



Knee Deep in Microservices

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Age of Netflix Engineering

Deploy large number of components
By large number of teams
Serving large amount of traffic





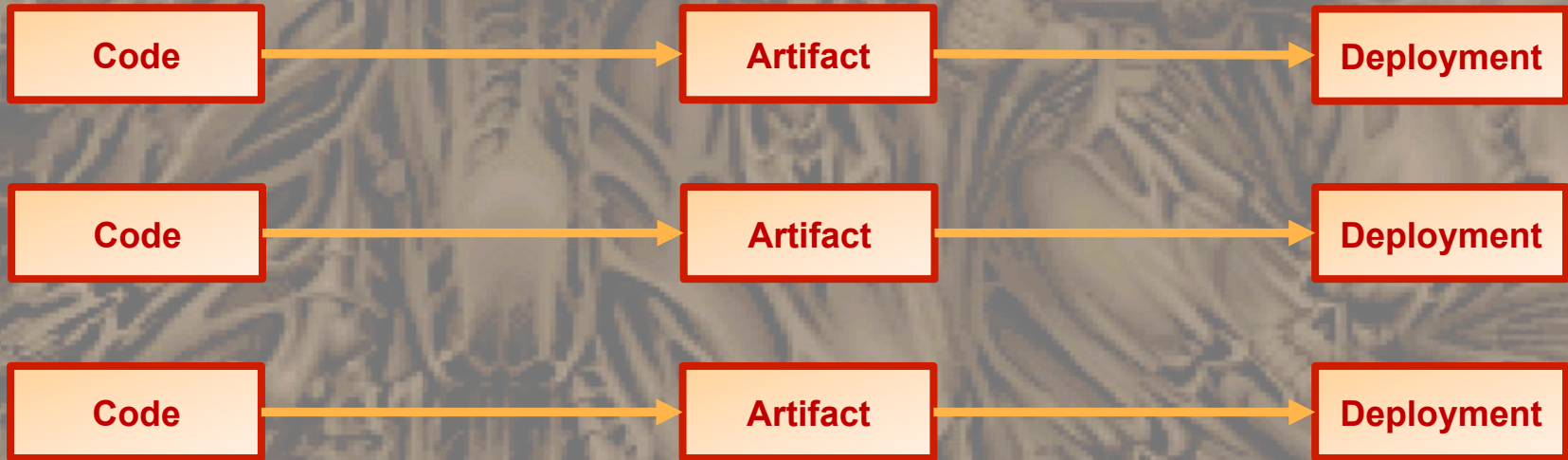
SCALE

VELOCITY

RESILIENCE

COST OPTIMIZATION

MICROSERVICES



DEMONS OF MICROSERVICES



SECURITY SYSTEM RELAY

DEMONIC INVASION IN PROGRESS

SYSTEM OPERATIONS

Containment procedure initiated
Awaiting protocol update
ERROR CODE 20

10:22/0.11:0
AREA EB-1 INDICATION UE

STATUS REPORT

ARCHIVE

02

CANCEL

PACKAGING



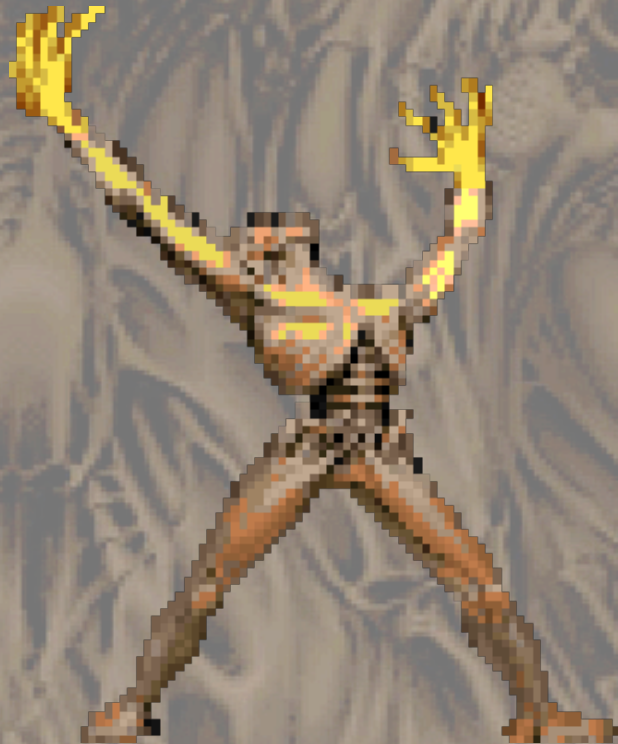
LOCAL DEVELOPMENT



OBSERVABILITY



SELF HEALING



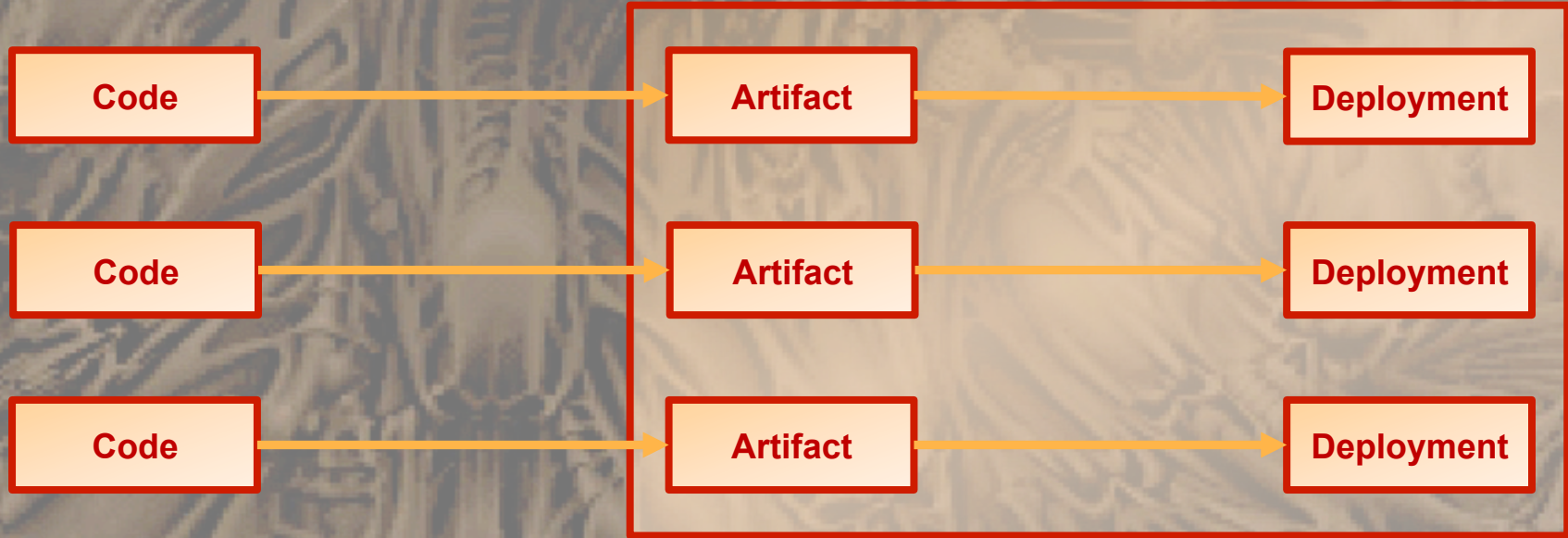
ORGANISATIONAL SILOS



CLOUD NATIVE WEAPONRY



CLOUD NATIVE



DOCKER



Slices VMs into tiny pieces

DOCKER-COMPOSE



Easy to use realistic development

ORCHESTRATORS

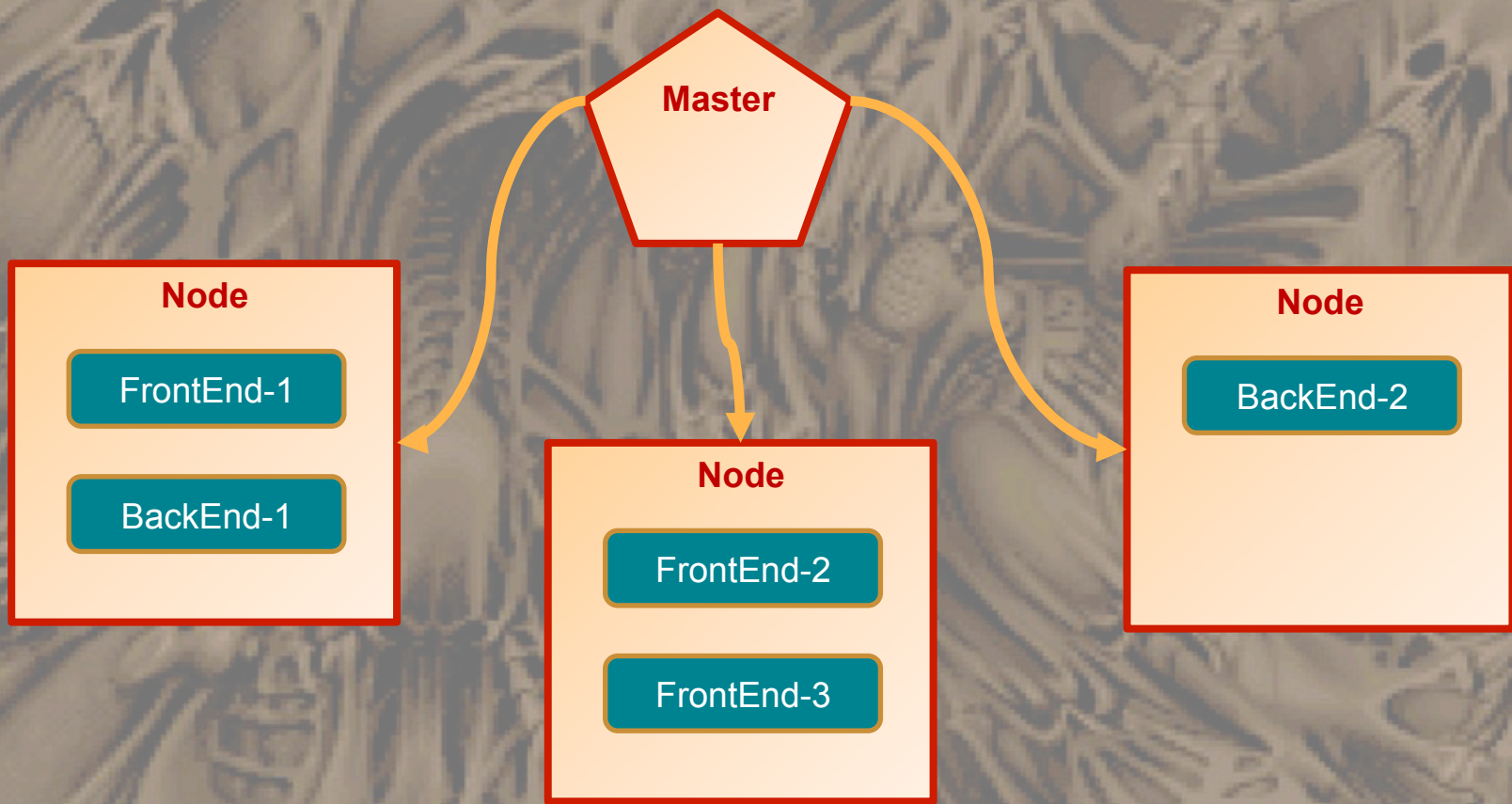
Kubernetes

DC/OS

Docker Swarm

ECS





CN MONITORING

Prometheus

Stackdriver

Sysdig

CoScale

DataDog





21 Sep 2016 15:55 - 21 Sep 2016 16:14

Quick select

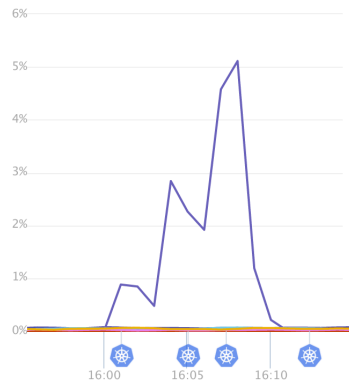
Add widget

Save

Reset



Service CPU time

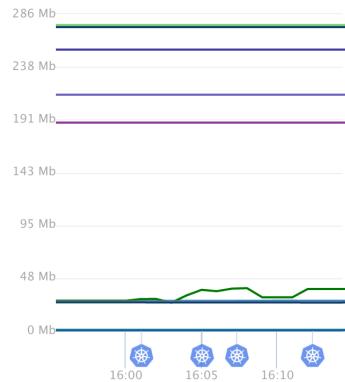


Wed 21 Sep 2016 (16:09)

Press tab to pin to current point

front-end (AVG)	Kubernetes container cpu us...	1.19%
orders-db (AVG)	Kubernetes container cpu us...	0.05%
rabbitmq (AVG)	Kubernetes container cpu us...	0.05%
cart-db (AVG)	Kubernetes container cpu us...	0.05%
user-db (AVG)	Kubernetes container cpu us...	0.05%
orders (AVG)	Kubernetes container cpu us...	0.02%
queue-master (AVG)	Kubernetes container cpu us...	0.02%

Service Memory usage

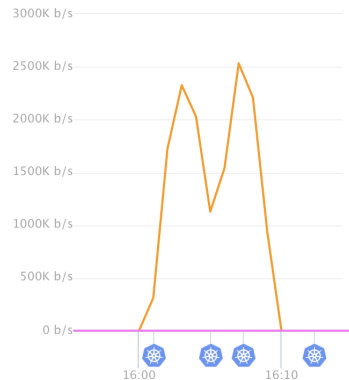


Wed 21 Sep 2016 (16:09)

Press tab to pin to current point

orders (AVG)	Kubernetes container memory...	276 Mb
shipping (AVG)	Kubernetes container memory...	274 Mb
queue-master (AVG)	Kubernetes container memory...	254 Mb
cart (AVG)	Kubernetes container memory...	213 Mb
catalogue-db (AVG)	Kubernetes container memory...	188 Mb
front-end (AVG)	Kubernetes container memory...	30.3 Mb
rabbitmq (AVG)	Kubernetes container memory...	27.2 Mb

Service Network usage

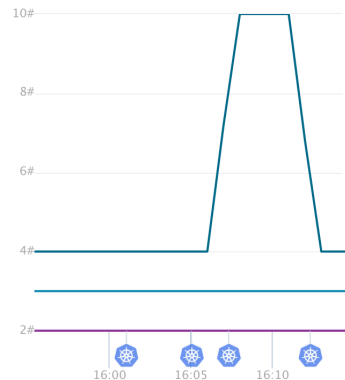


Wed 21 Sep 2016 (16:09)

Press tab to pin to current point

front-end (AVG)	Kubernetes container networ...	943K b/s
orders-db (AVG)	Kubernetes container networ...	34.8 b/s
cart-db (AVG)	Kubernetes container networ...	27.6 b/s
user (AVG)	Kubernetes container networ...	25.8 b/s
cart (AVG)	Kubernetes container networ...	20.6 b/s
orders (AVG)	Kubernetes container networ...	17.4 b/s
user-db (AVG)	Kubernetes container networ...	17.3 b/s

Number of containers per Service



Wed 21 Sep 2016 (16:14)

Press tab to pin to current point

All servers (AVG)	Kubernetes number of conta...	4#
All servers (AVG)	Kubernetes number of conta...	3#
All servers (AVG)	Kubernetes number of conta...	2#
All servers (AVG)	Kubernetes number of conta...	2#

Events

Add Event

Kubernetes event

21 Sep (16:12) - 21 Sep (16:12)

Killing container with docker id 31d77e47a70: Need to kill pod.

Kubernetes event

21 Sep (16:12) - 21 Sep (16:12)

Killing container with docker id c4f1eab0c554: Need to kill pod.

Kubernetes event

21 Sep (16:12) - 21 Sep (16:12)

Deleted pod: front-end-2118727291-fckcv

Kubernetes event

21 Sep (16:12) - 21 Sep (16:12)

Deleted pod: front-end-2118727291-w50ti

Kubernetes event

21 Sep (16:12) - 21 Sep (16:12)

Killing container with docker id 89ee4ba3e118: Need to kill pod.

Kubernetes event

21 Sep (16:12) - 21 Sep (16:12)

Killing container with docker id 1f1b92b77931: Need to kill pod.

Kubernetes event

21 Sep (16:12) - 21 Sep (16:12)



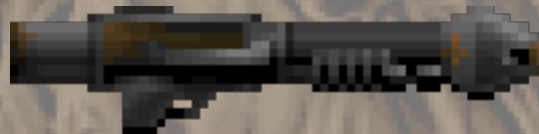
CONTINUOUS INTEGRATION

GitLab

Jenkins

CodeShip

OpenShift



E1M6: DevOps

E1M7: Monitoring

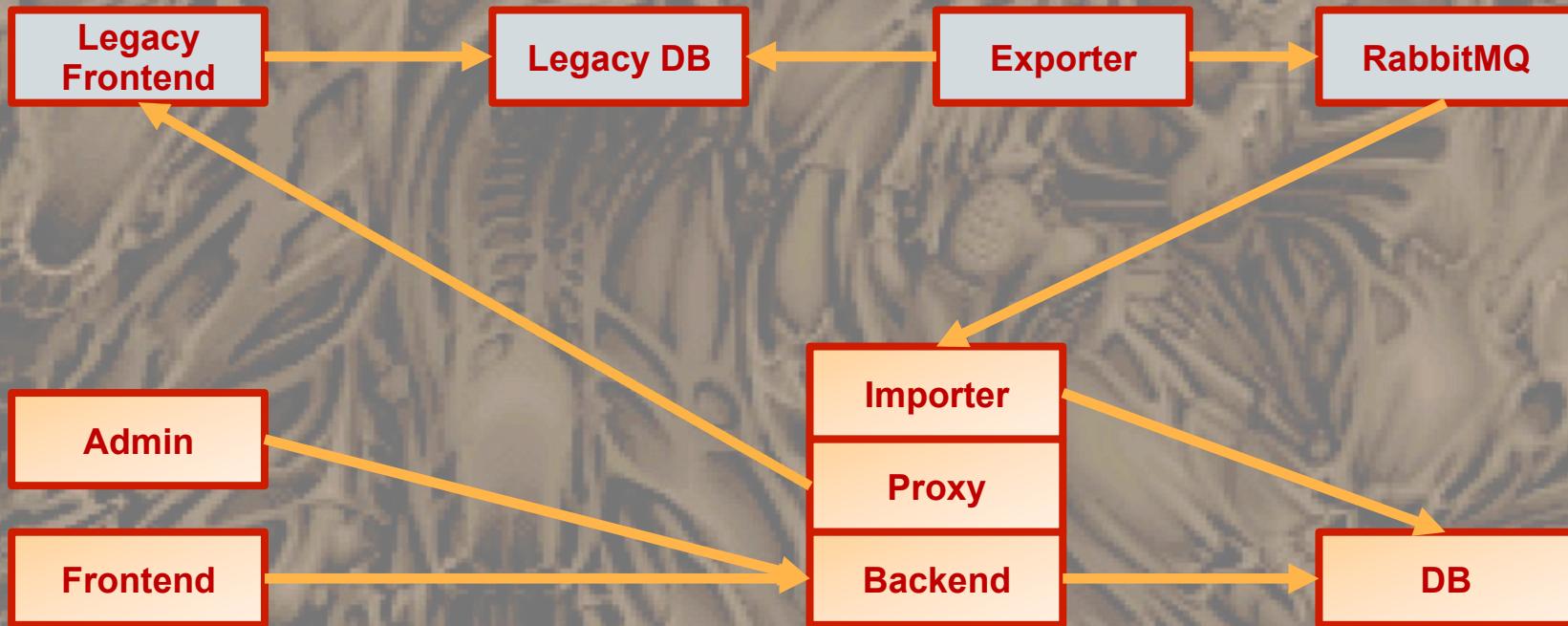
E1M5: Training

E1M4: Production
Workload

E1M3: CI/CD

E1M2: Managing
Environments

E1M1:
Independent
Delivery





INDEPENDENT DELIVERY

Separate source repos

Separate artifacts

Sharing is not caring!

Own your database!

**Deployment
Service
HPA**

Admin

Admin

**Deployment
Service
HPA**

Frontend

Frontend

**Deployment
Service
HPA**

Backend

Backend

Backend

**Managed
Service**

DB

MANAGING ENVIRONMENTS

Cheap

Disposable

Versioned

Namespace

Feature X

Admin

Backend

Frontend

Namespace

Feature Y

Admin

Backend

Frontend

Namespace

Develop

Admin

Backend

Frontend

Namespace

Production

Admin

Backend

Frontend



PRODUCTION WORKLOAD

Autoscaling

Resource limit / reservations

Finetuning

CONTINUOUS DELIVERY

Docker support in build tool

How to push artifacts to environments?

OPS team only creates tooling

TRAINING

OPS deep platform knowledge

DEV confident as users of the platform

MONITORING

OPS only delivers tooling

Inter-service debugging

Log enough but not too much



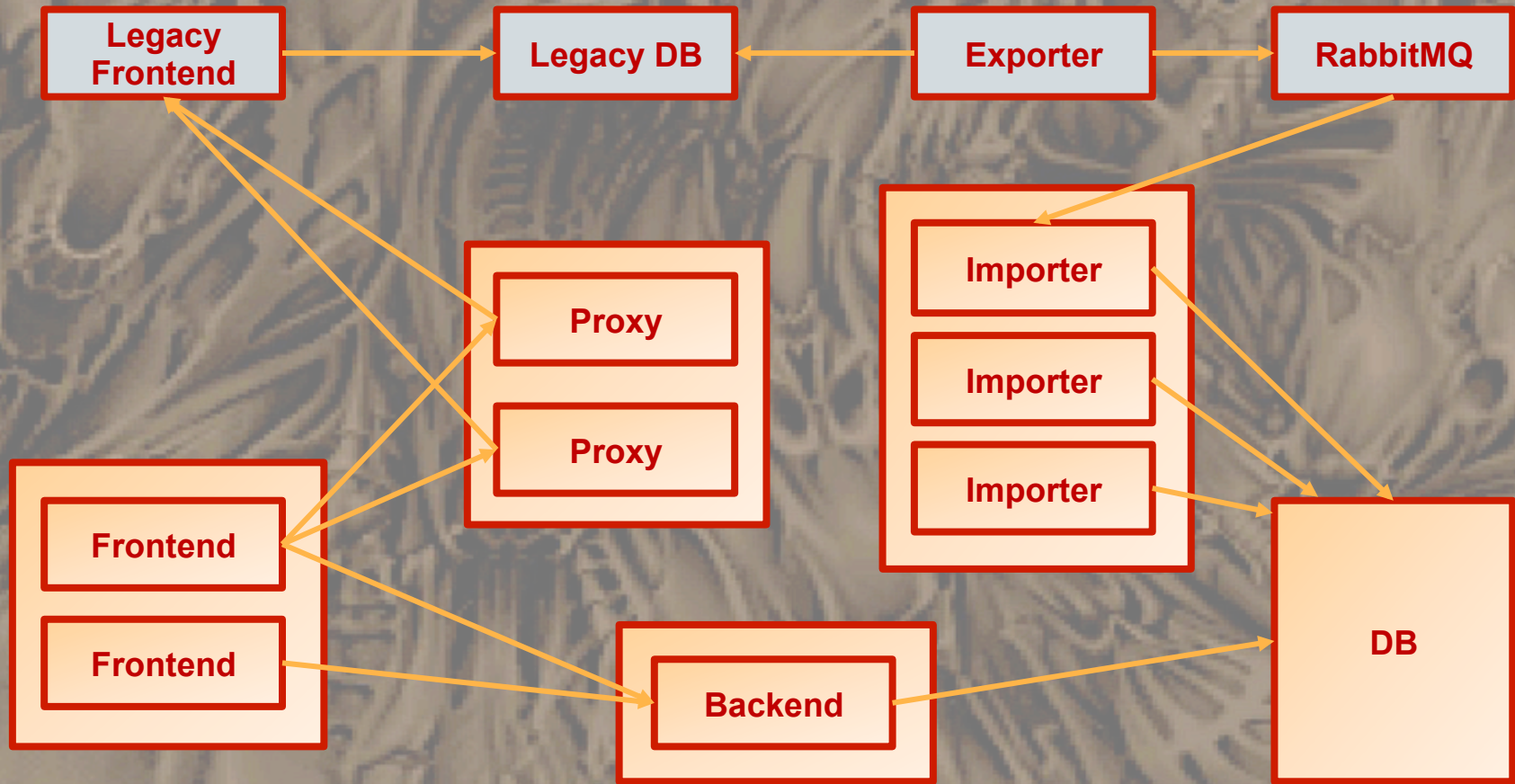
DEVOPS

OPS is a necessity

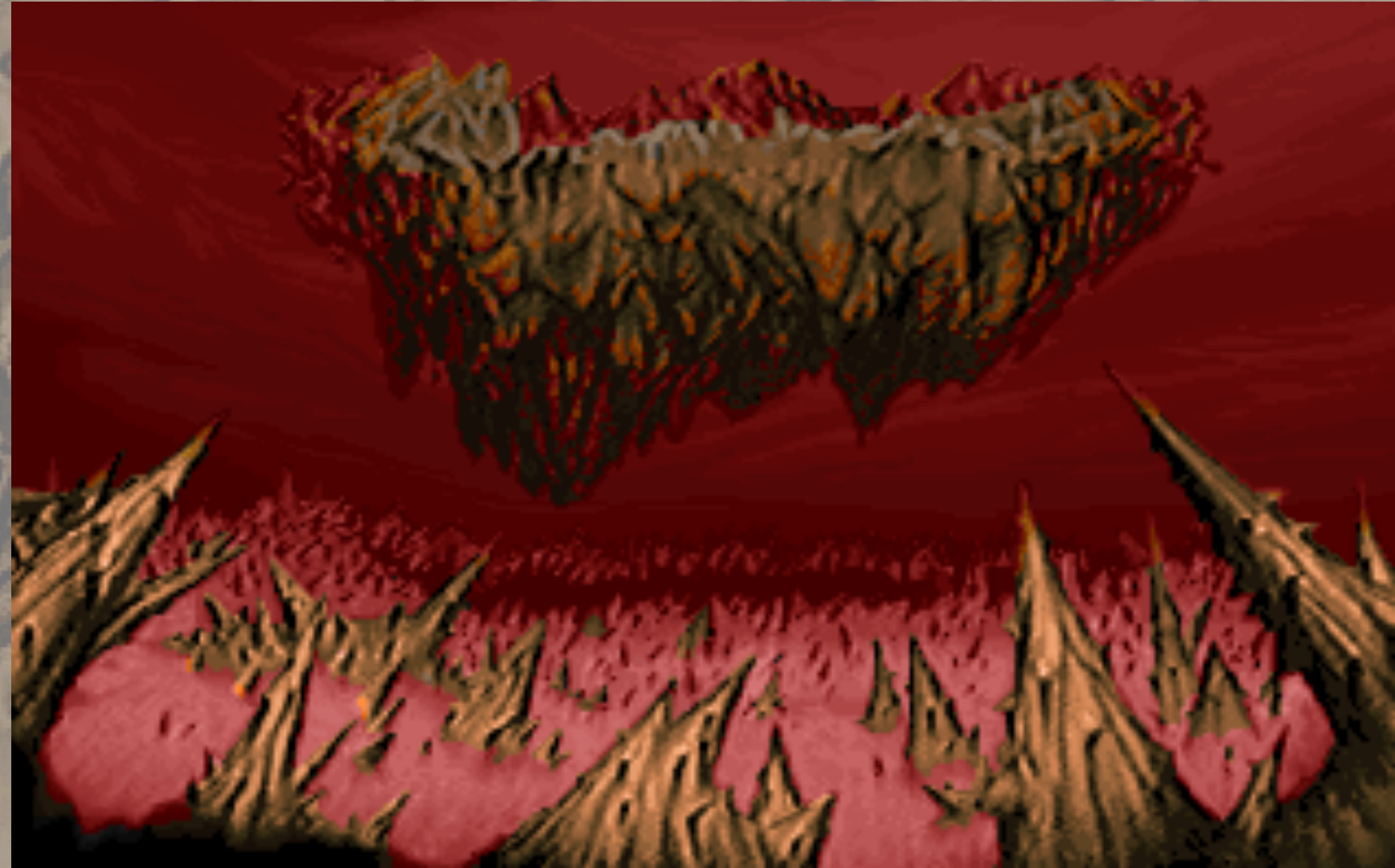
Develop tooling

Deployments are DEV responsibility

Environments are DEV responsibility











id
SOFTWARE

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Docker



CN Monitoring



Docker Compose



Container
Orchestrators







Q & A

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Doom graphics property of Id Software