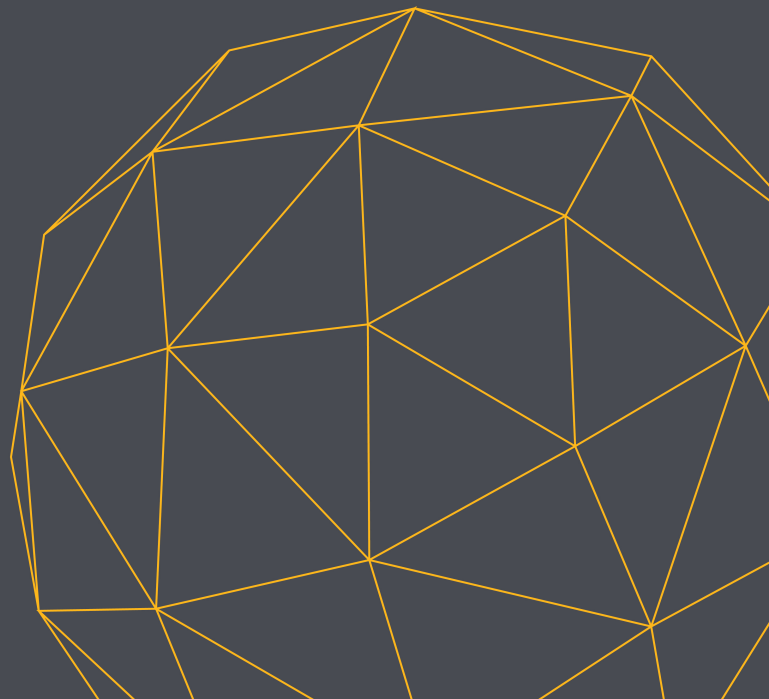
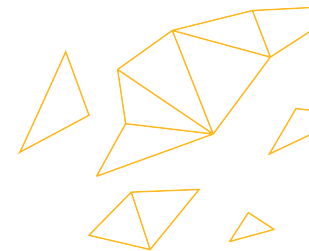





# CHALLENGING PERCEPTIONS OF NHS IT

# 01 INTRO STORY





failed software   projects	
failed software <b>projects</b>	<a href="#">Remove</a>
failed software <b>projects examples</b>	
failed software <b>projects case studies</b>	
failed software <b>update iphone</b>	

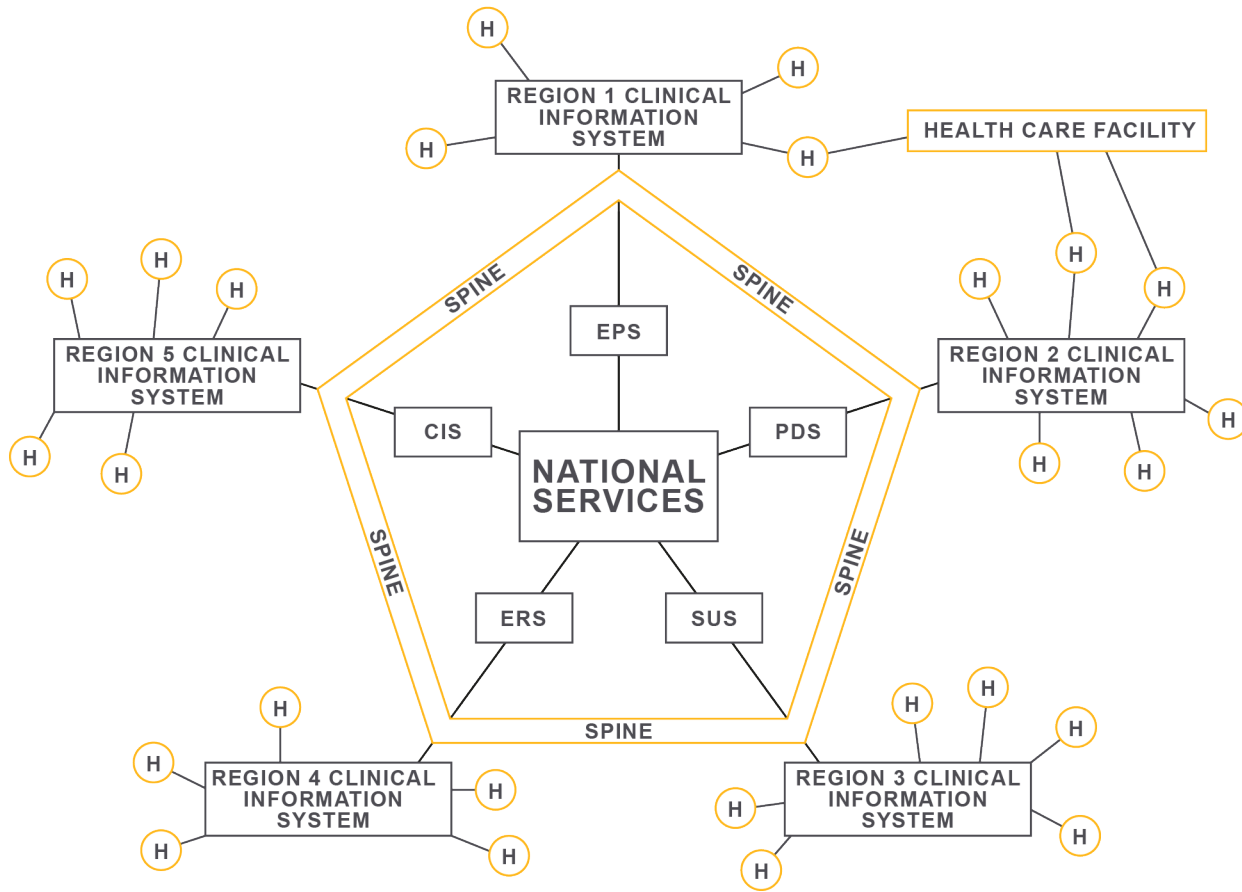
Year	Year	System Name	System Type	Country	Government Level	Description	Cost	Delivery Model	Status
2002	2011	NHS Connecting for Health	Electronic care records	United Kingdom	Central government	<p>Beset by delays and ballooning costs, and the software part of it was never finished. The government was also criticised for not demonstrating value for money. Although the contracts were drafted to ensure that the contractors would be forced to bear a significant portion of the cost of the project going wrong if it did go wrong, in reality this did not always happen. The NPfIT was described by <a href="#">Members of Parliament</a> as one of the "worst and most expensive contracting fiascos" ever.<sup>[3]</sup></p>	£12bn (£2.3bn)	Outsourced	Discontinued, but some parts continued



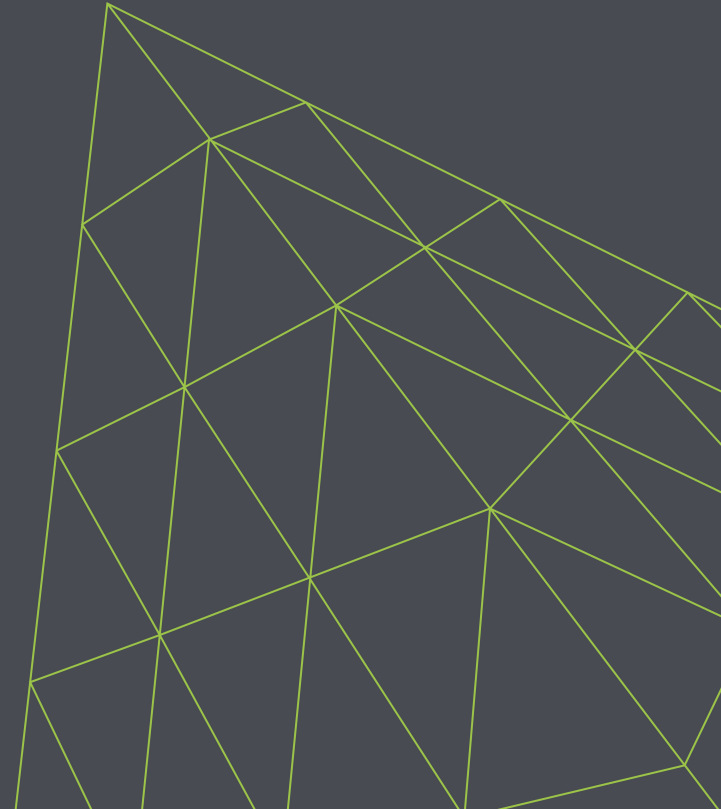
£2,300,000,000

A cluster of several overlapping, thin orange lines forming various geometric shapes, including triangles and polygons, positioned to the right of the main text.

£12,000,000,000



## 02 TECHNICAL SCENE SET



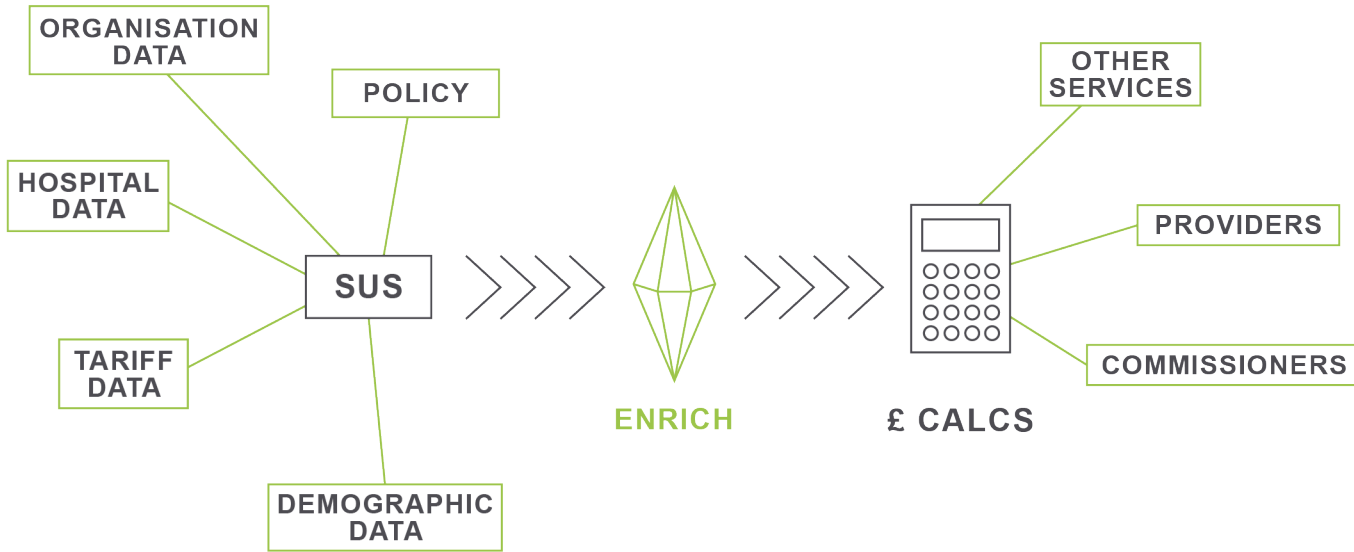




# HERE'S SOME EXCITING BULLET POINTS

- ▷ FAILURE TOLERANT PLATFORM ARCHITECTURE
- ▷ SQL WITH NOSQL
- ▷ CONTINUOUS PERFORMANCE ENGINEERING

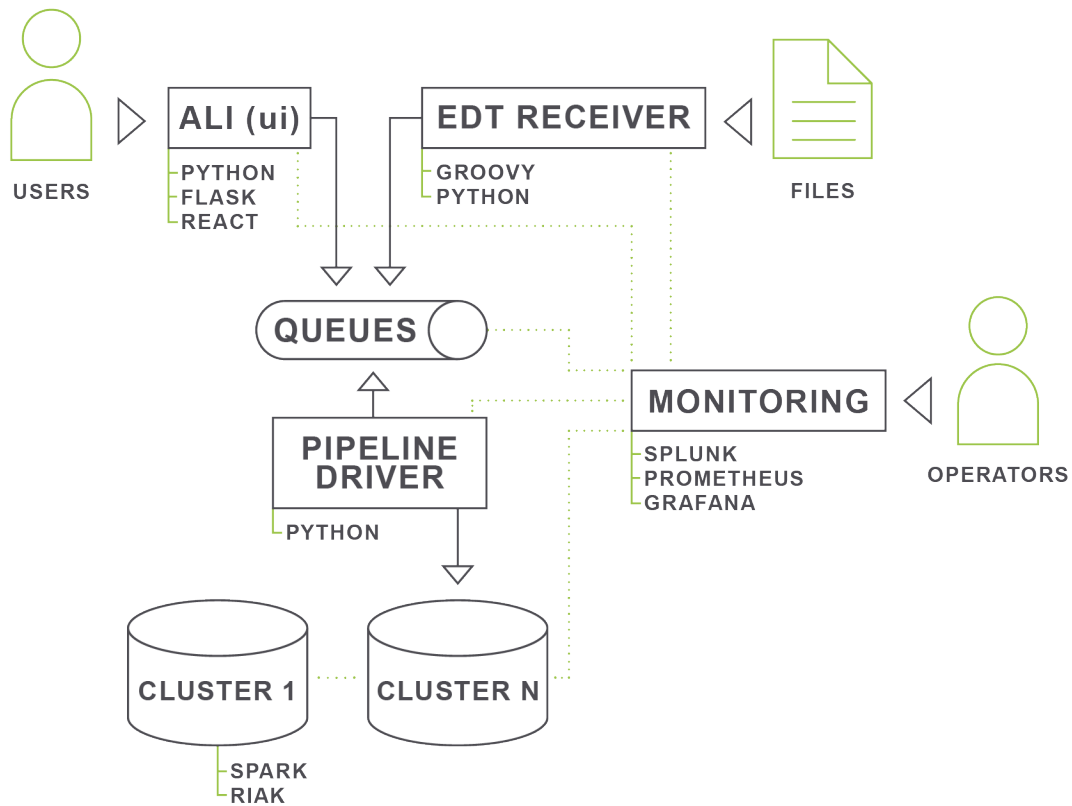
# NTS-101



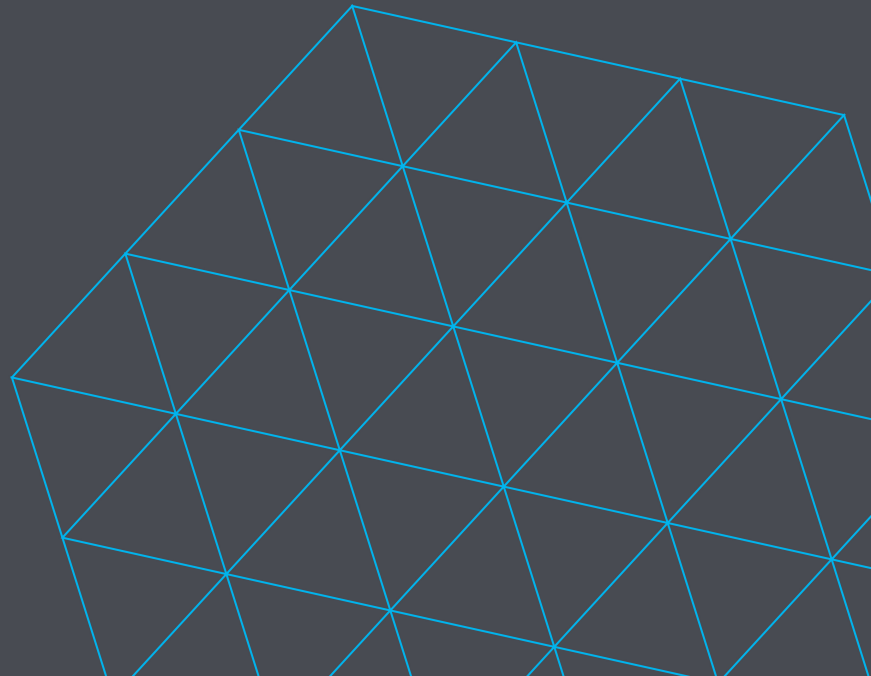


**02** Challenging Perceptions of NHS IT  
Infinity Works & NHS Digital

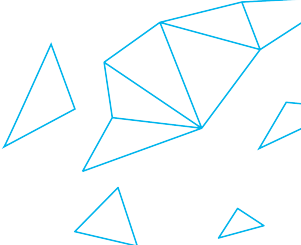
@thetriangle  
@edhiley



# 03 REDUNDANT ARCHITECTURE

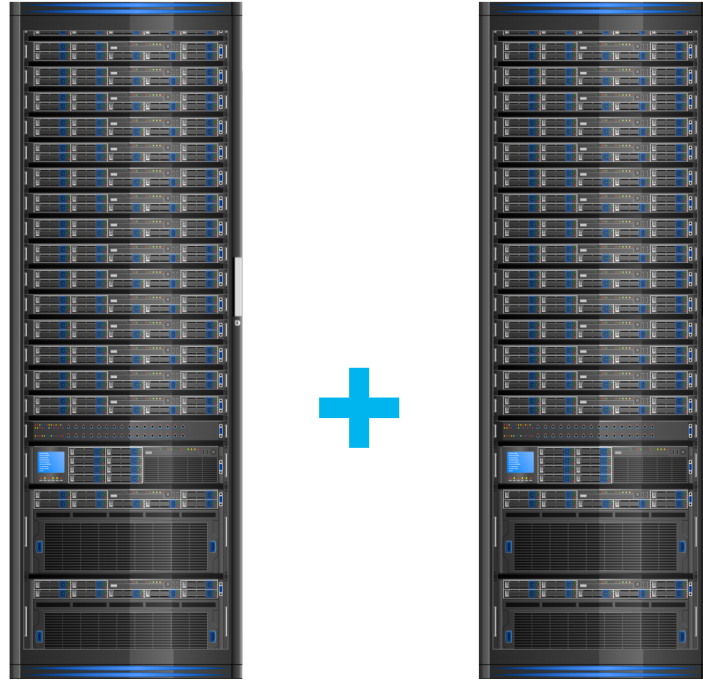


# PIZZAS, MMM





## SINGLE STACK



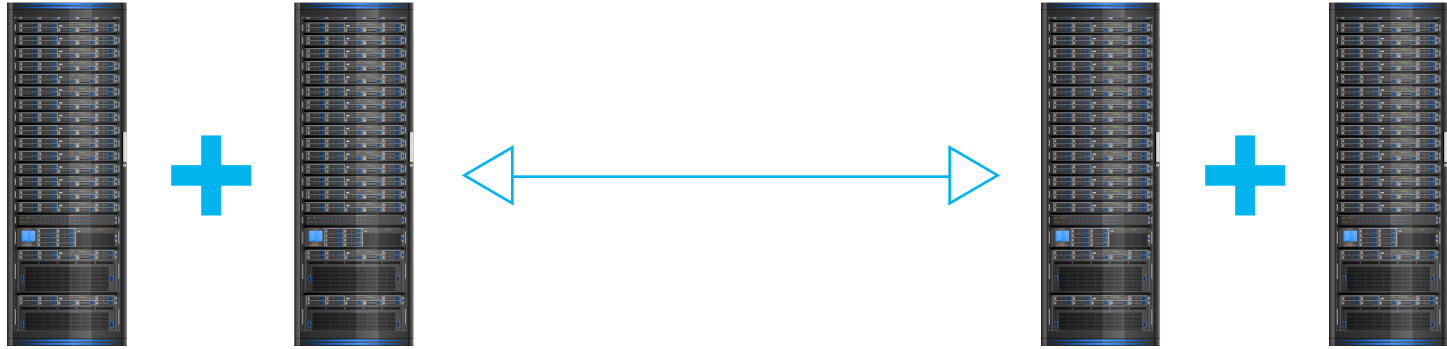
DUAL STACK



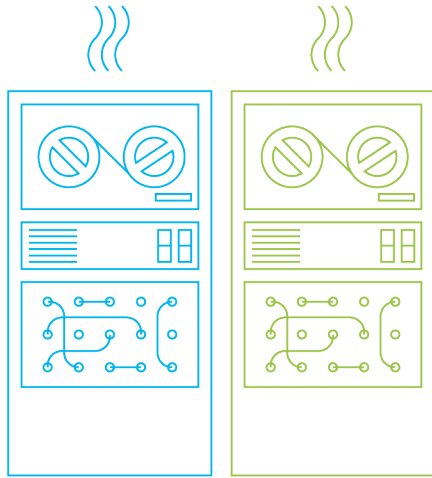


# 03

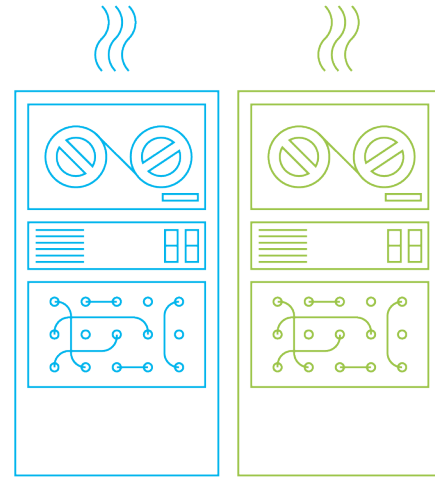
Challenging Perceptions of NHS IT  
Infinity Works & NHS Digital



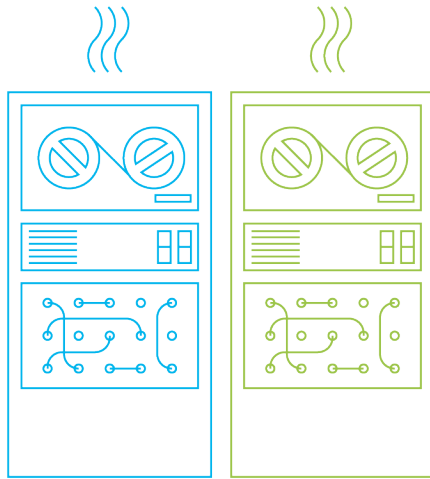
## DUAL SITES



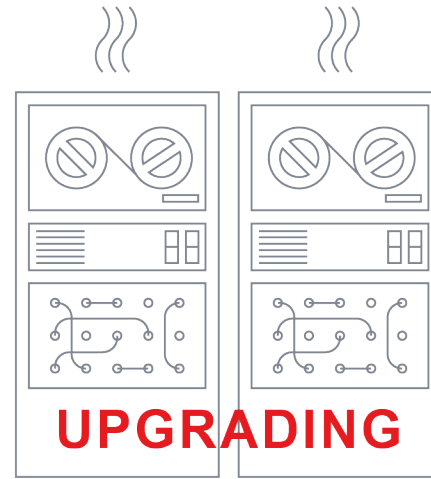
**A**



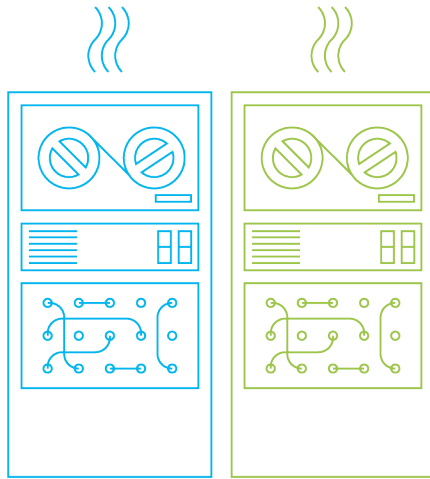
**B**



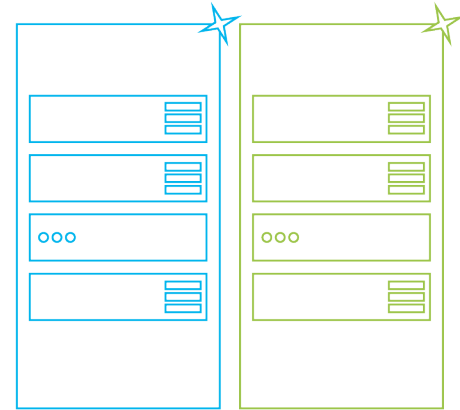
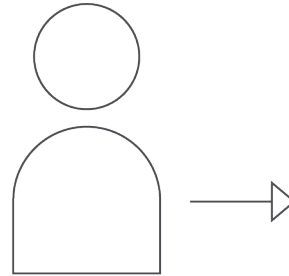
**A**



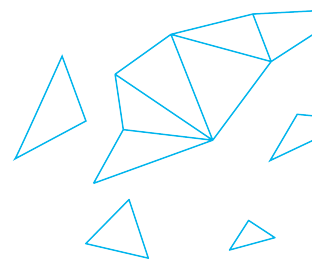
**B**

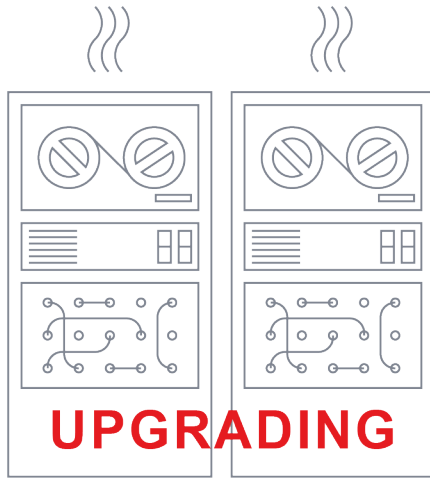


**A**

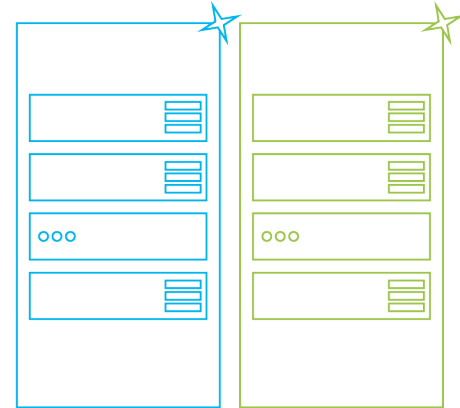
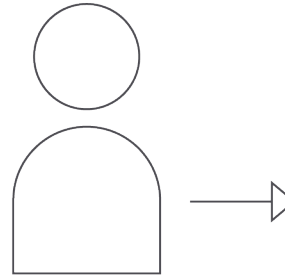


**B**

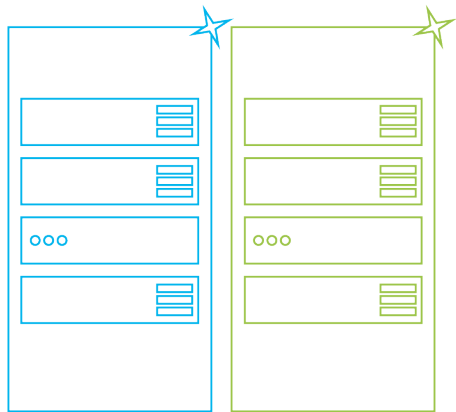




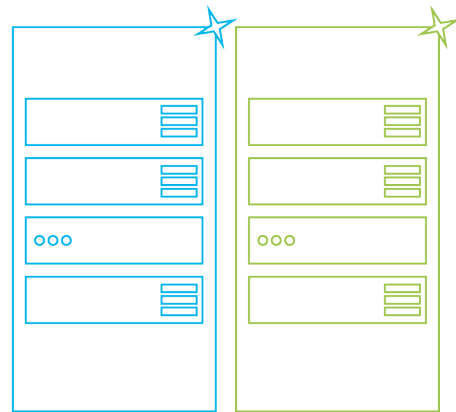
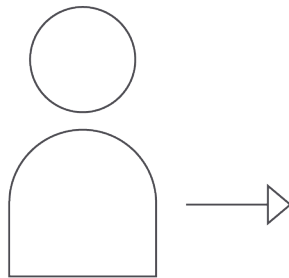
A



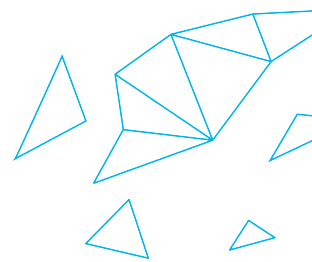
B

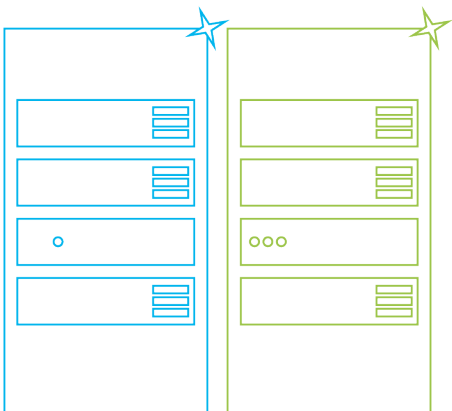
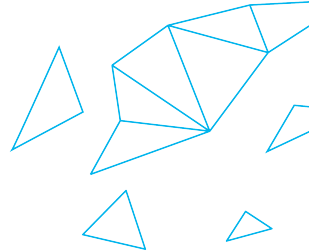


**A**

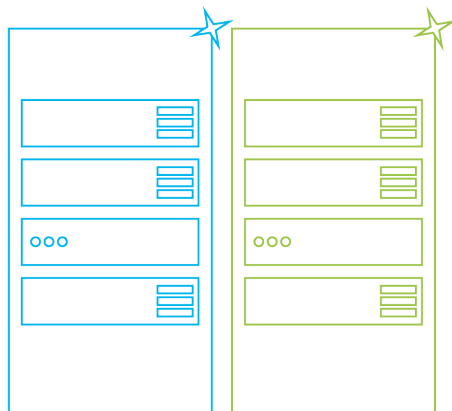
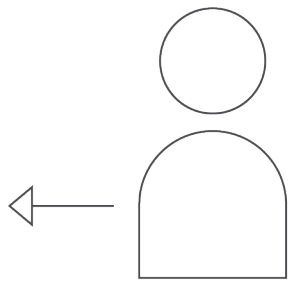


**B**





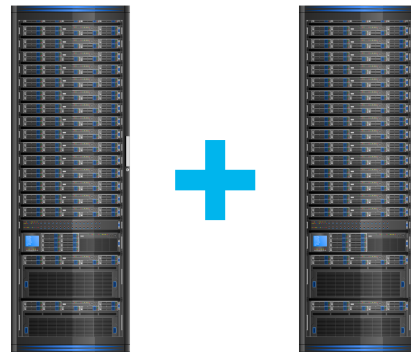
**A**



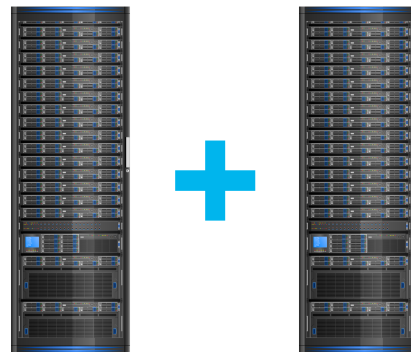
**B**



LIVE



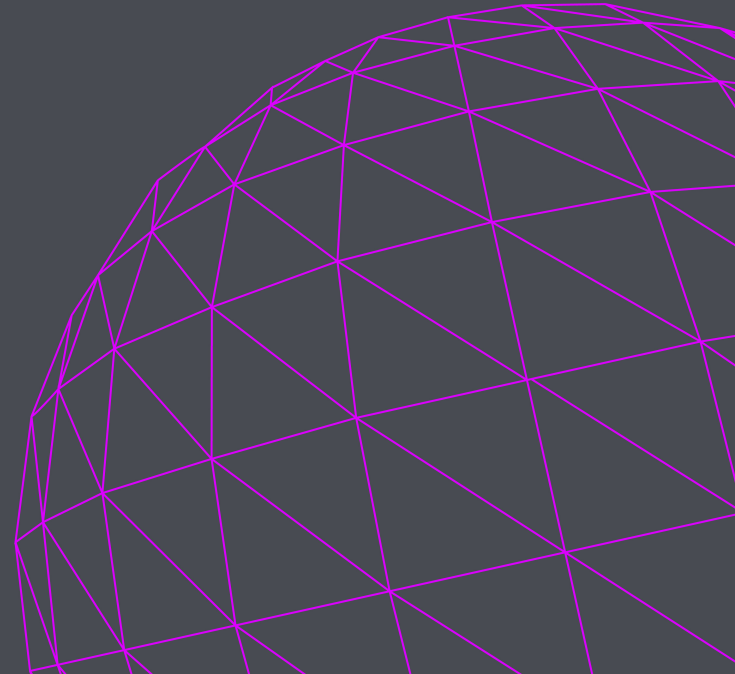
REFERENCE

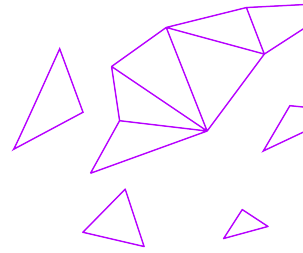


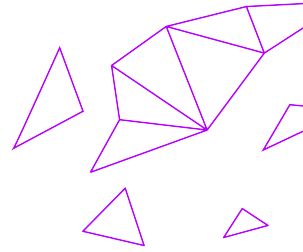
DUAL ENVIRONMENTS  
(REF)

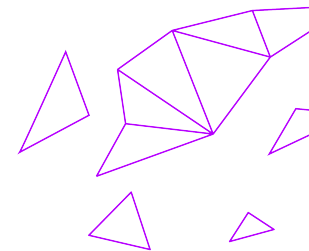


# 04 IMMUTABLE INFRASTRUCTURE

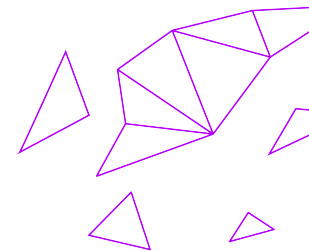








cobbler  
cobbler



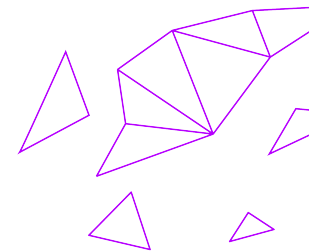


SUS+ RefA Nightly Rebuild



SUS+ RefB Nightly Rebuild





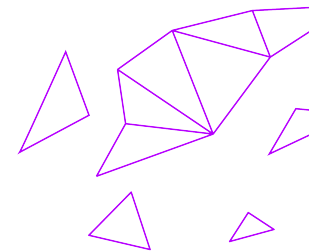
**SPARK  
MASTER**

**SPARK  
WORKER 1**

**SPARK  
WORKER 2**



**SPARK  
WORKER N**



**SPARK  
MASTER**

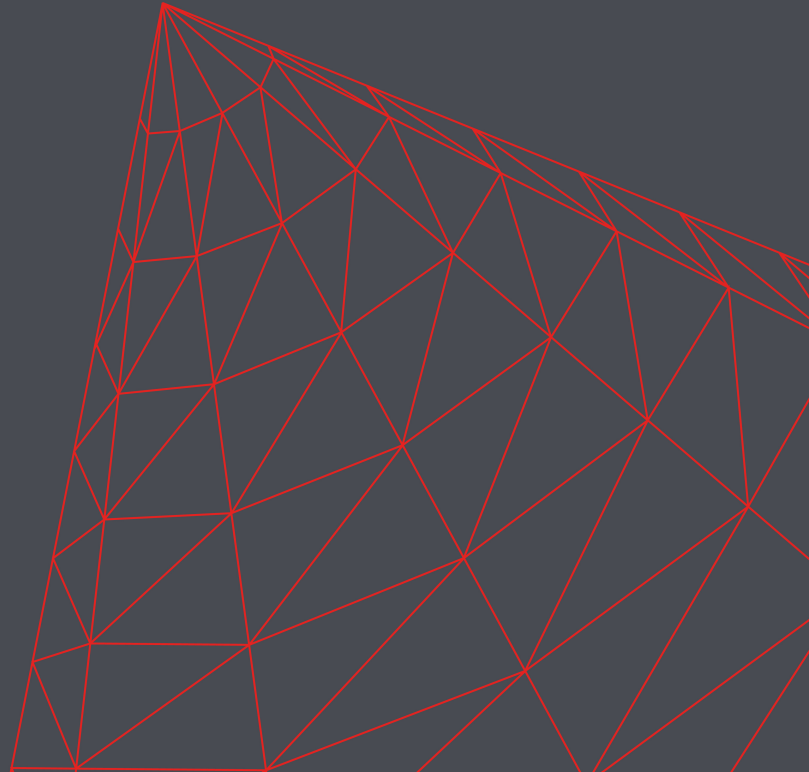
**SPARK  
WORKER 1**  
**RIAK**

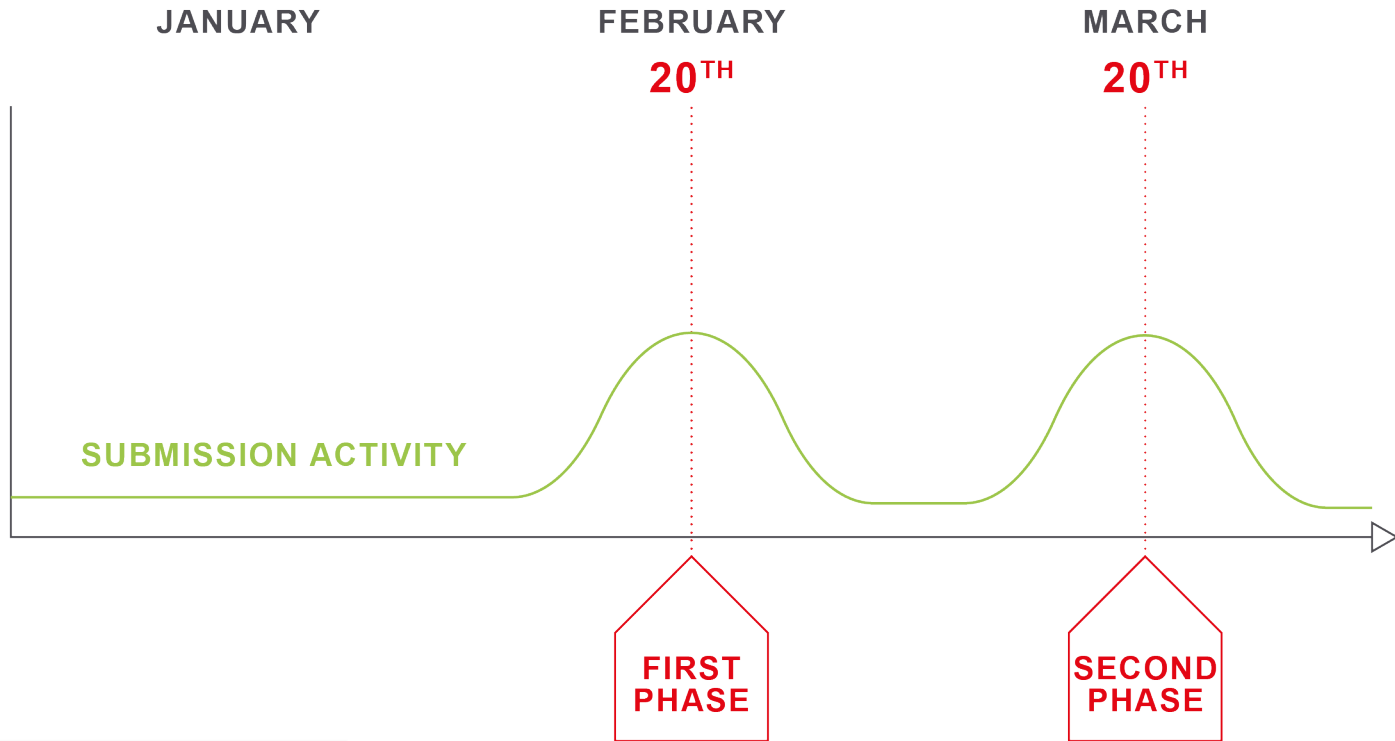
**SPARK  
WORKER 2**  
**RIAK**



**SPARK  
WORKER N**  
**RIAK**

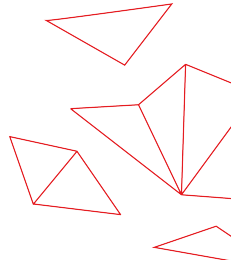
# 05 SQL WITH NOSQL





**ACTIVITY A**

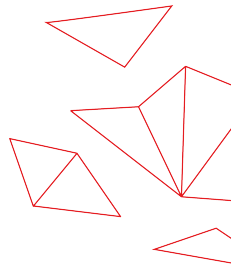
**ACTIVITY B**



ACTIVITY A

ACTIVITY B

01.03.16  
LEEDS TH

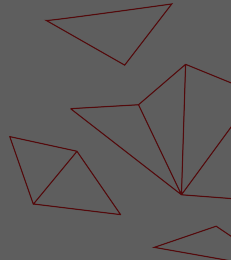


ACTIVITY A

01.03.16  
LEEDS TH

```
"20160301:LEEDSTH": [  
  "ACTIVITY A",  
  "ACTIVITY B"  
]
```

AC



**ACTIVITY A**

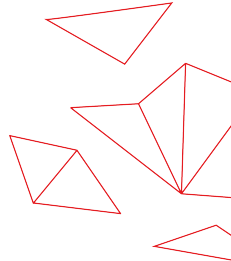
**ACTIVITY A UPDATE**

**ACTIVITY B**

**ACTIVITY C**

**01.03.16  
LEEDS TH**

**05.03.16  
LEEDS TH**





ACTIVITY A

01.03.16  
LEEDS TH

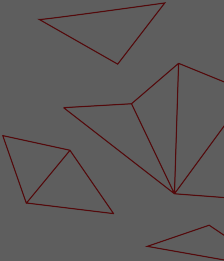
ACTIVITY A

```
"20160305:LEEDSTH": [
  "ACTIVITY A UPDATE",
  "ACTIVITY B",
  "ACTIVITY C"
]
```

5.03.16  
EEDS TH

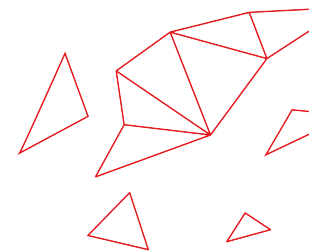
ACTIV

ACTIVITY C





Does un  
rebygg i Gy  
No-one de  
the Wal



DATABASE ID	ORGANISATION	ACTIVITY DATE	VALID FROM	VALID TO
456	LEEDSTH	01.03.2016	01.04.2016 10:20	01.01.9000 00:00
123	LEEDSTH	01.03.2016	10.03.2016 10:09	01.04.2016 10:20

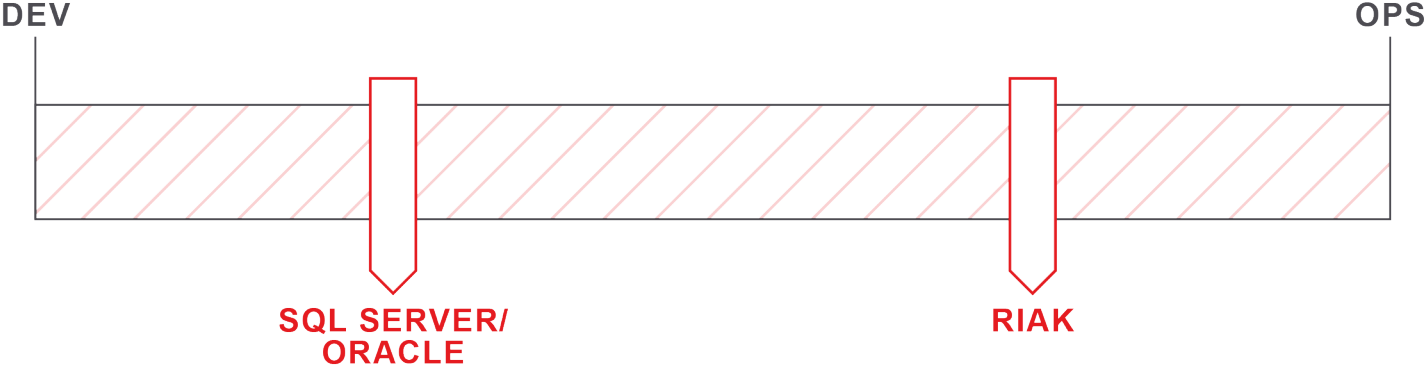
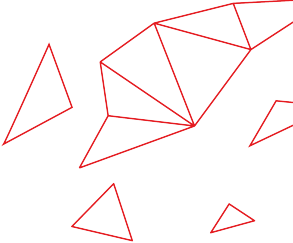
```
SELECT
    db_id
FROM
    hospital_episodes
WHERE
    organisation = 'LEEDSTH'
AND
    activity_date BETWEEN '01/03/2016' AND '31/03/2016'
AND
    valid_from < '20/04/2016'
AND
    valid_to ≥ '20/04/2016'
```

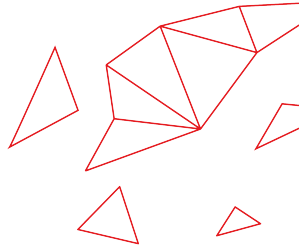
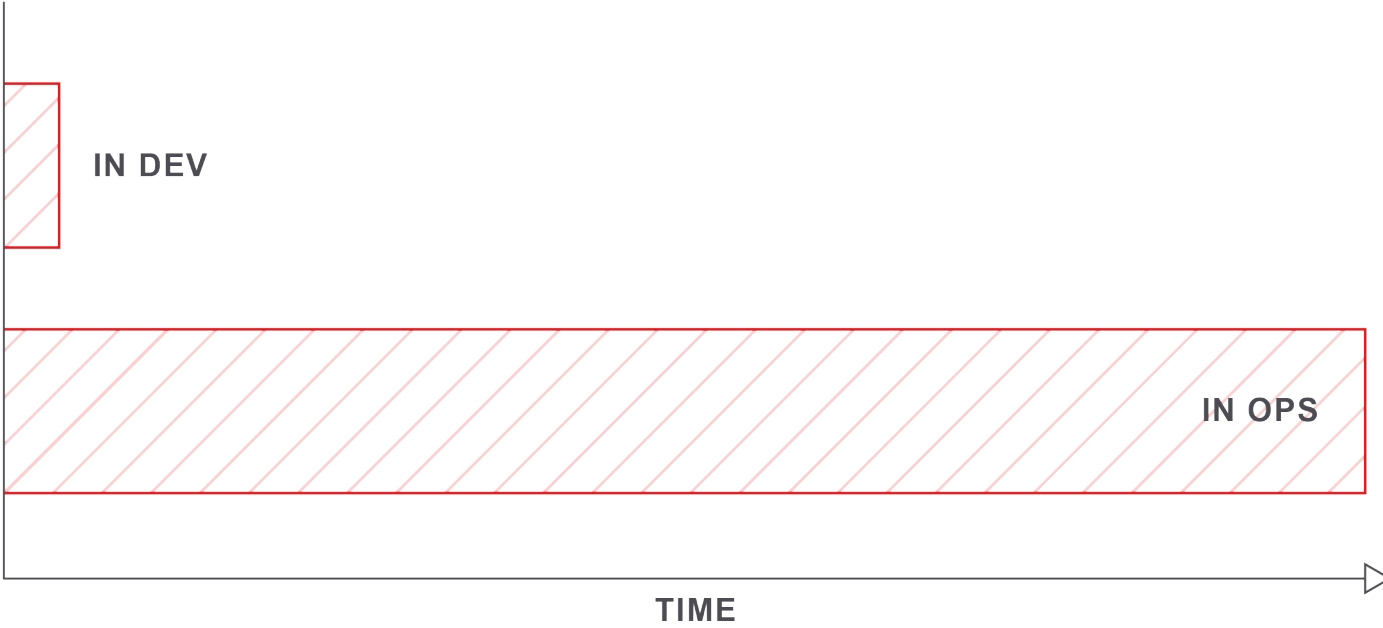
"http://riak/org\_index/LEEDSTH:2016-03-01/LEEDSTH:2016-03-31?return\_terms=true"

```
var results = [{  
  "db_id": 456,  
  "term": "LEEDSTH:2016-03-01:2016-04-01_1020:9000-01-01"  
}, {  
  "db_id": 123,  
  "term": "LEEDSTH:2016-03-01:2016-03-10_0920:2016-04-01_1020"  
}];
```

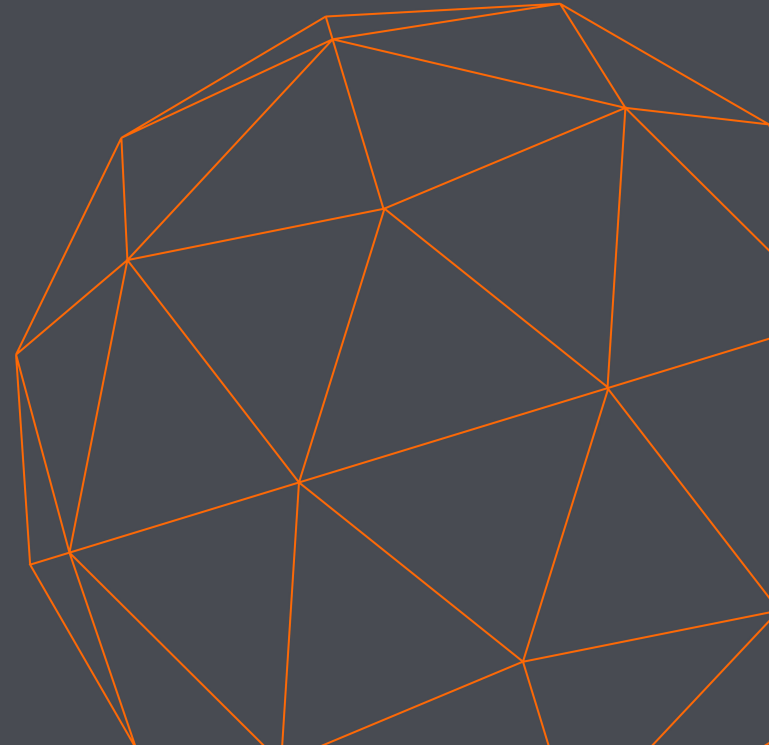
ACTIVITY DATE                      VALID FROM                      VALID TO

# “EASIER FOR”

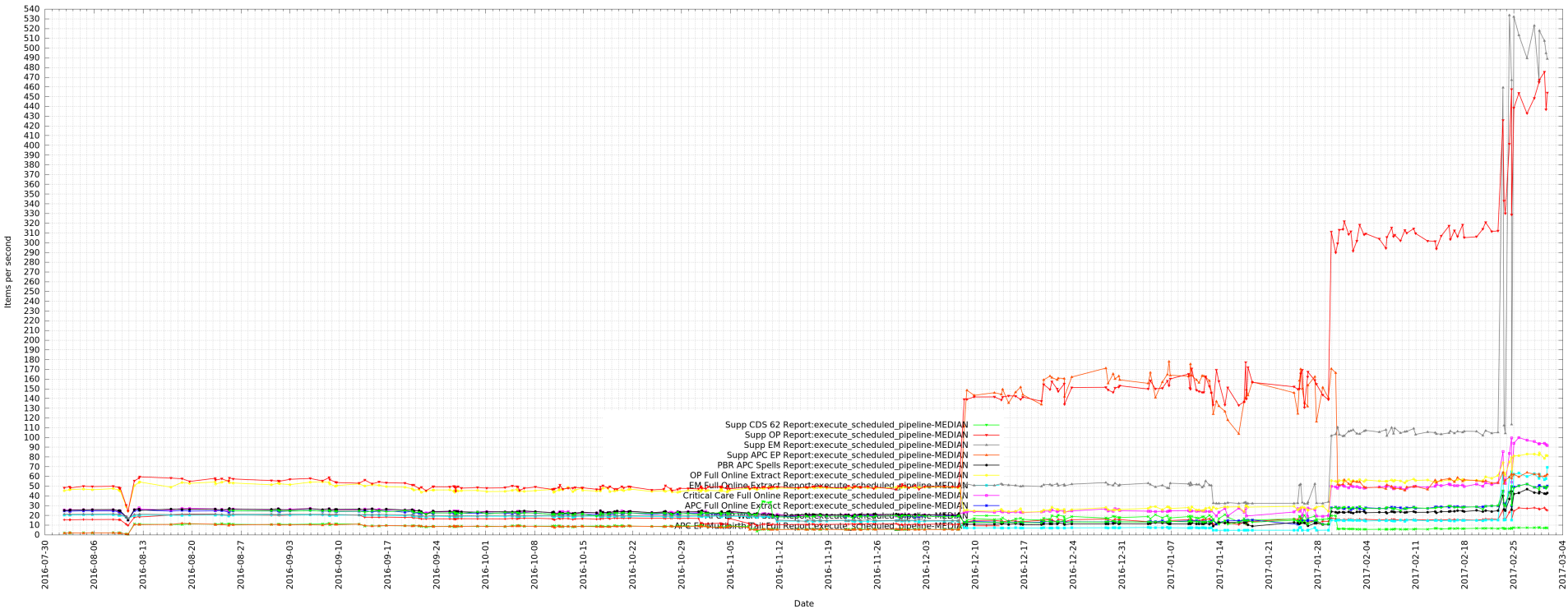




# 06 VOLUME & PERFORMANCE

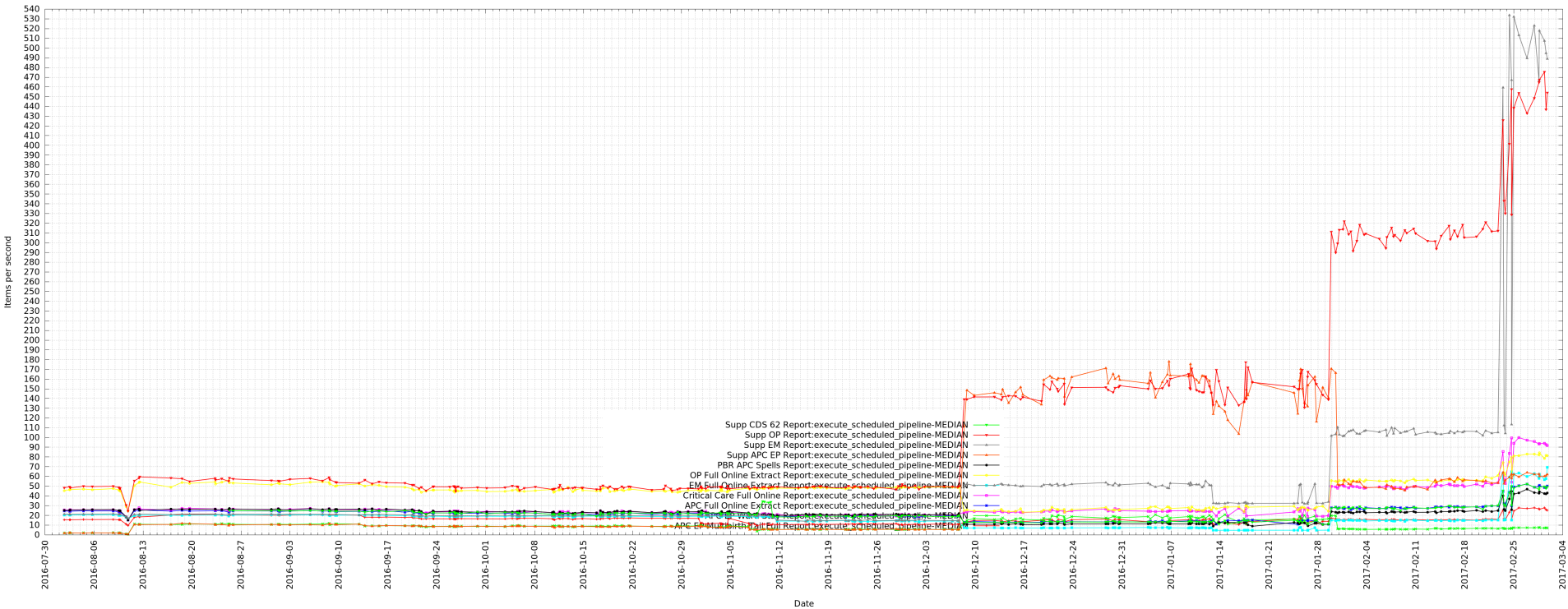












**CSASSCSV**

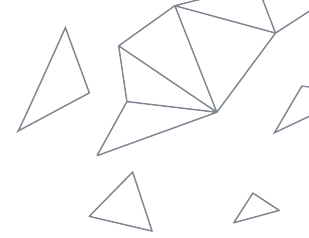
J, O, Z, X, Y, Q, K,





**GET** /nhs/it/perceptions  
**if-modified-since: 2017-03-05**





- ▶ **Redundancy from the start**
- ▶ **Treat bare metal like cloud**
- ▶ **Simple may work, defer complexity**
- ▶ **Short term pain, long term gain**
- ▶ **Automate performance tests**



The text 'ANY QUESTIONS?' is centered in a large, bold, dark grey font. It is surrounded by several thin, grey, geometric shapes, primarily triangles and polygons, some of which are partially overlapping the text, creating a dynamic and abstract background.

**ANY QUESTIONS?**

▷ **DAN RATHBONE**

TECHNICAL DIRECTOR  
INFINITY WORKS

@THETRILEMMA

INFINITYWORKS.COM

I \ N F I \ N I T Y W O R K S

▷ **ED HILEY**

PRINCIPAL SYSTEMS  
ENGINEER  
NHS DIGITAL

@EDHILEY

DIGITAL.NHS.UK



**Digital**