

Server or Serverless?

Dr. Liam Betsworth
Head of User Experience
AMPLYFI

- 
- ▶ Who are AMPLYFI?
 - ▶ Serverless Experiments
 - ▶ The good
 - ▶ The bad
 - ▶ The ugly
 - ▶ Server or Serverless?

► Who are AMPLYFI?

130,000,000,000,000

► Who are AMPLYFI?

130,000,000,000,000
webpages in 2016

► Who are AMPLYFI?



~520,000,000,000
books

► Who are AMPLYFI?

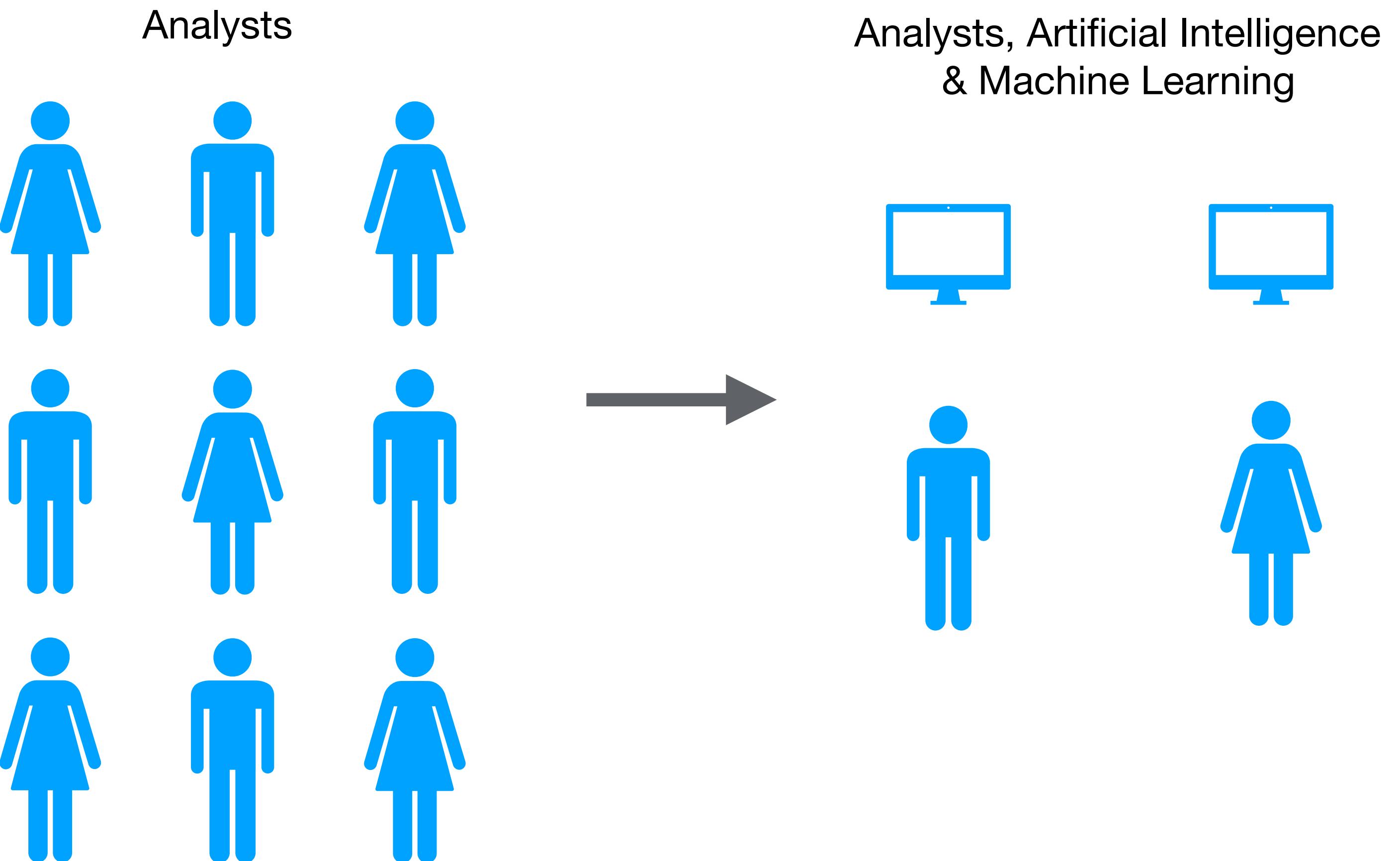
26,645
books read in a lifetime

► Who are AMPLYFi?

There's a lot of
information
out there.

► Who are AMPLYFI?

We are reshaping business intelligence and research.



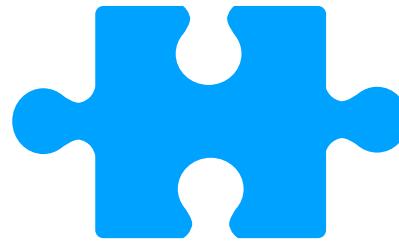
► Who are AMPLYFI?

We take big data and turn it into
actionable insights

Who?



What?



When?



Where?



Trends

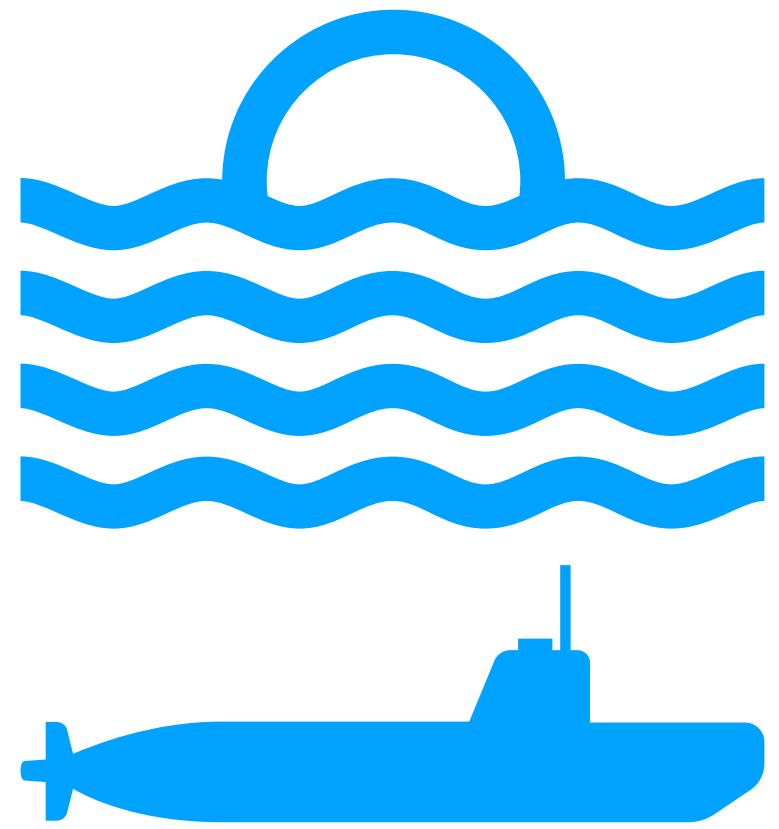


► Who are AMPLYFI?

Surface
Web



Deep
Web



Dark
Web

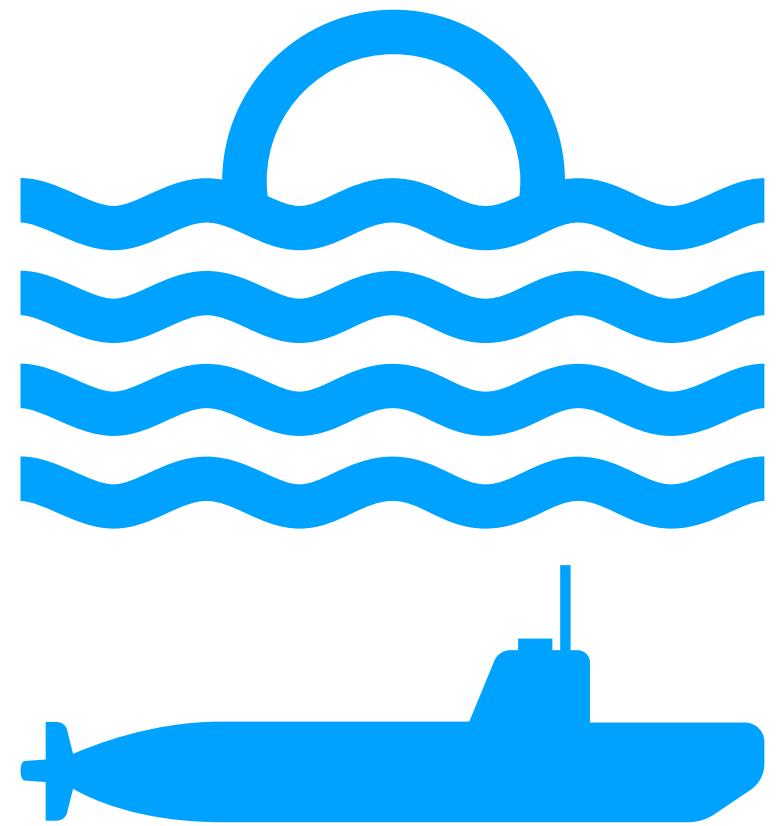


► Who are AMPLYFI?

Surface
Web



Deep
Web



Dark
Web



- ▶ Who are AMPLYFI?
- ▶ Where do I fit in?

Where do I fit in?

- ▶ Who are AMPLYFI?
- ▶ Where do I fit in?

- ▶ PhD in Human-Computer Interaction,
background in Computer Science
- ▶ Head hunted by AMPLYFI to transform and
present complex data in an intuitive way
- ▶ Lots of past experience with servers and IOT
- ▶ Over the last year I've been getting to grips
with Serverless. It's new and exciting!
- ▶ Currently working on rearchitecting our APIs

- ▶ Who are AMPLYFI?
- ▶ Where do I fit in?
- ▶ Serverless

Why we use Serverless

- ▶ Deployment
- ▶ Maintainability
- ▶ Scalability
- ▶ Cost
- ▶ Support & Community

- ▶ Who are AMPLYFI?
- ▶ Where do I fit in?
- ▶ Serverless

Our use cases

- ▶ Data processing
- ▶ APIs (backend and user-facing frontend)
- ▶ DB (Aurora Serverless)

- ▶ Who are AMPLYFI?
- ▶ Where do I fit in?
- ▶ Serverless
- ▶ The Good

Serverless

The Good

- ▶ Who are AMPLYFI?
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- ▶ Serverless
- ▶ The Good

The Good

Data Processing

- ▶ Event-based computing
 - ▶ Lambdas with SQS and S3 triggers
- ▶ Scalability - speed, ease & cost
- ▶ Concurrency

- ▶ Who are AMPLYFI?
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 - ▶ The Good
 - ▶ The Bad

Serverless

The Bad

- ▶ Who are AMPLYFI?
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The Bad

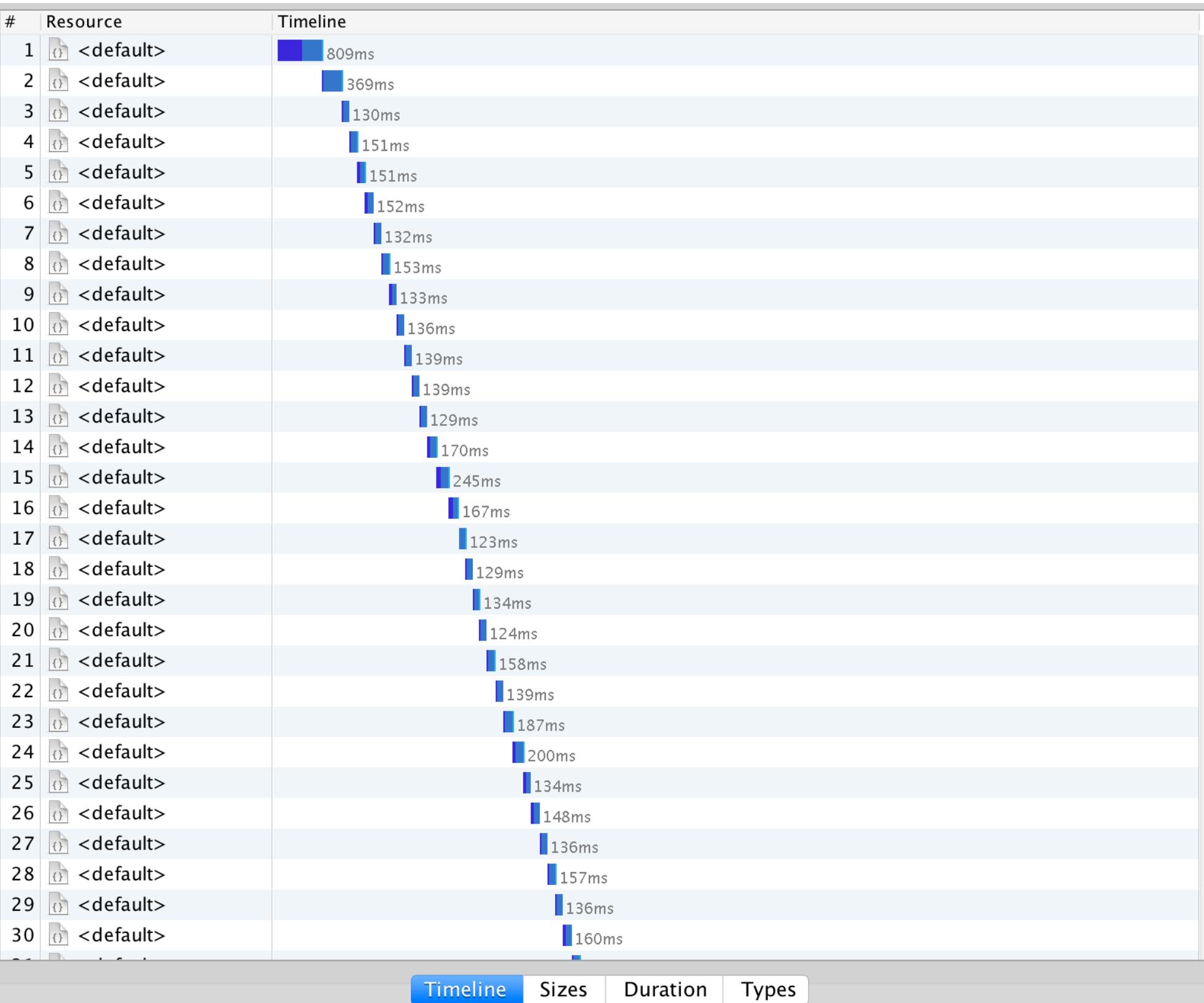
Language Support

- ▶ We used 3 different languages in a single API
(C#, Python, Javascript)
- ▶ Difficult to maintain
- ▶ Forced to agree on a single language

- ▶ Who are AMPLYFI?
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 - ▶ The Good
 - ▶ The Bad

The Bad

API Gateway cold starts

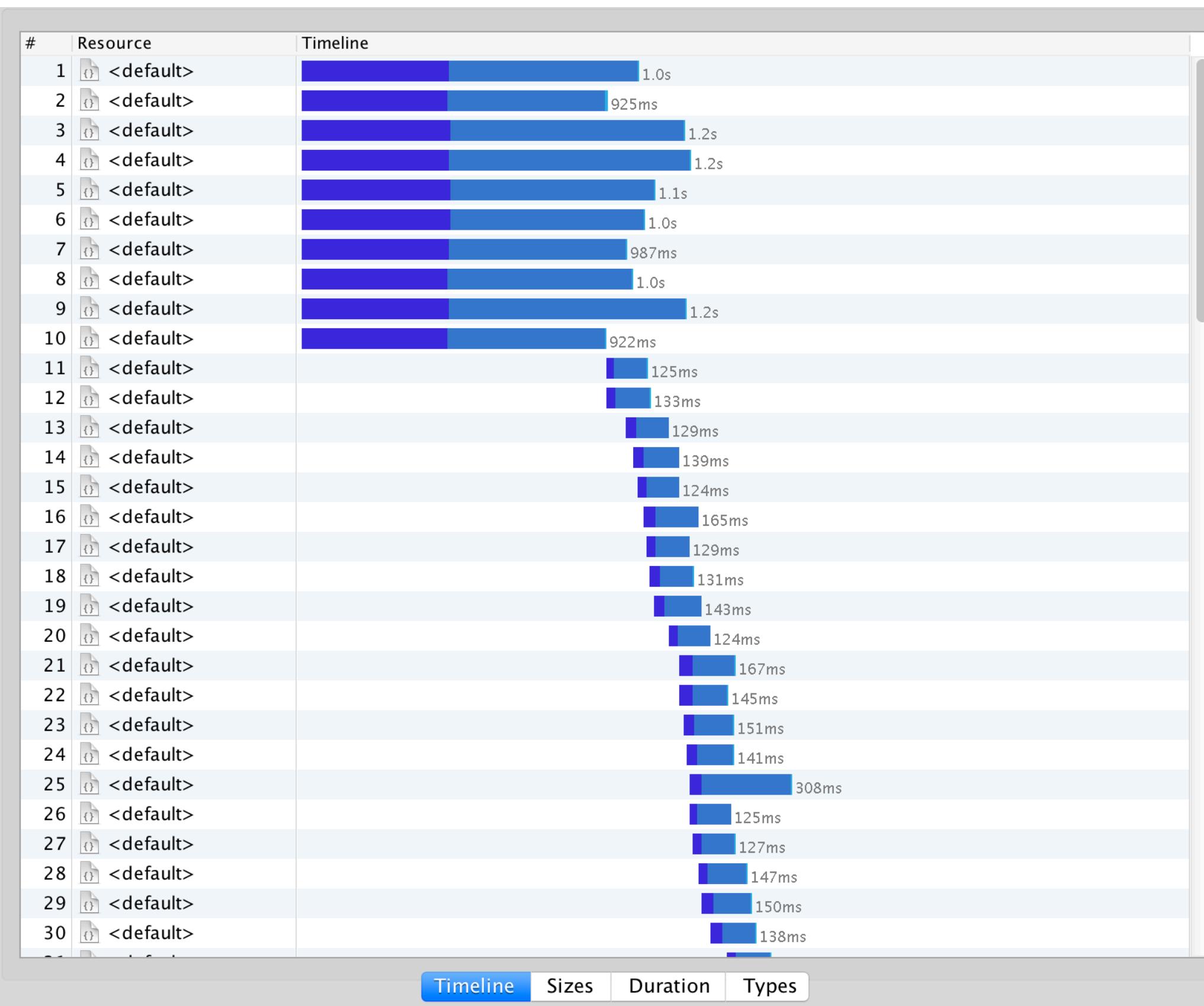


1 request at
a time

- ▶ Who are AMPLYFI?
- ▶ Where do I fit in?
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- ▶ The Good
- ▶ The Bad

The Bad

API Gateway cold starts

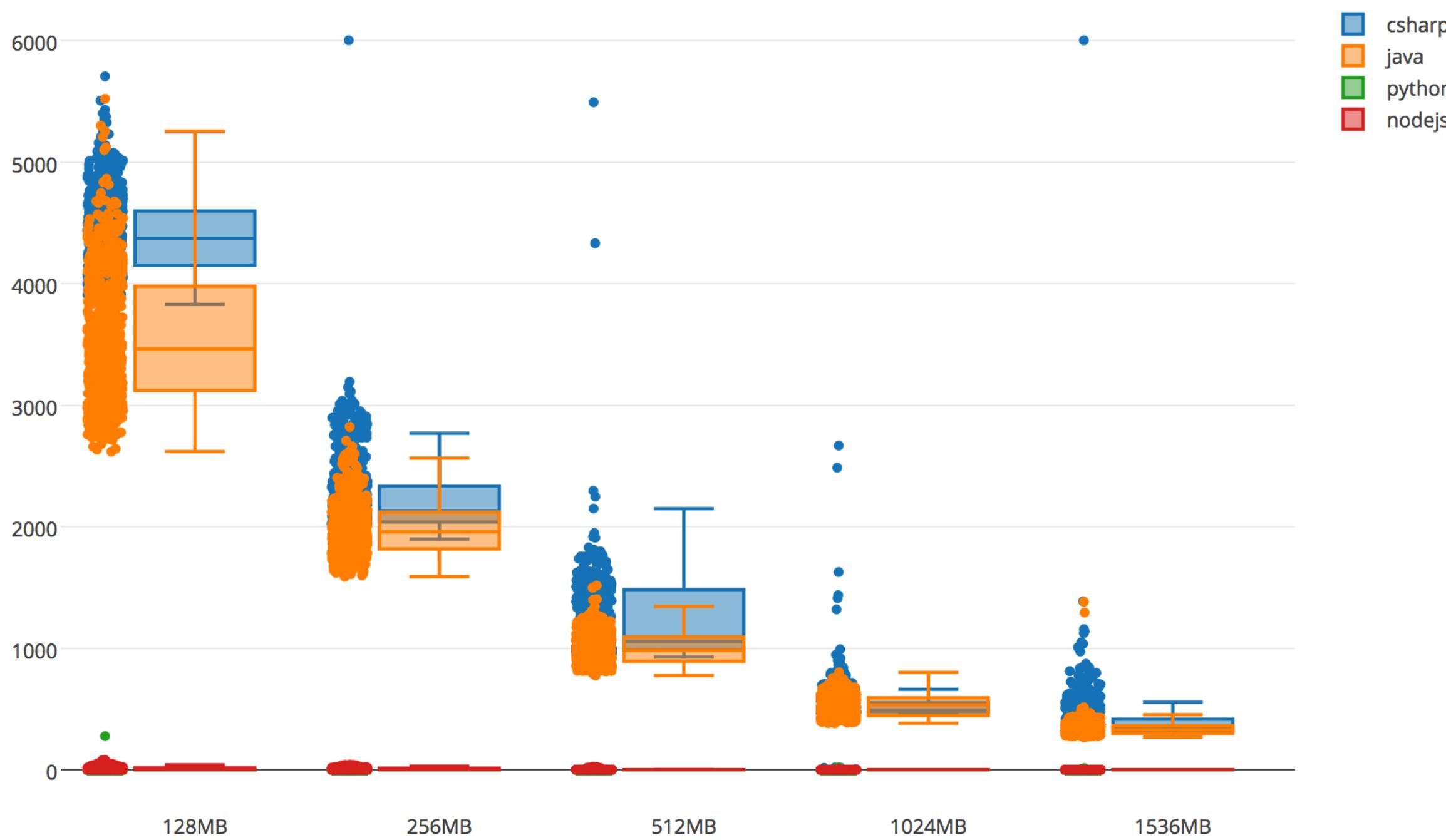


10 concurrent
requests

- ▶ Who are AMPLYFI?
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The Bad

API Gateway cold starts

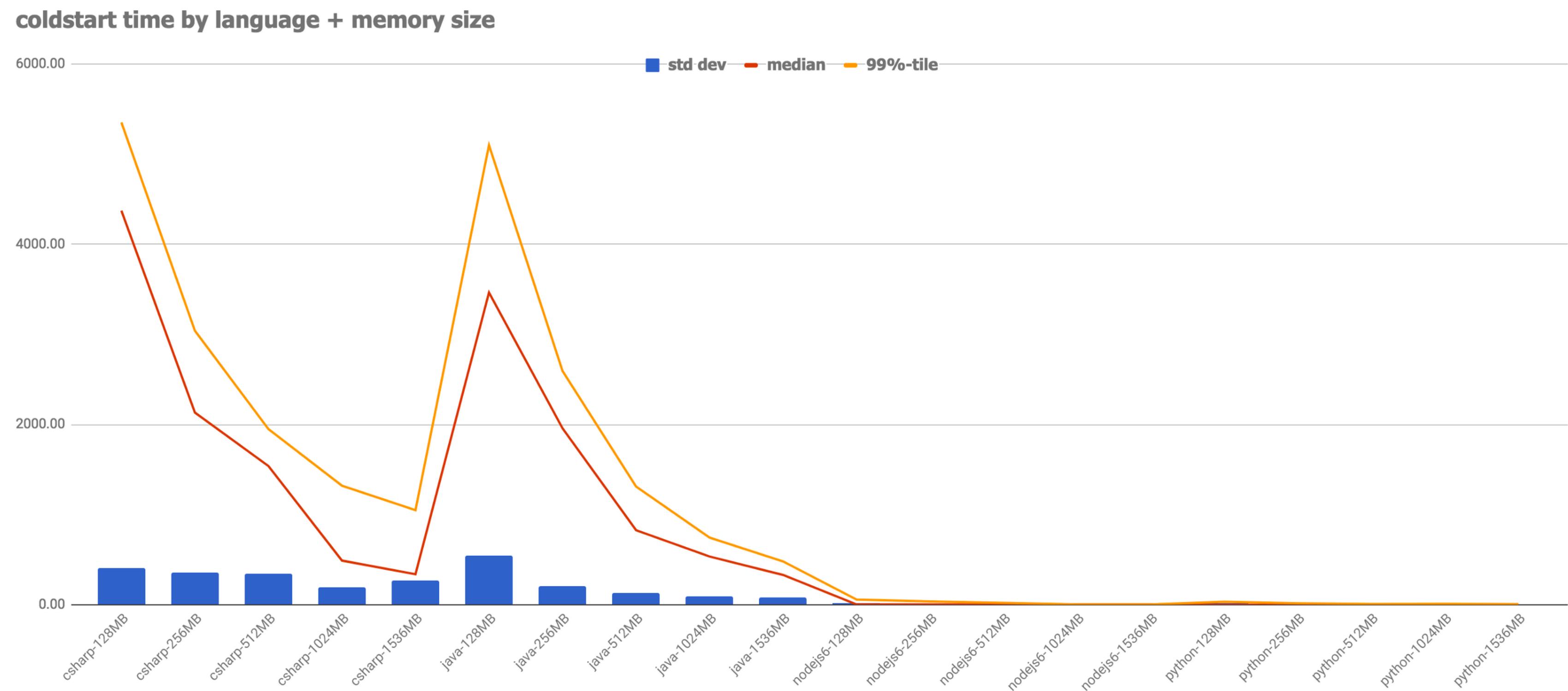


Language
choice

- ▶ Who are AMPLYFI?
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- ▶ The Good
- ▶ The Bad

The Bad

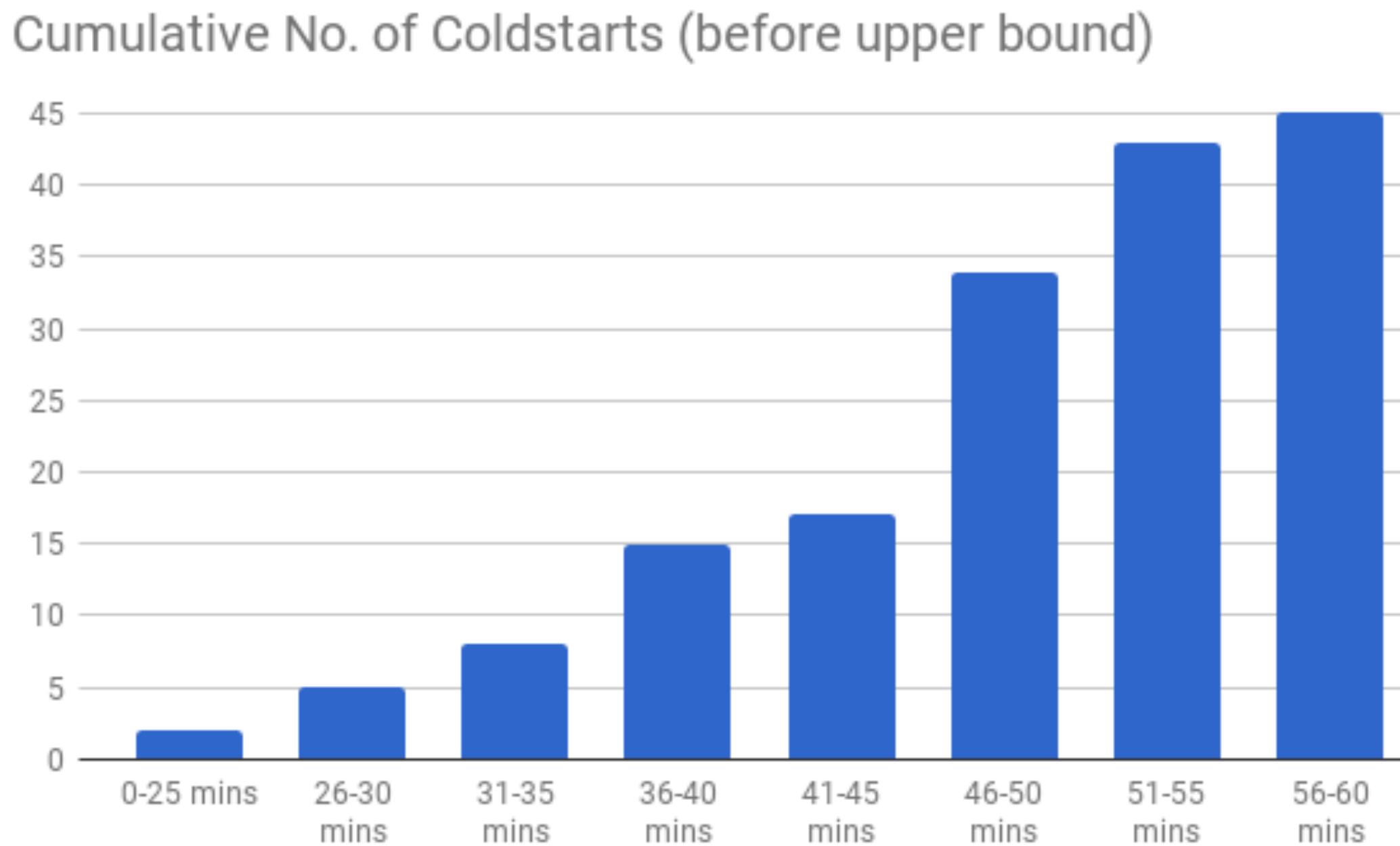
API Gateway cold starts



- ▶ Who are AMPLYFI?
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The Bad

API Gateway cold starts



Keeping the
endpoints
warm

- ▶ Who are AMPLYFI?
- ▶ Where do I fit in?
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 - ▶ The Good
 - ▶ The Bad
 - ▶ The Ugly

Serverless

The Ugly

- ▶ Who are AMPLYFi?
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 - ▶ The Ugly

The Ugly

- ▶ VPC cold starts with statically typed language and sparse, rarely used endpoints
 - ▶ ENI creation (~10 seconds)
 - ▶ C# Lambda invocation (~6 seconds)
 - ▶ Often ~16 seconds for a response!
 - ▶ x70 endpoints

- ▶ Who are AMPLYFI?
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 - ▶ The Ugly
- ▶ Lessons

What have we learnt?

- ▶ Avoid Serverless for responsive user facing APIs
- ▶ Avoid statically typed languages for user facing APIs (java, c#)
- ▶ DON'T use a VPC
- ▶ And if you ignore everything I've just said, please at least use a CDN to cache responses

Server or Serverless?

Server and Serverless

- ▶ Who are AMPLYFI?
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 - ▶ The Ugly
 - ▶ Lessons
- ▶ The Future

What does the future hold?

- ▶ We're refactoring our APIs to work with Serverless and Server
 - ▶ Language: Typescript
 - ▶ Frameworks: Express and AWS Serverless Express
 - ▶ Make the best choice of platform for the API
 - ▶ Write the code once, deploy to both Serverless and Elastic Beanstalk!

Thank you!

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