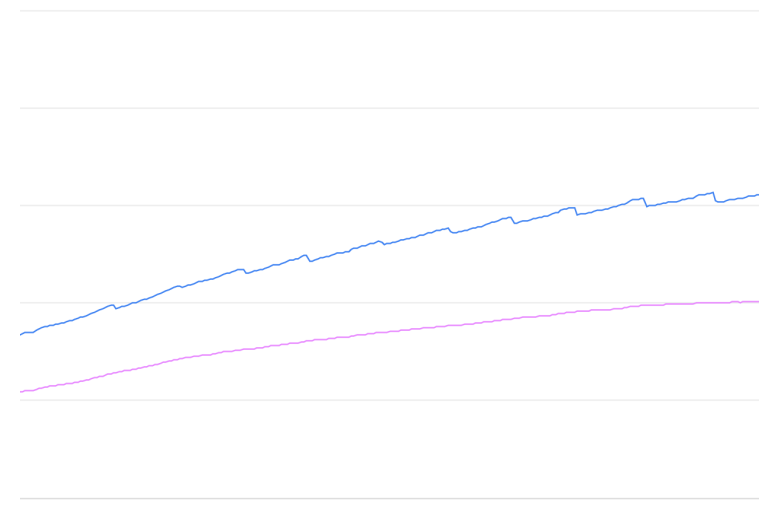
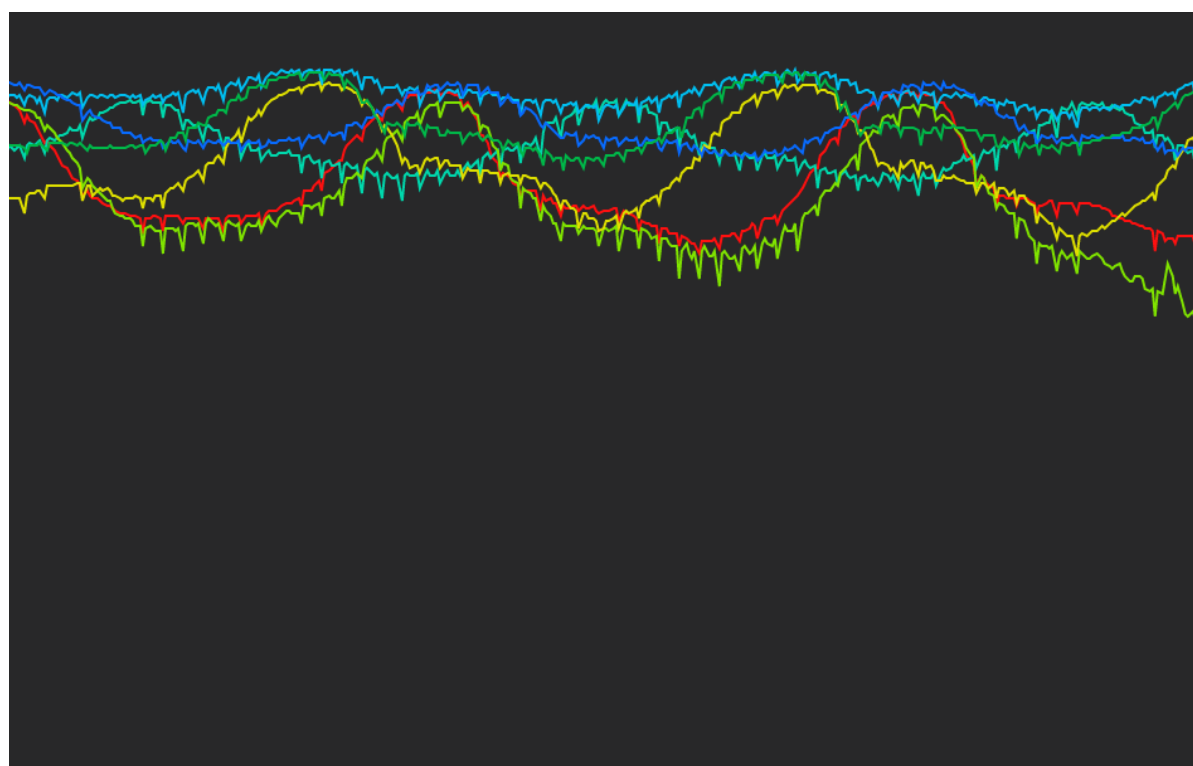
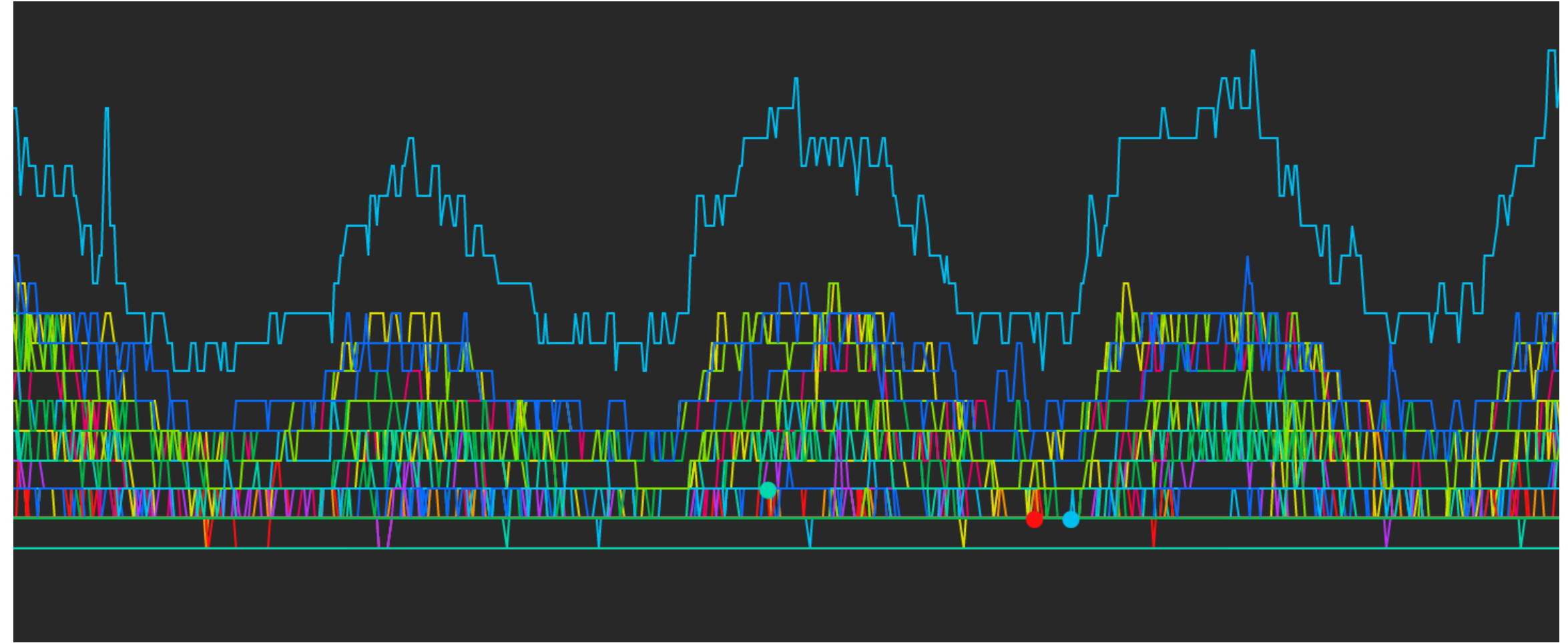
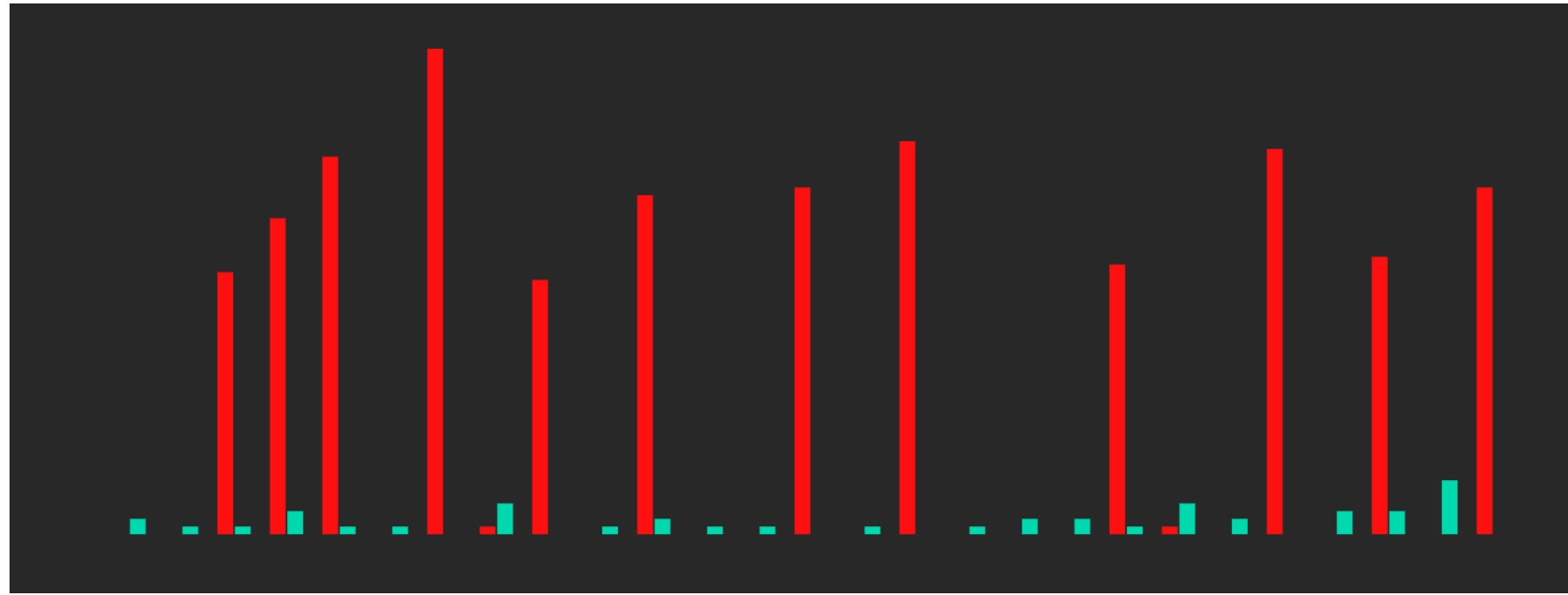
Data Loss Monitoring

System Monitoring

Event Delivery System

2017-03-08 10H	2017-03-08 11H	2017-03-08 12H	2017-03-08 13H	2017-03-08 14H
2017-03-08 10H	2017-03-08 11H	2017-03-08 12H	2017-03-08 13H	2017-03-08 14H
2017-03-08 10H	2017-03-08 11H	2017-03-08 12H	2017-03-08 13H	2017-03-08 14H
2017-03-08 10H	2017-03-08 11H	2017-03-08 12H	2017-03-08 13H	2017-03-08 14H

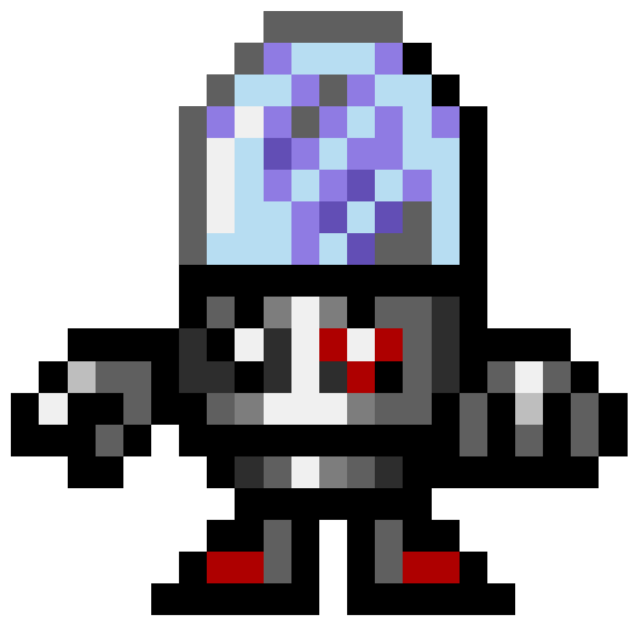
System Monitoring



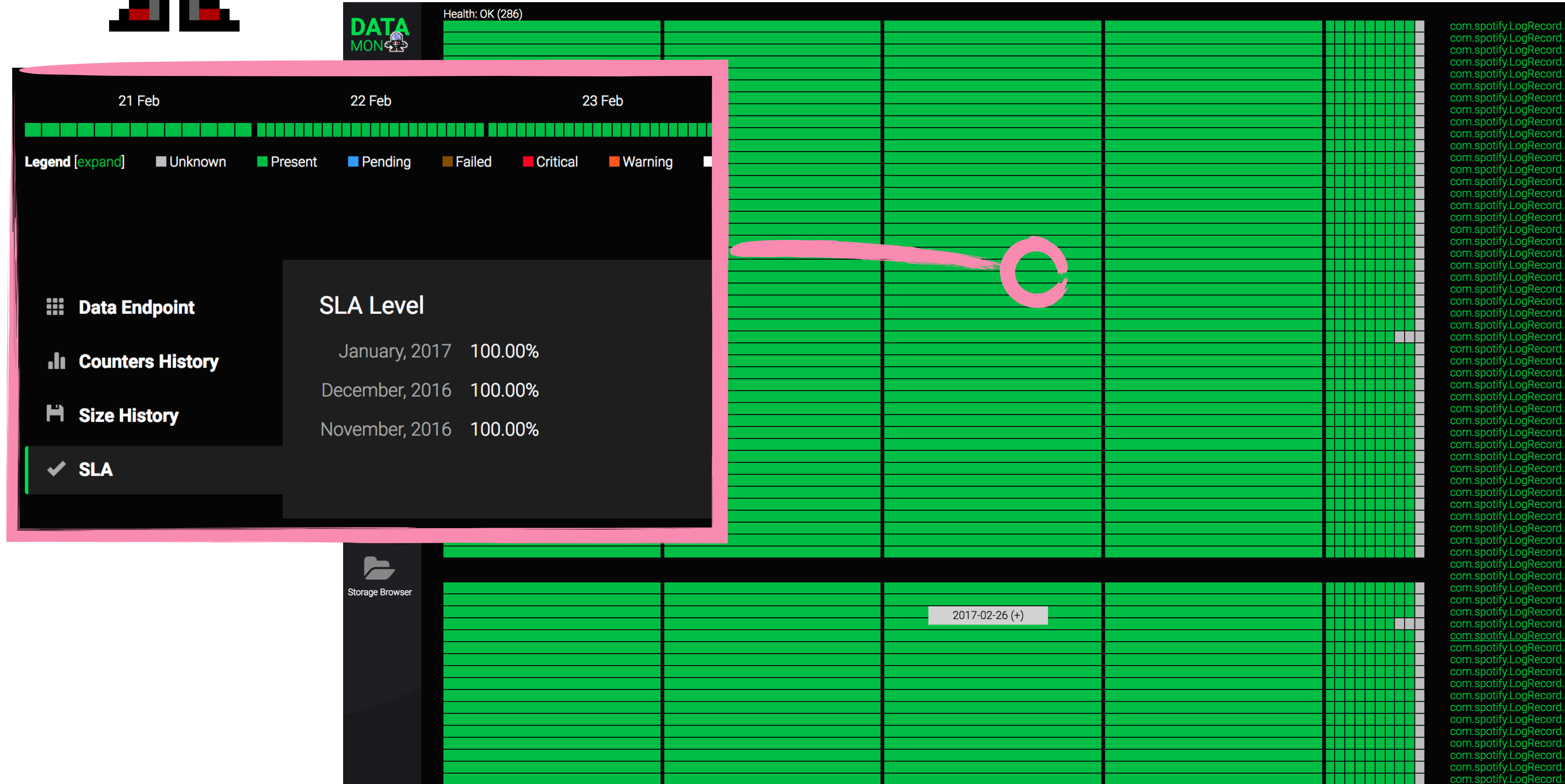
Data

Monitoring

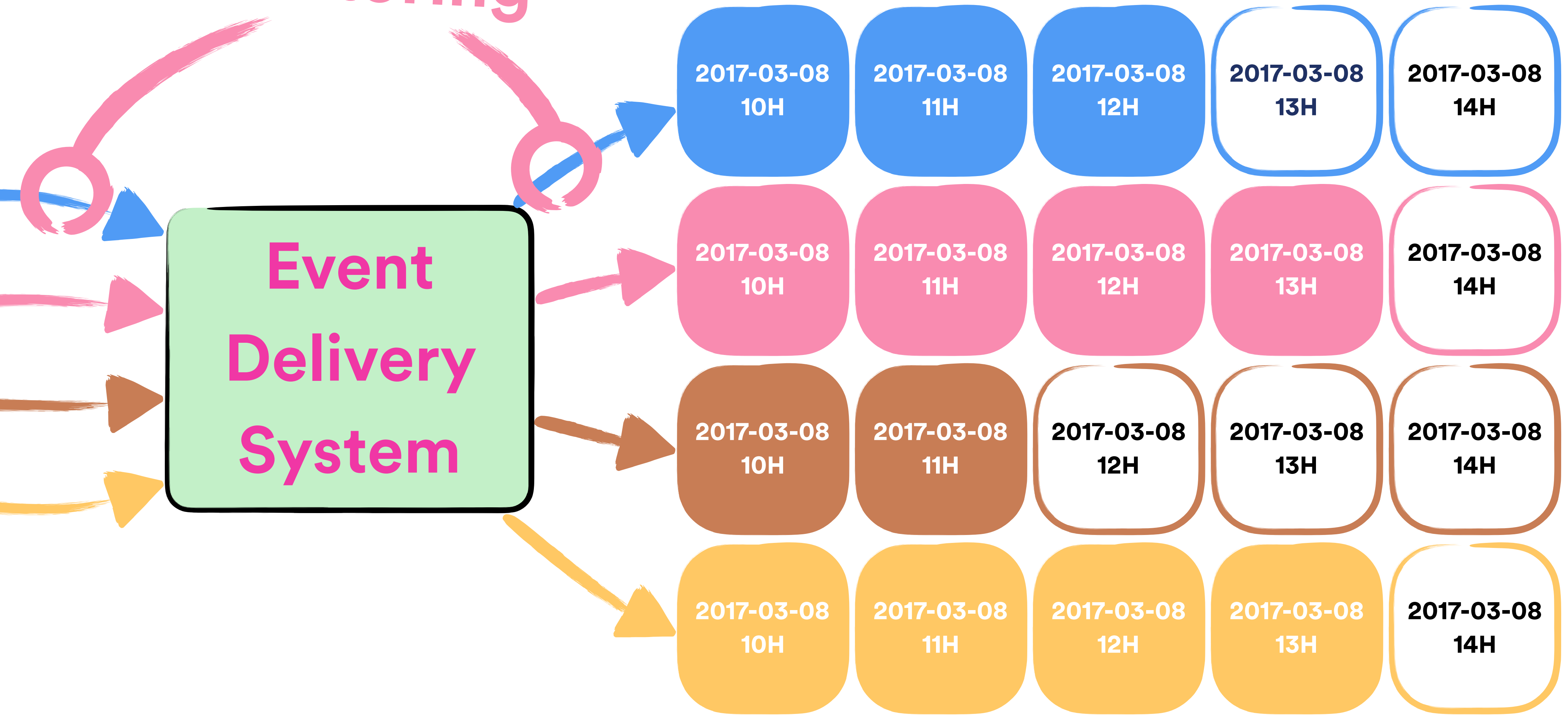




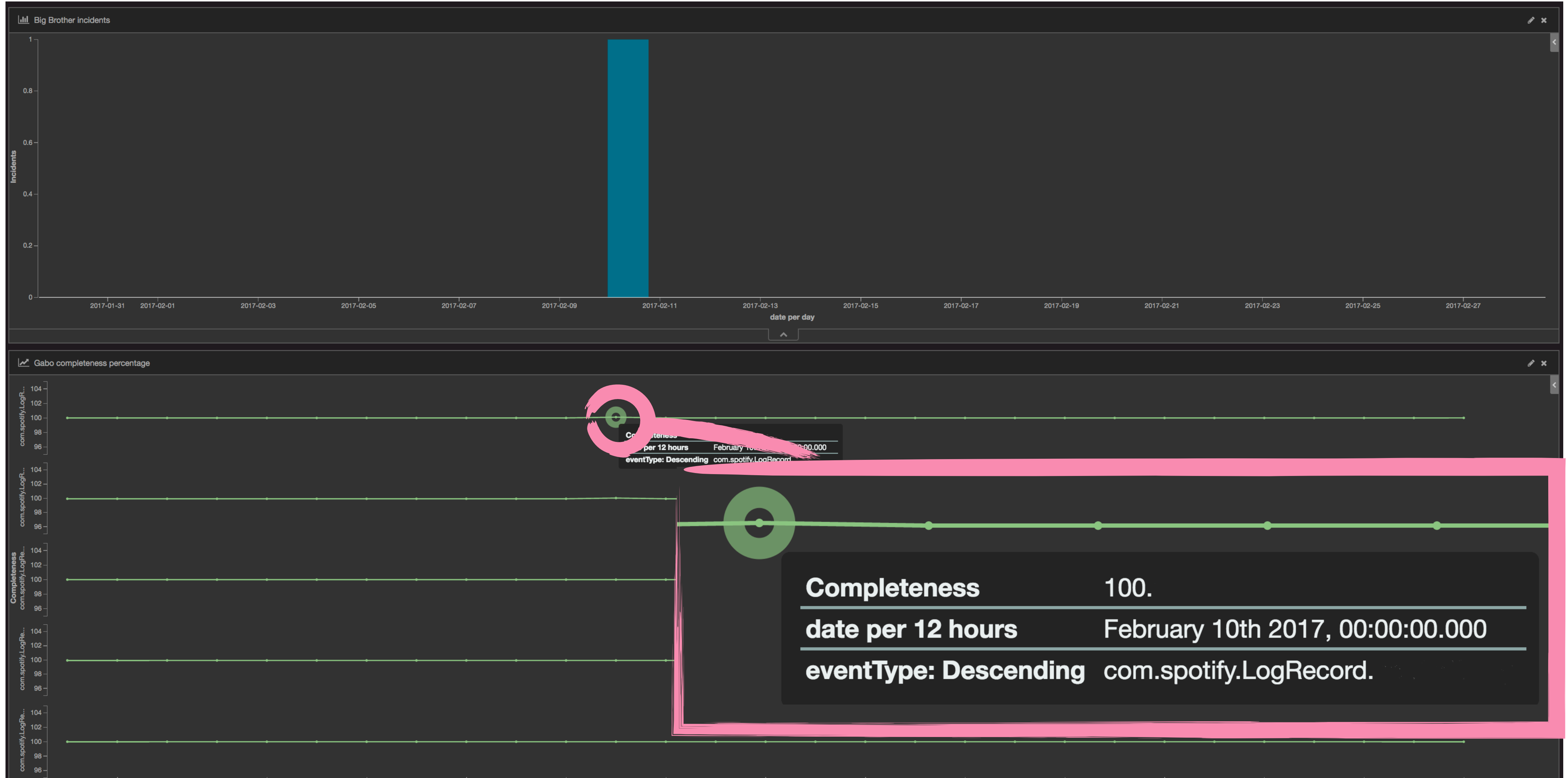
Data Monitoring



Data Loss Monitoring



Data Loss Monitoring



Scaling



- > **100M Monthly Active Users**
- > **1.5M Events Per Second**
- > **60 TB Delivered Per Day**
- > **250 Unique Event Types**

Event Type Ownership

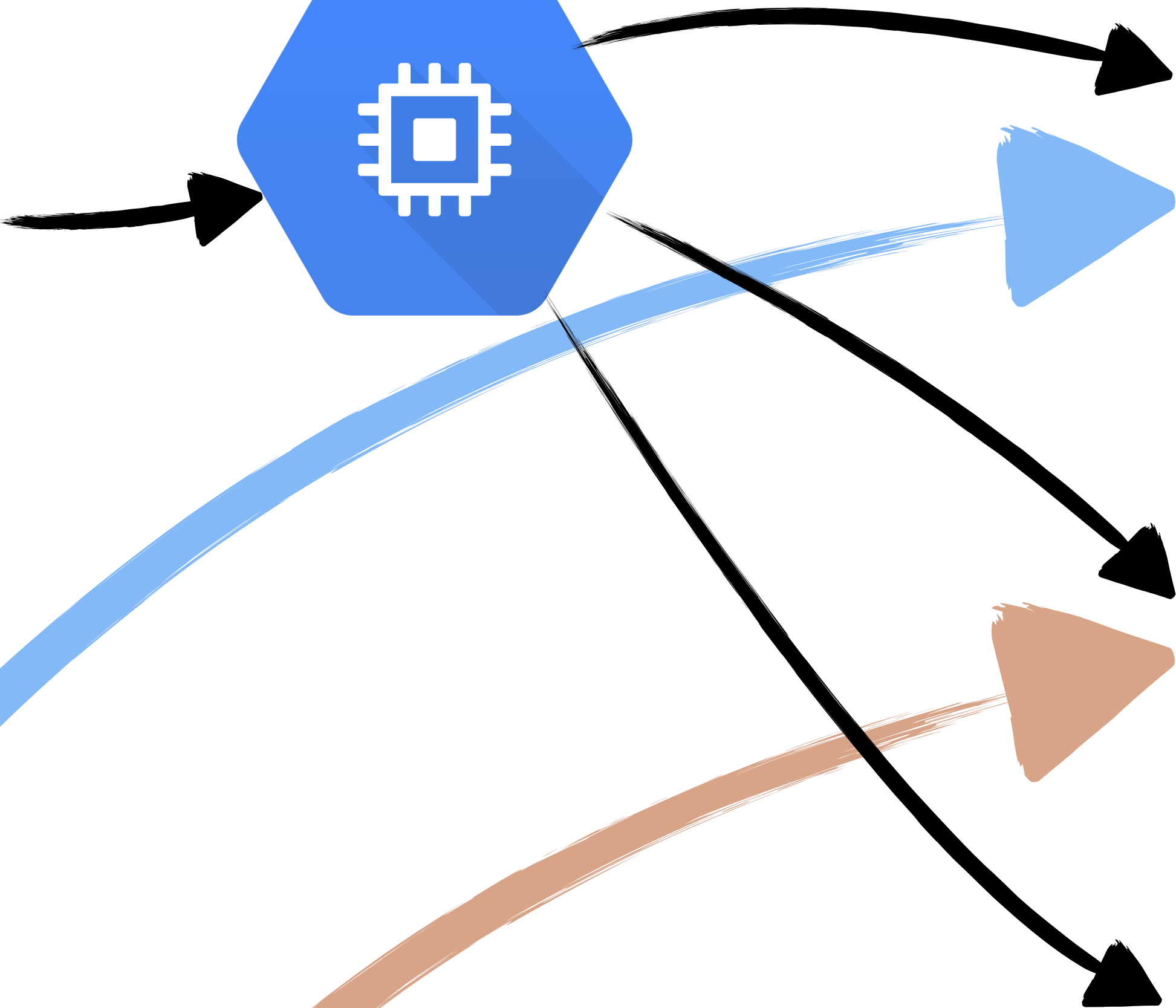
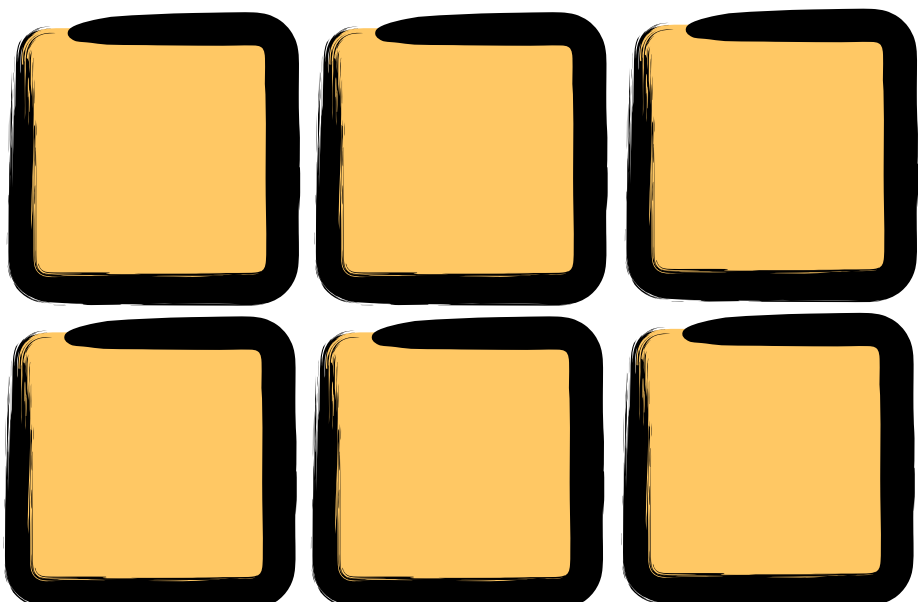
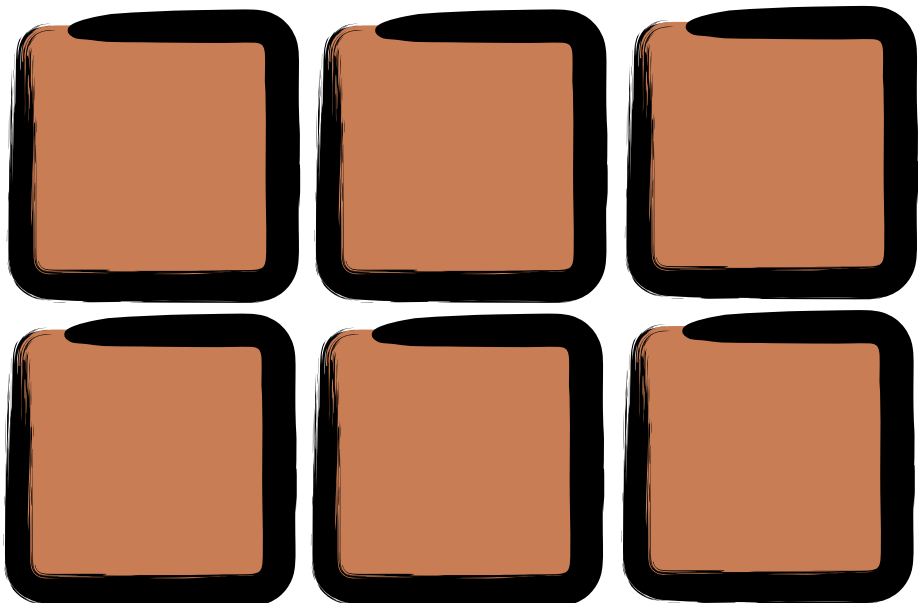
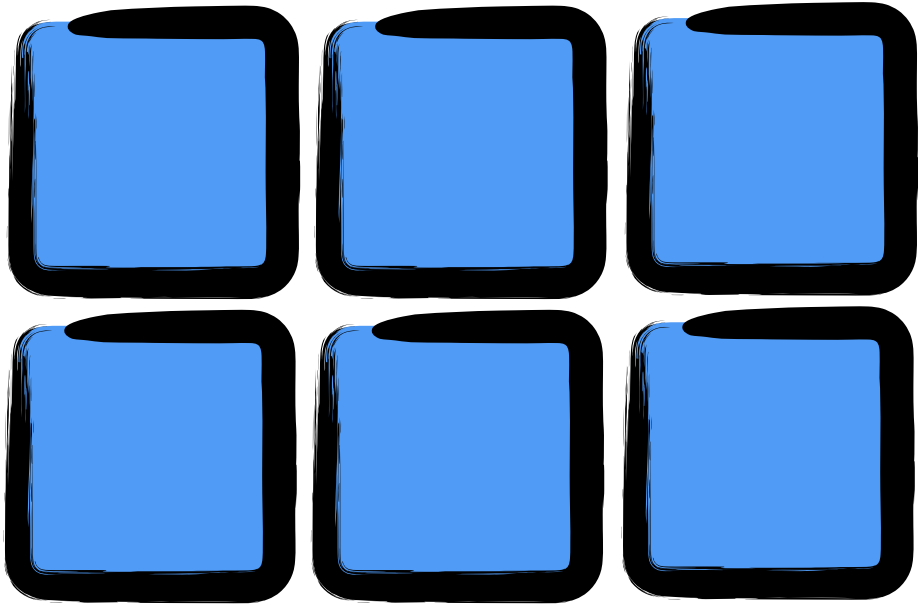
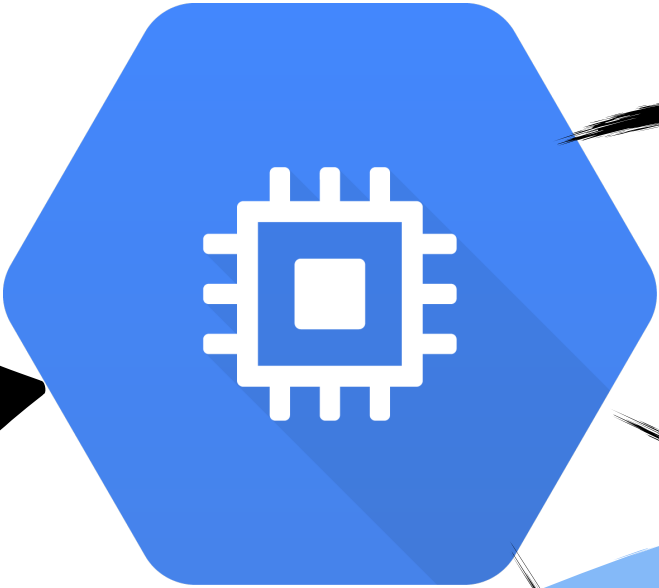
data-events	v	service: searchview event: SearchViewResponse hdfs: true bq: true
	v	service: searchview event: ApolloIncomingRequest bq: true
	v	service: searchview event: ApolloOutgoingRequest bq: true



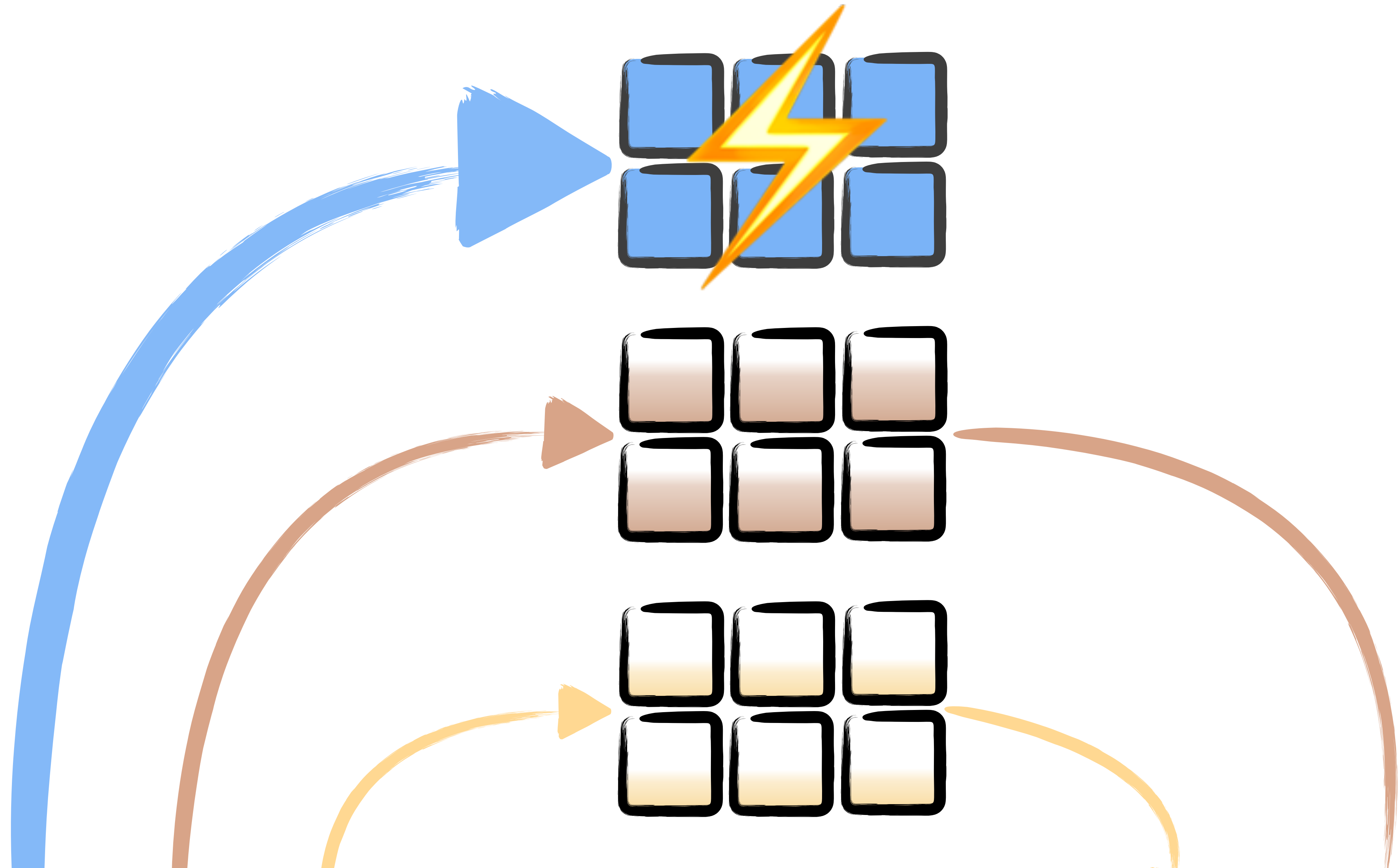
**Distributed
Configuration
Service**

Independent Event Streams

Distributed
Configuration
Service

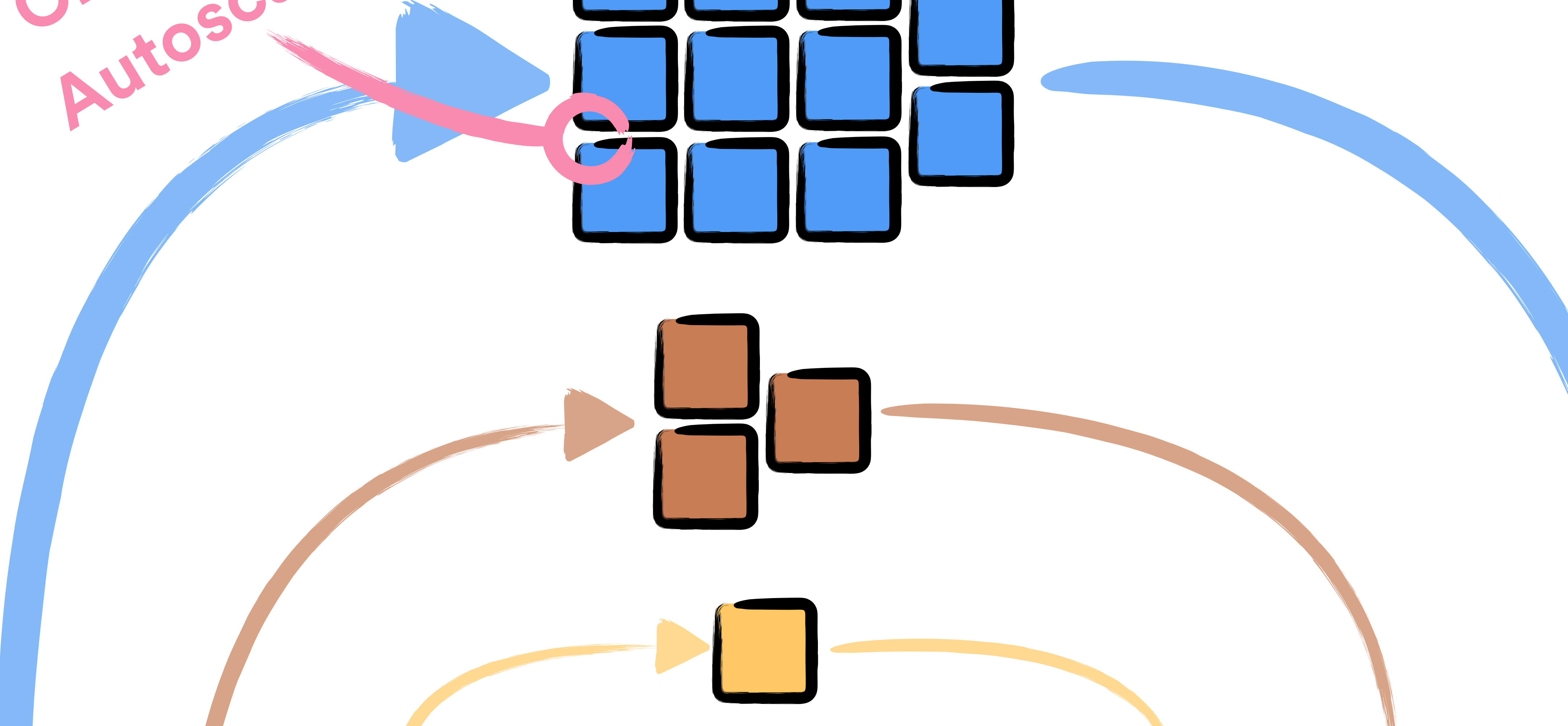
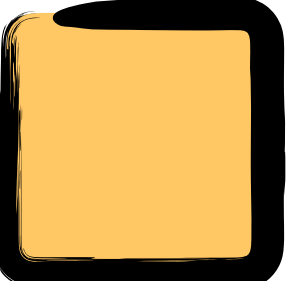
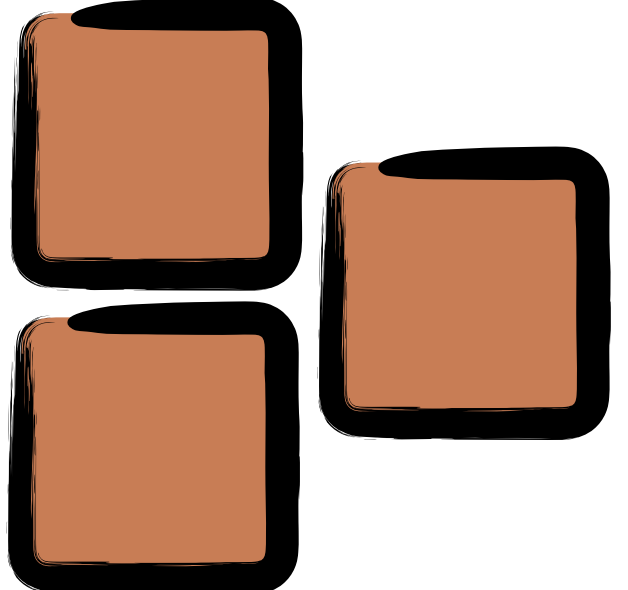
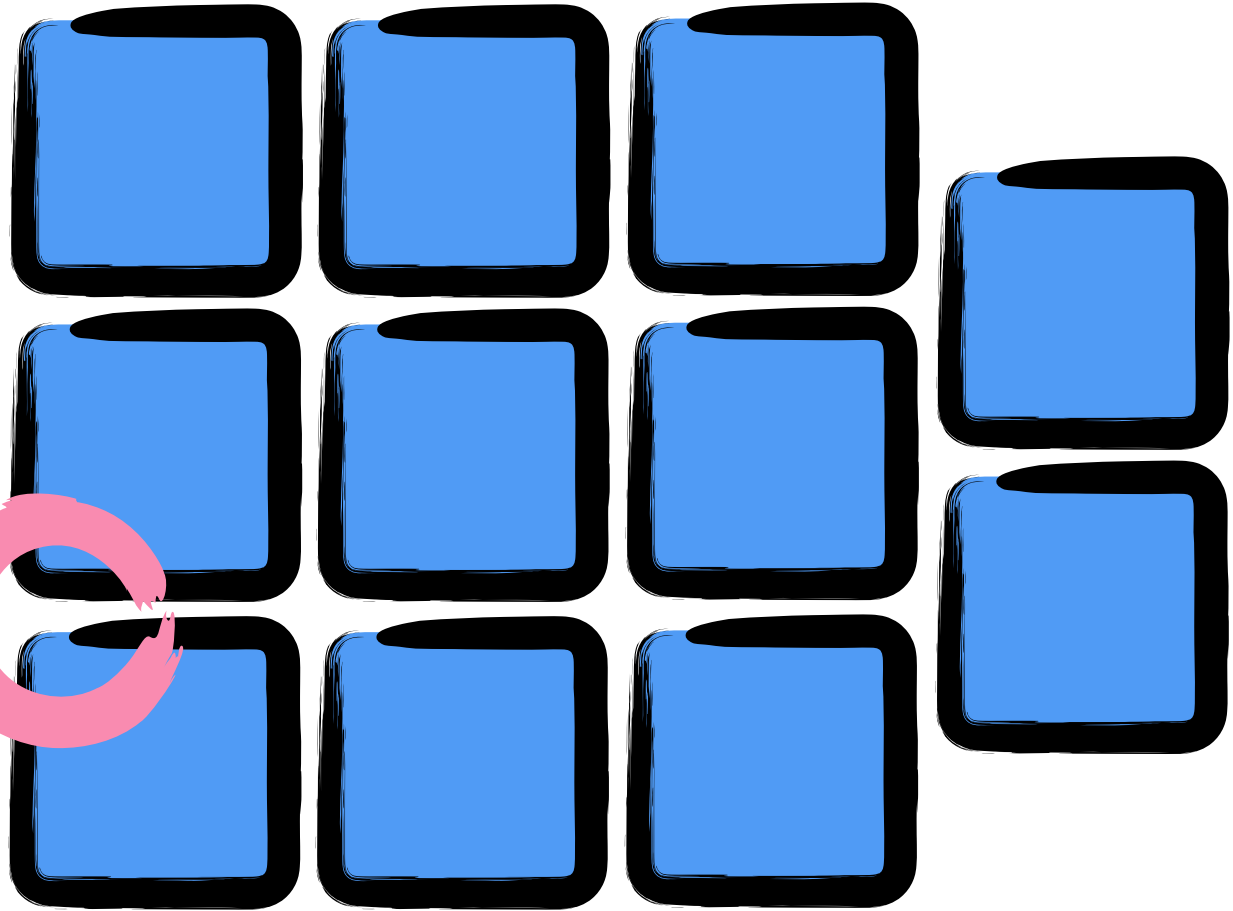


One Size Does Not Fit All

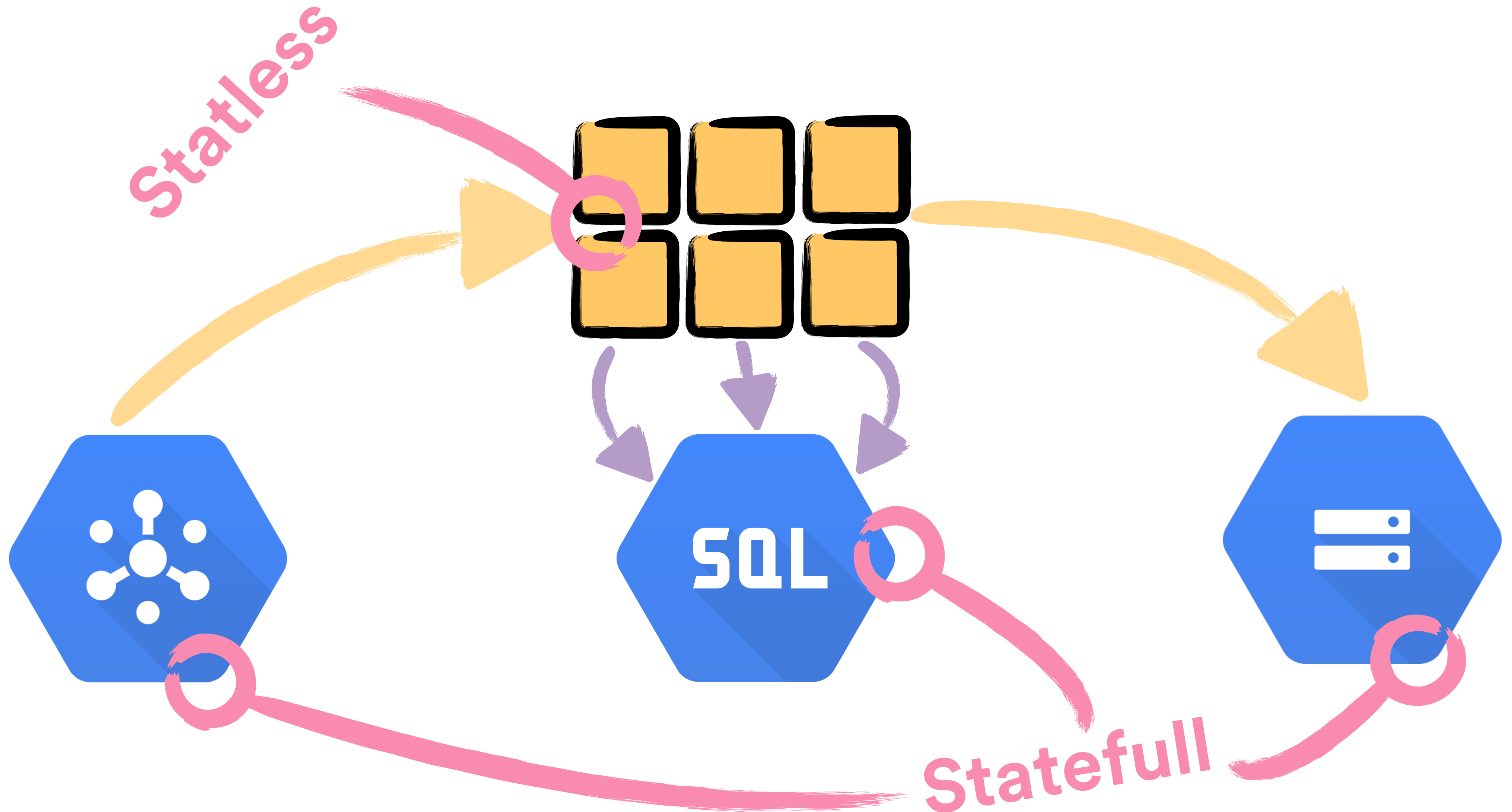


Autoscaling

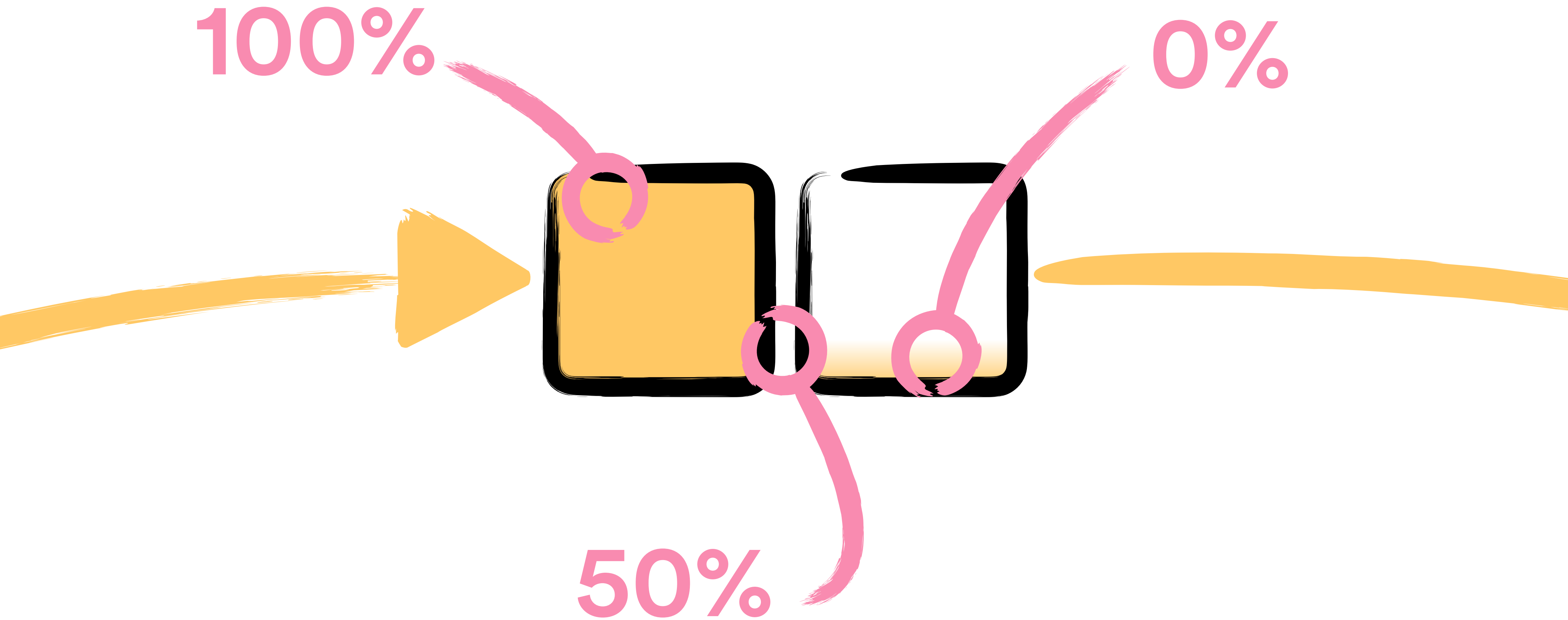
CPU based
Autoscaling



Stateless Components

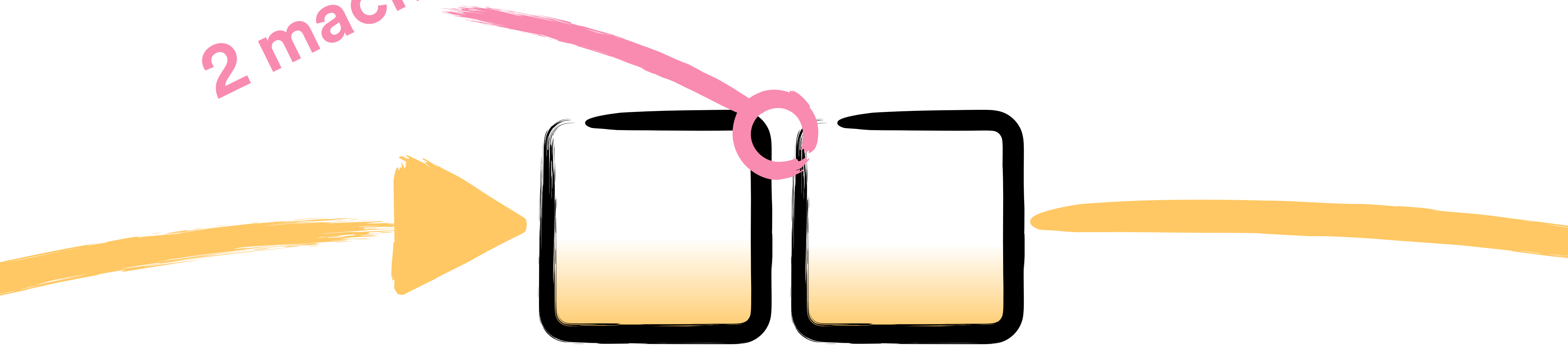


Averages Are Misleading



Safety First

Minimum
2 machines



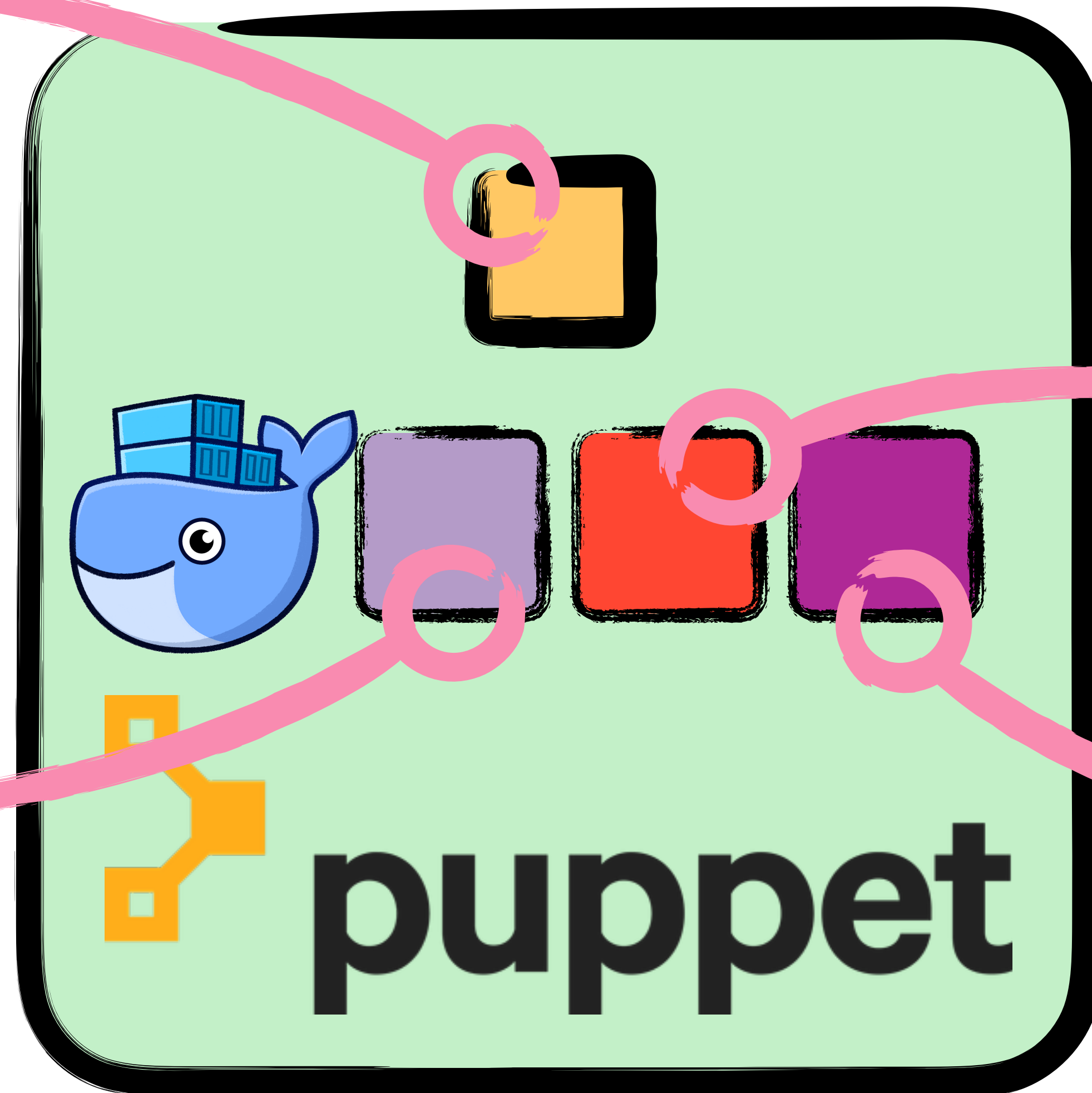
Bootstrapping Single Worker

Our Business
Logic

Helios
Deployment
Agent

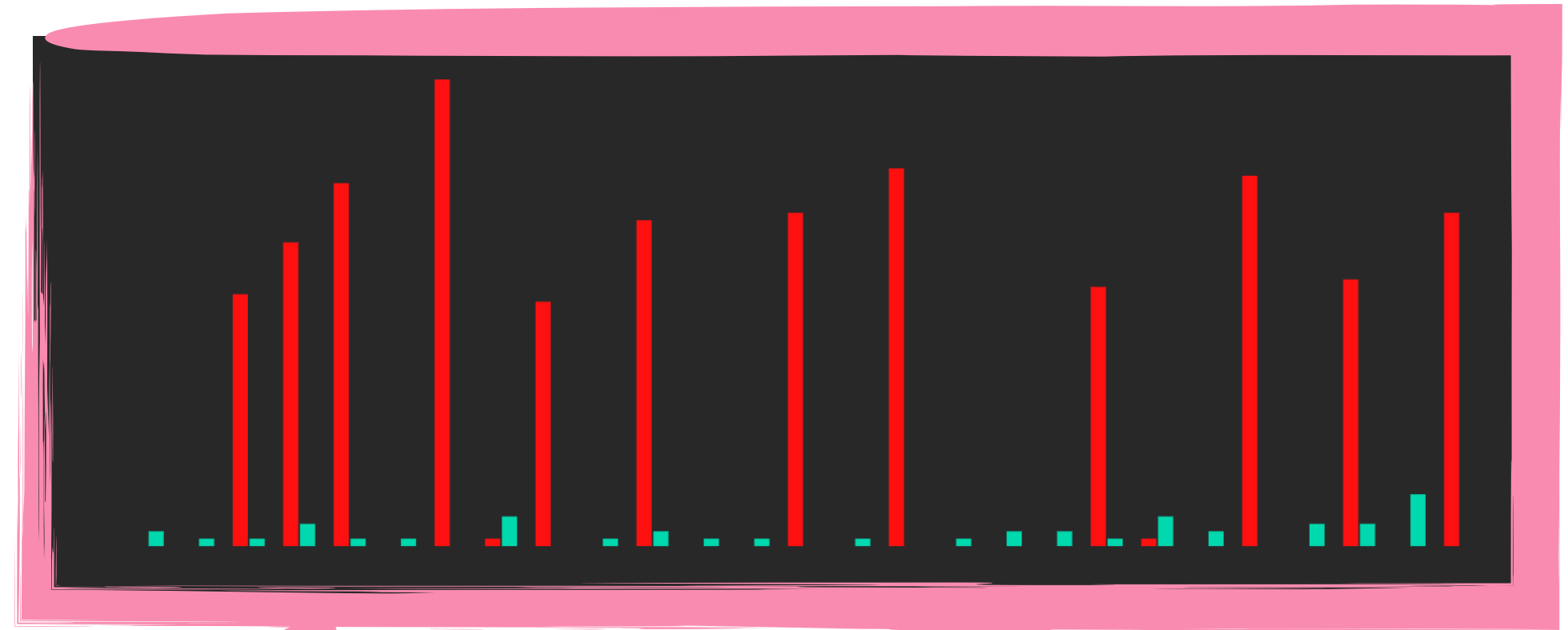
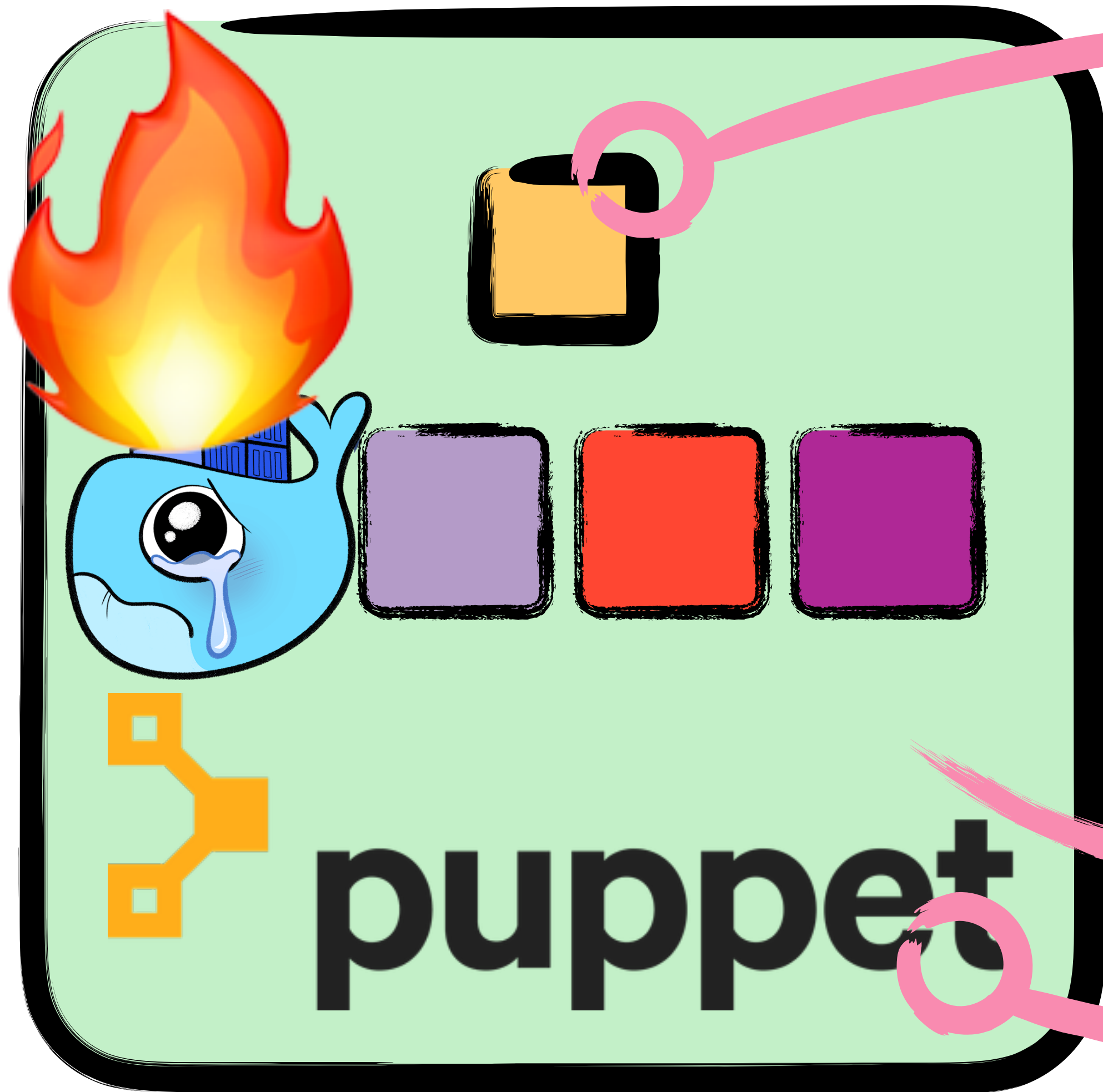
Service
Discovery

Monitoring
Daemon



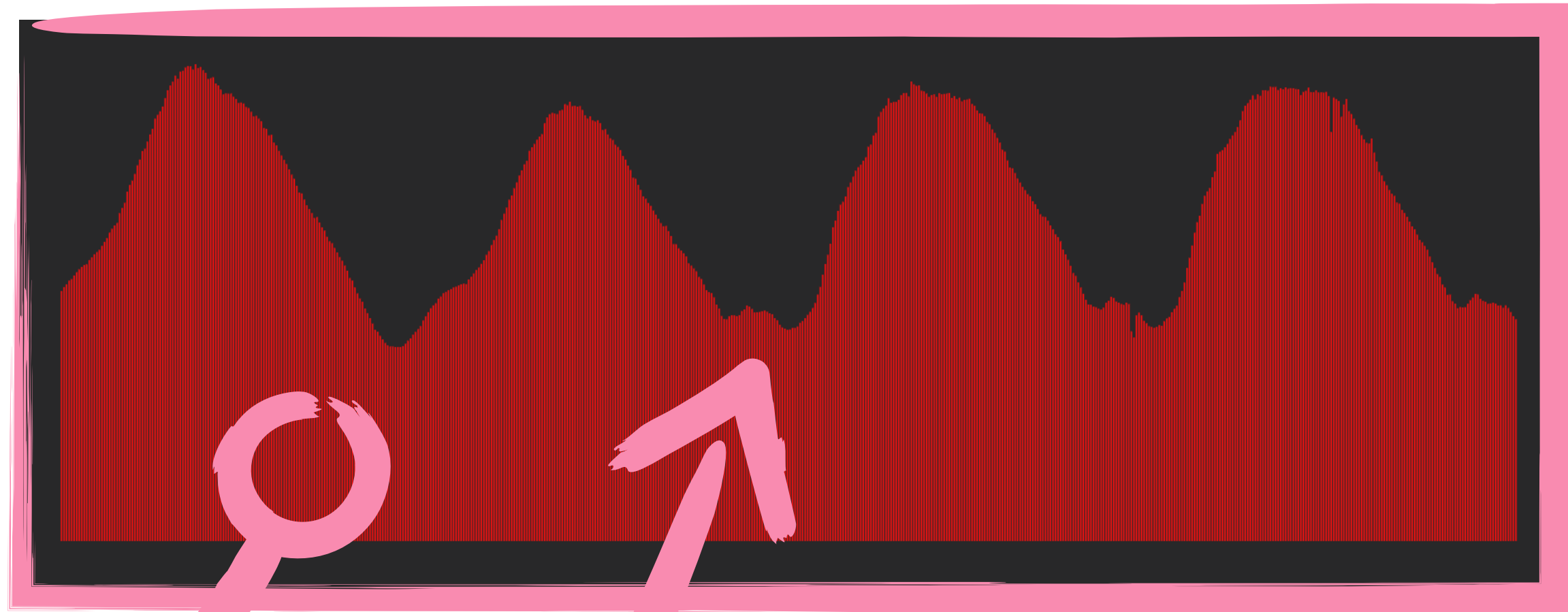
Leaky Abstractions

~~Health
Checks~~



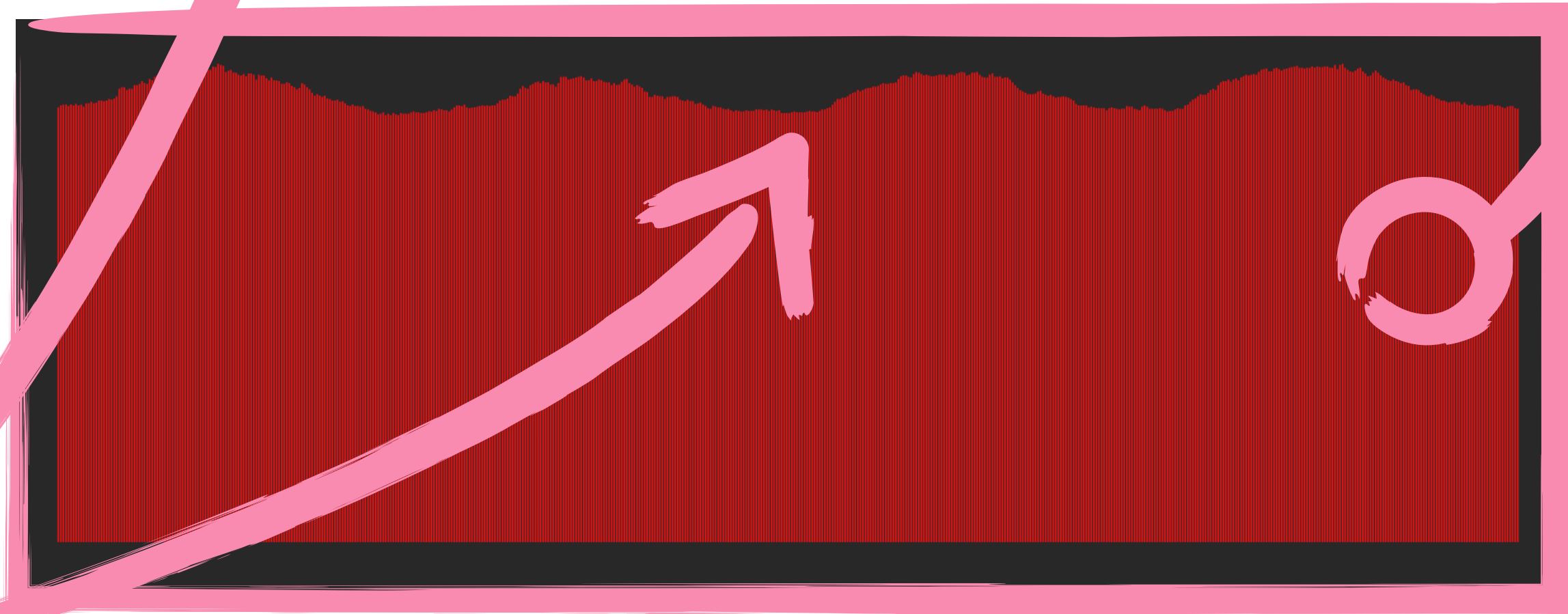
Kill
Scripts

Suboptimal Resource Usage

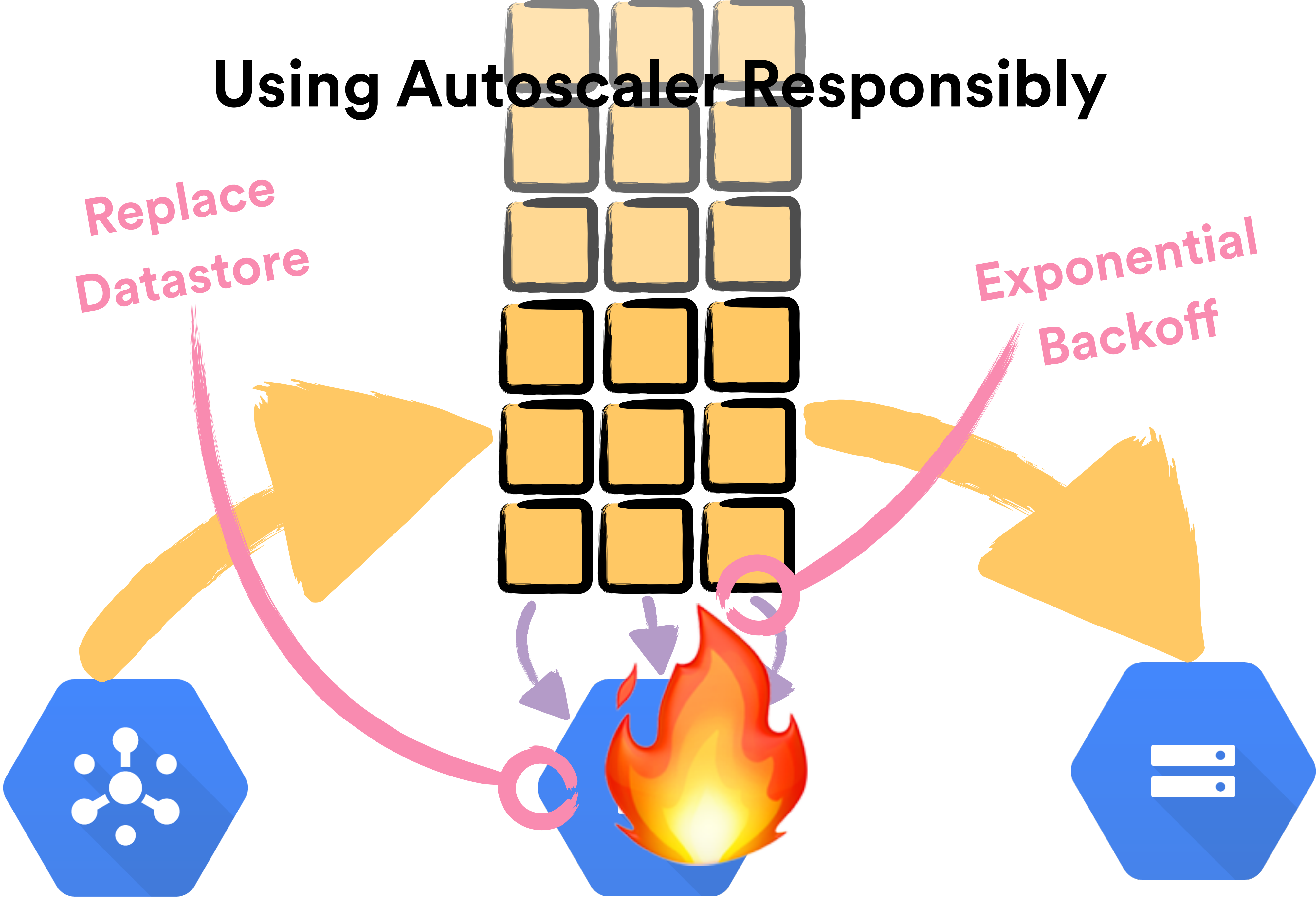


Machines
Used

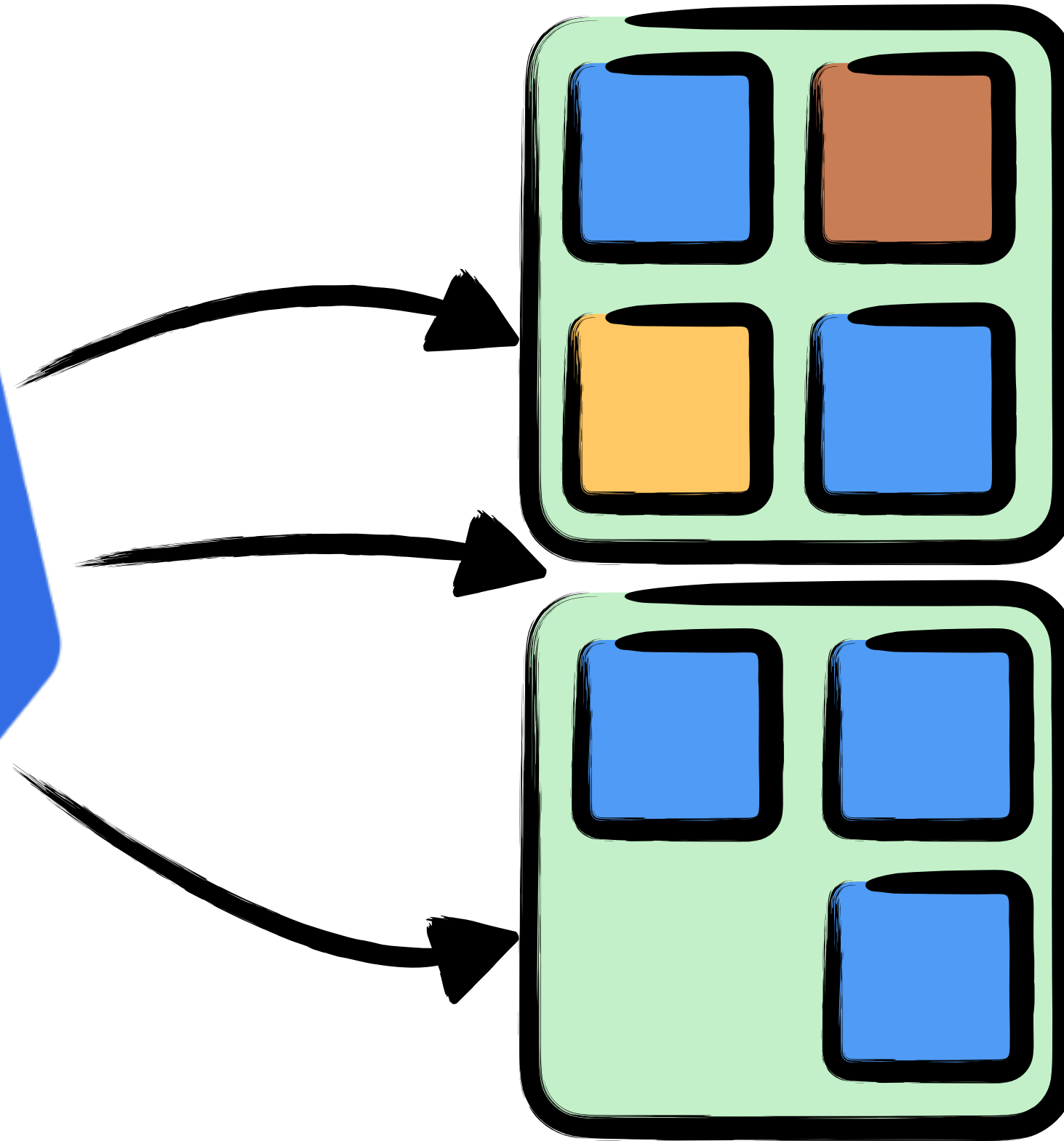
Events
Published



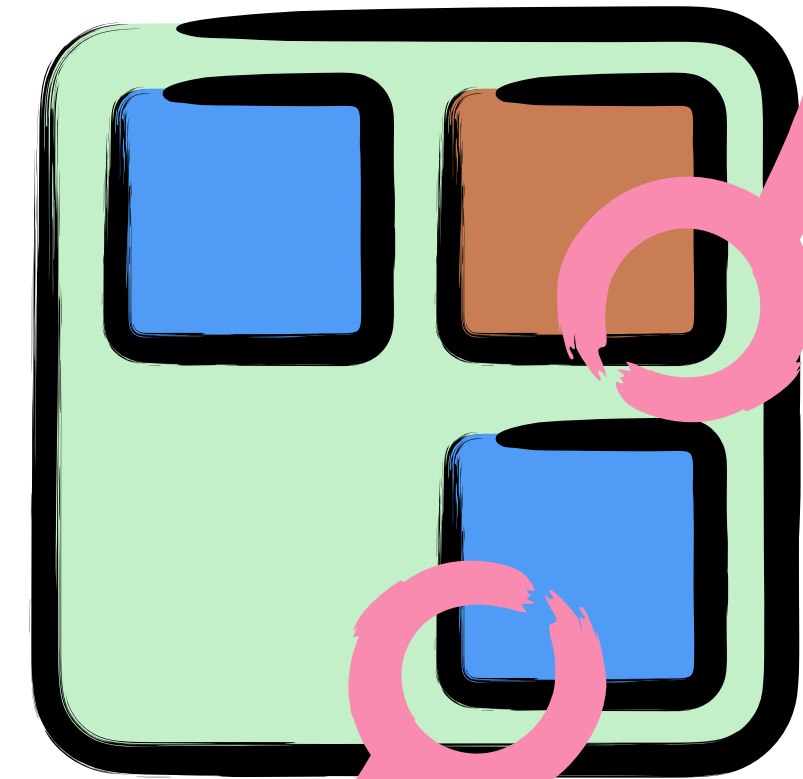
Using Autoscaler Responsibly



Next Iterations



Monitoring?



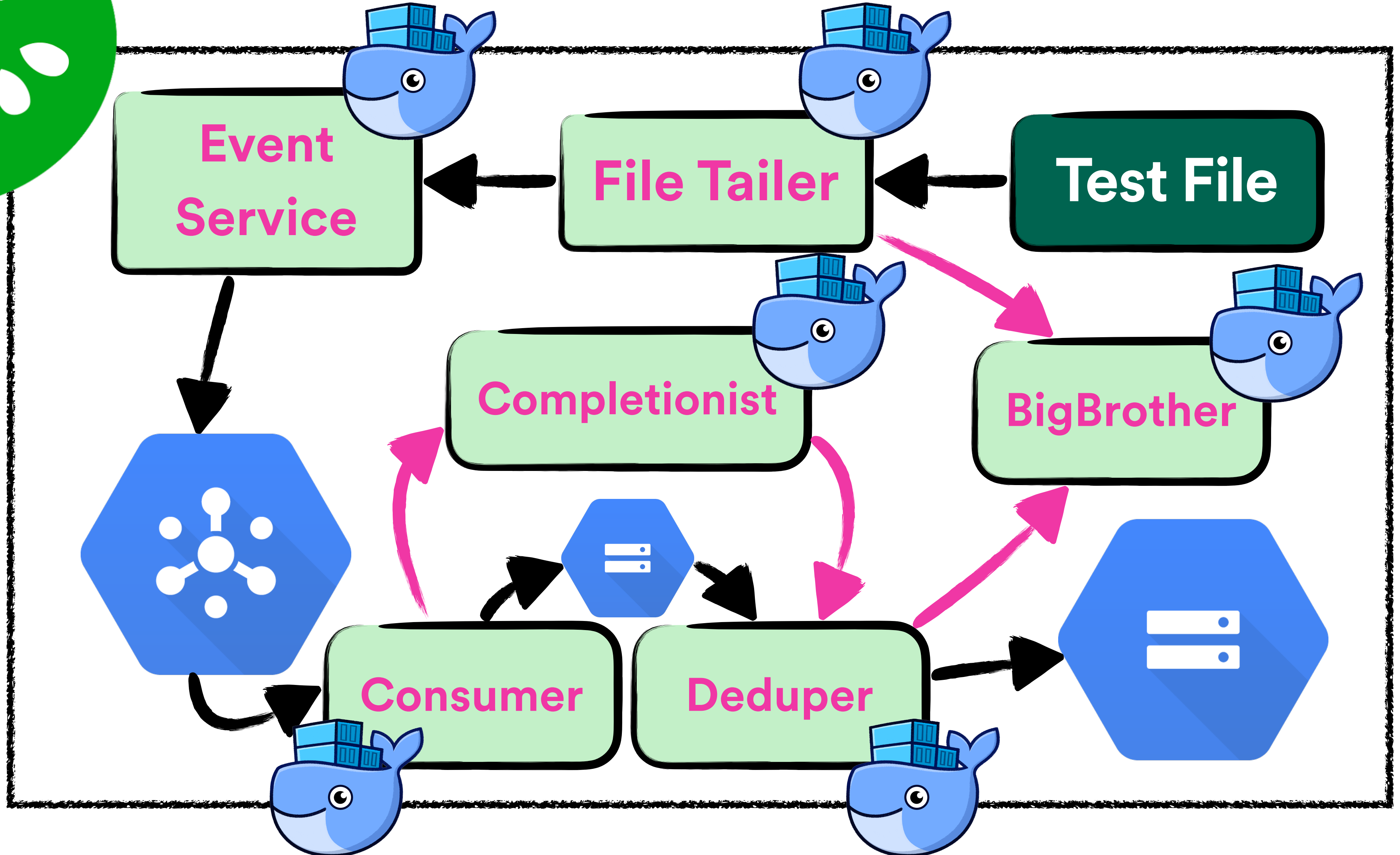
Service Discovery?



~~puppet~~

Testing





Thank you!

Игор Маравић <igor@spotify.com>





We're hiring!

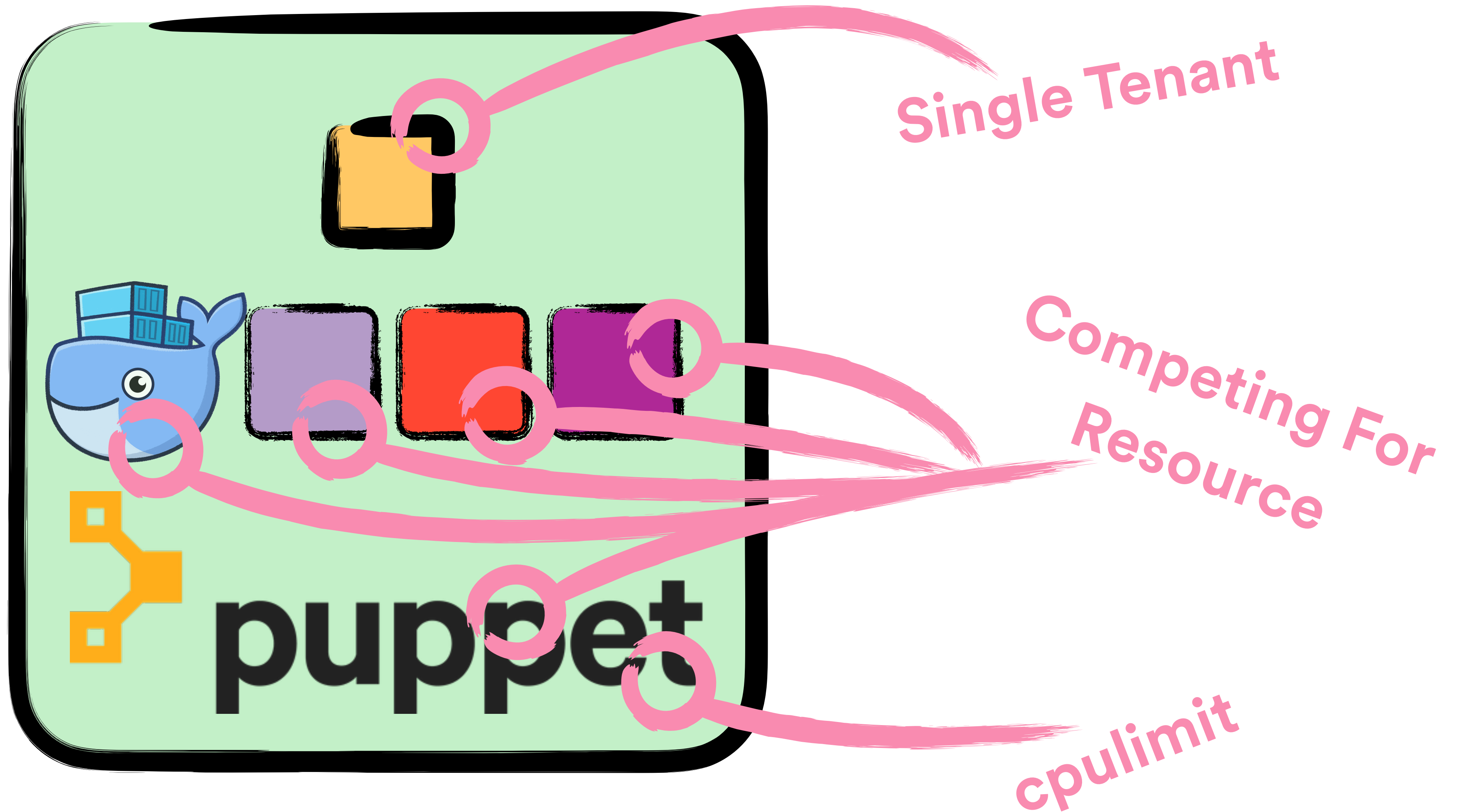
<https://www.spotify.com/jobs>



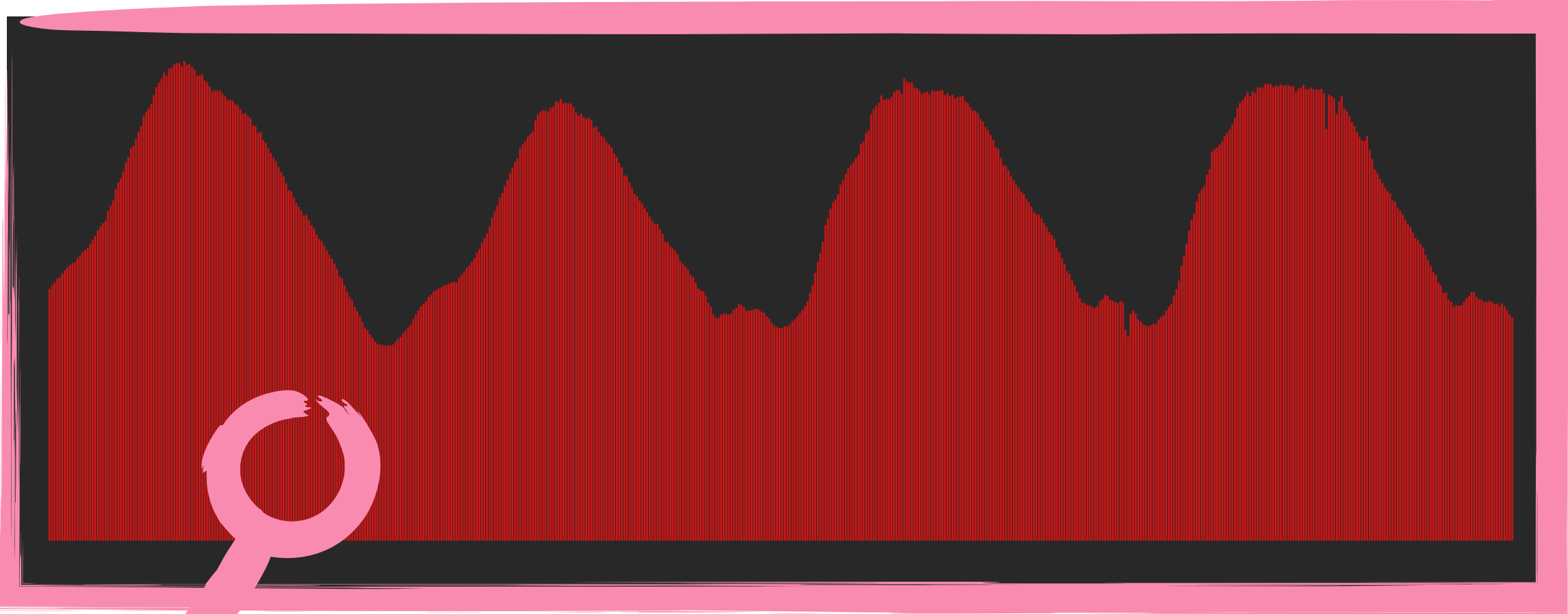
THE END



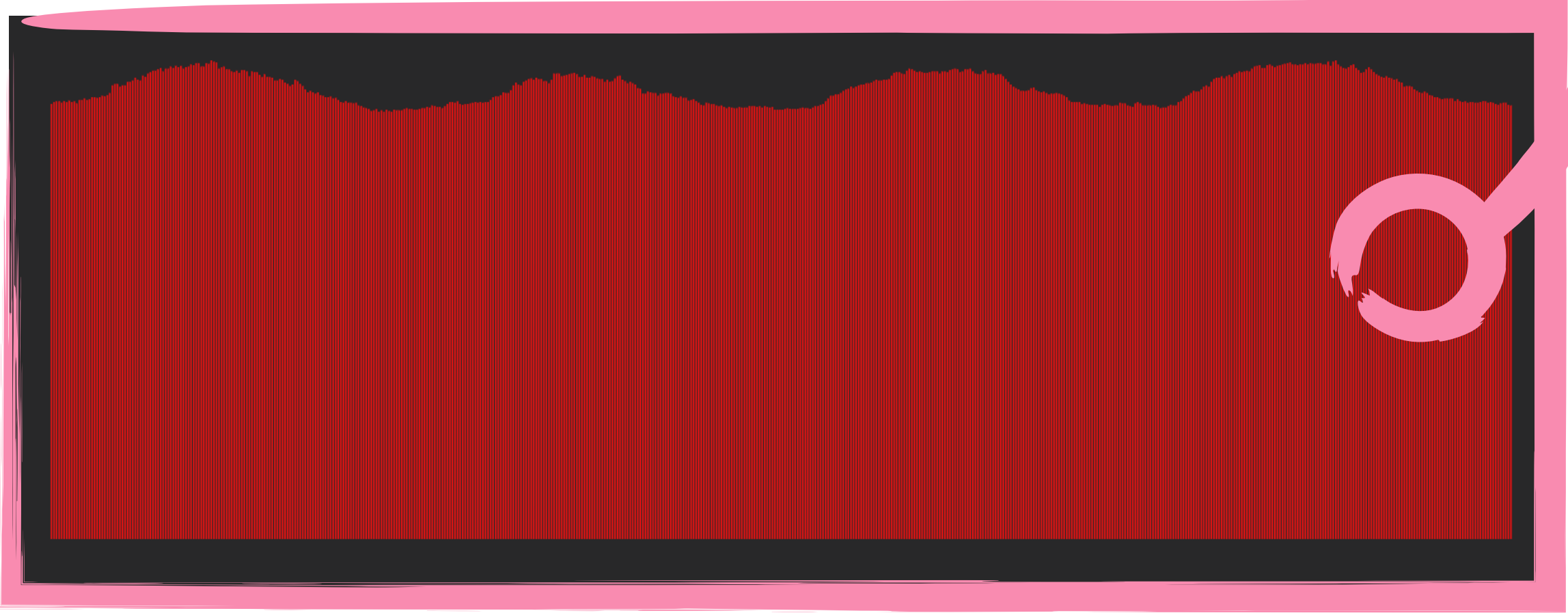
Suboptimal Resource Usage



Following the day pattern



Machines
Used



Events
Published