

# Calculating the Operations cost of software you haven't Developed

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# easyJet



Passengers

> 76 million



Employees

> 10 thousand



# John Eric Davis



Technology

Trainer, Developer, Consultant  
Architect, CTO



Business

Investment Banking, Energy  
Government, Startups

# how much will it cost?



Operations



Substantial



# what hardware do we need to buy?



Cloud



On-Prem

# budget structure



“The Budget”

Yearly



“Success”

Spend Or Lose

# problems



Duration

Unrealistic



Approach

Wild guesses  
Over provision  
Under provision

# improvements



Project Stage

Experiment vs Exploit



Success

Customer and Operational  
Outcomes



# microservices



Deployment



Domain Driven Design



# microservices



Correlation

Relationship between  
performance and cost

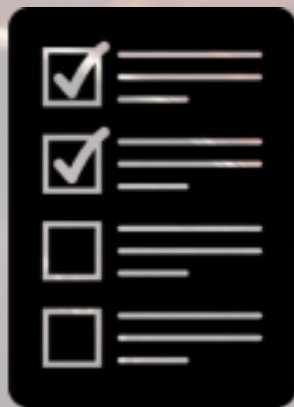


Forecast

Future from Existing



# performance



Non Functional Requirements

Resilience  
Security  
Performance

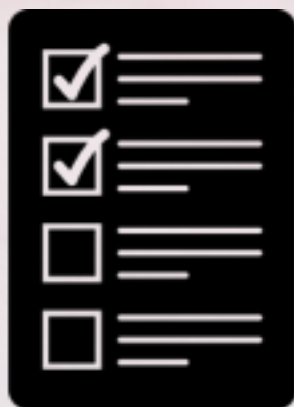


Performance Requirement

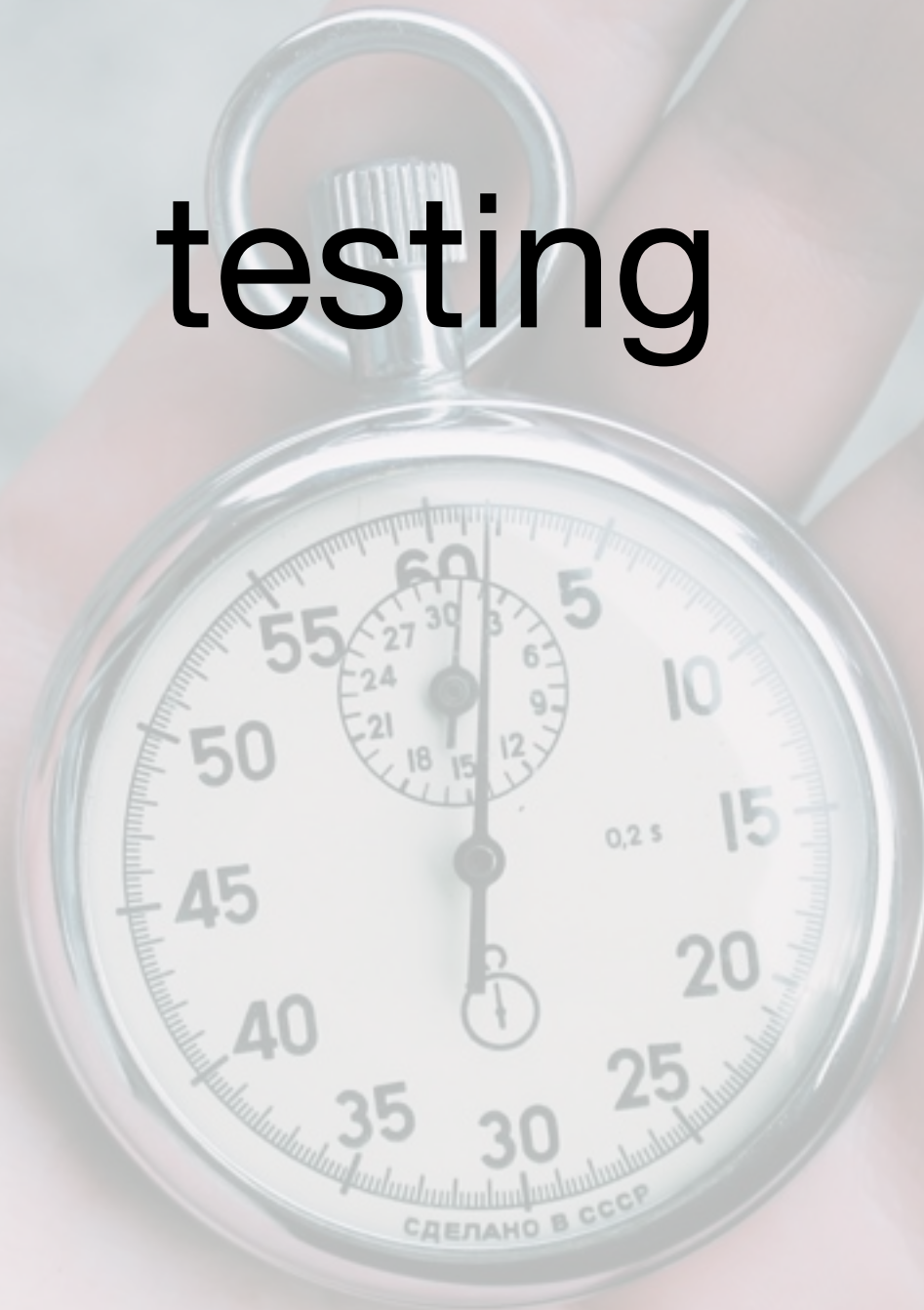
Transactions Per Second  
Response Time (milliseconds)  
95th Percentile



# testing



Tests



Automated



# requirement

**TPS  
(Peak)**

400

**Response Time  
(95th percentile)**

< 100 milliseconds



# results

TPS	Response Time	Resource	Platform
400	45	extra large VM	IaaS
400	73	large VM	IaaS
400	> 5000	medium VM	IaaS
400	> 5000	small VM	IaaS



# forecast



## Constrain resources

restrict CPU/RAM etc  
e.g. different VM sizes

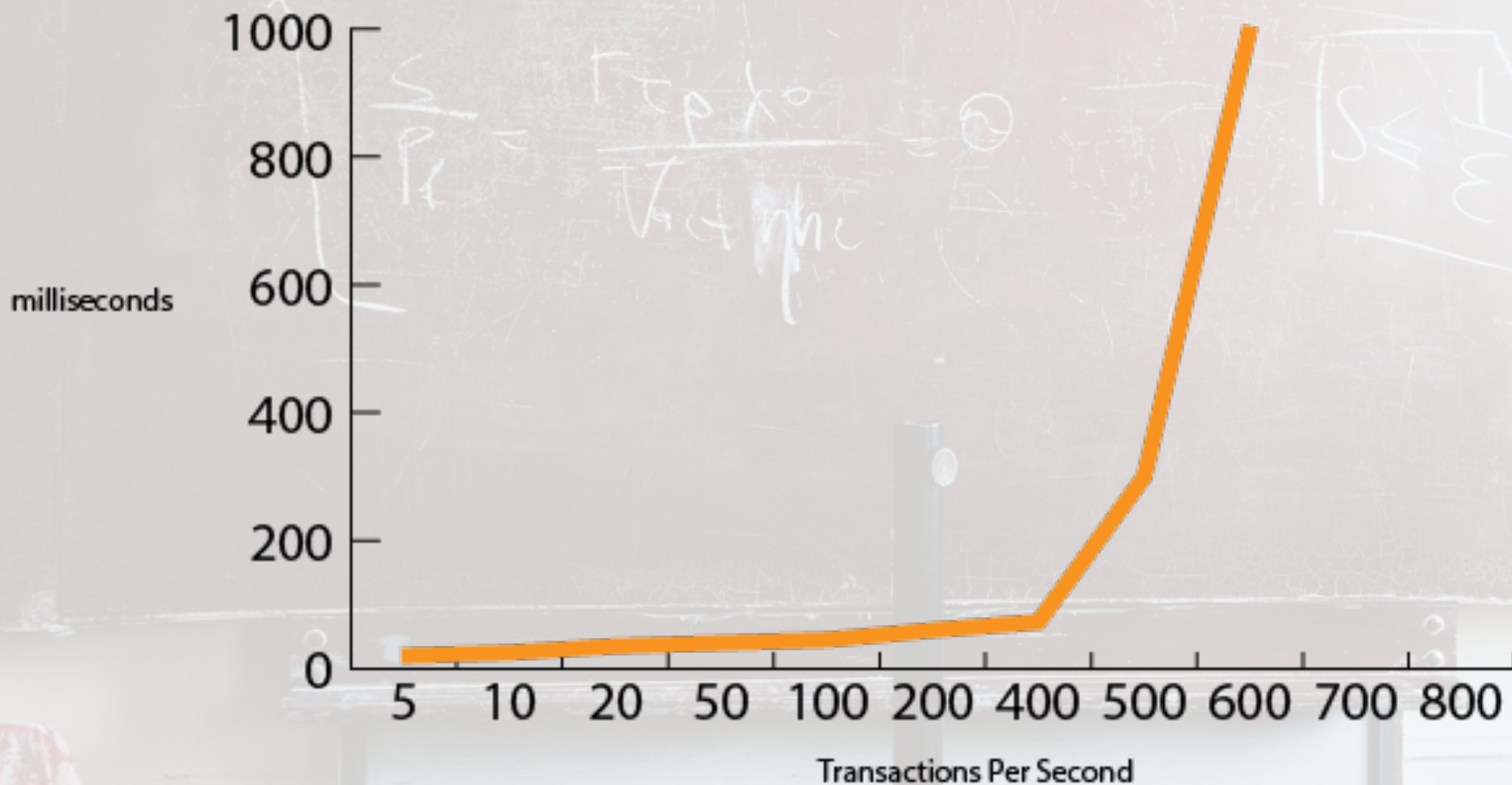


## Alternate Load

Test service using several TPS  
e.g 800, 400, 200, 100, 50, 20



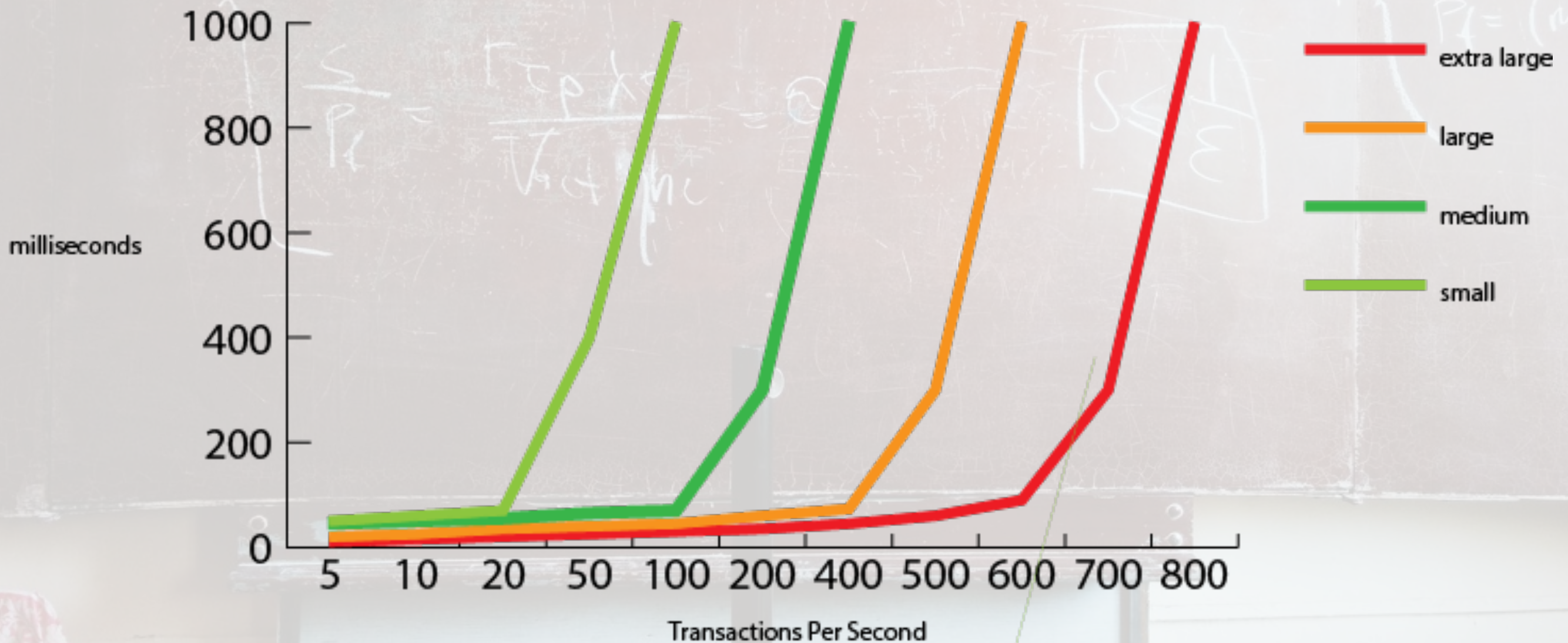
# alternate loads



large



# alternate resources





# Recommendation Service



Requirements

2000 searches per second

5% of customers

Fast Response Time



NFR

TPS : 100

Response Time : < 150 ms



**TPS: 100**

**Response Time : < 150**

microservice	TPS	Response Time	Resource	CPU	Memory	Platform
Product Service	100	133	1 x medium	95%	30%	IaaS
Customer Service	100	98	1 x medium	70%	50%	IaaS
Inventory Service	100	126	1 x medium	82%	42%	IaaS



# efficient allocation



Cloud



On-Prem



# costs



Cloud



On-Prem



# impact



Before



After



# summary



Key Pillars

Teams  
Requirements  
Architecture



Reality

Culture  
Empirical Data



# thank you



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