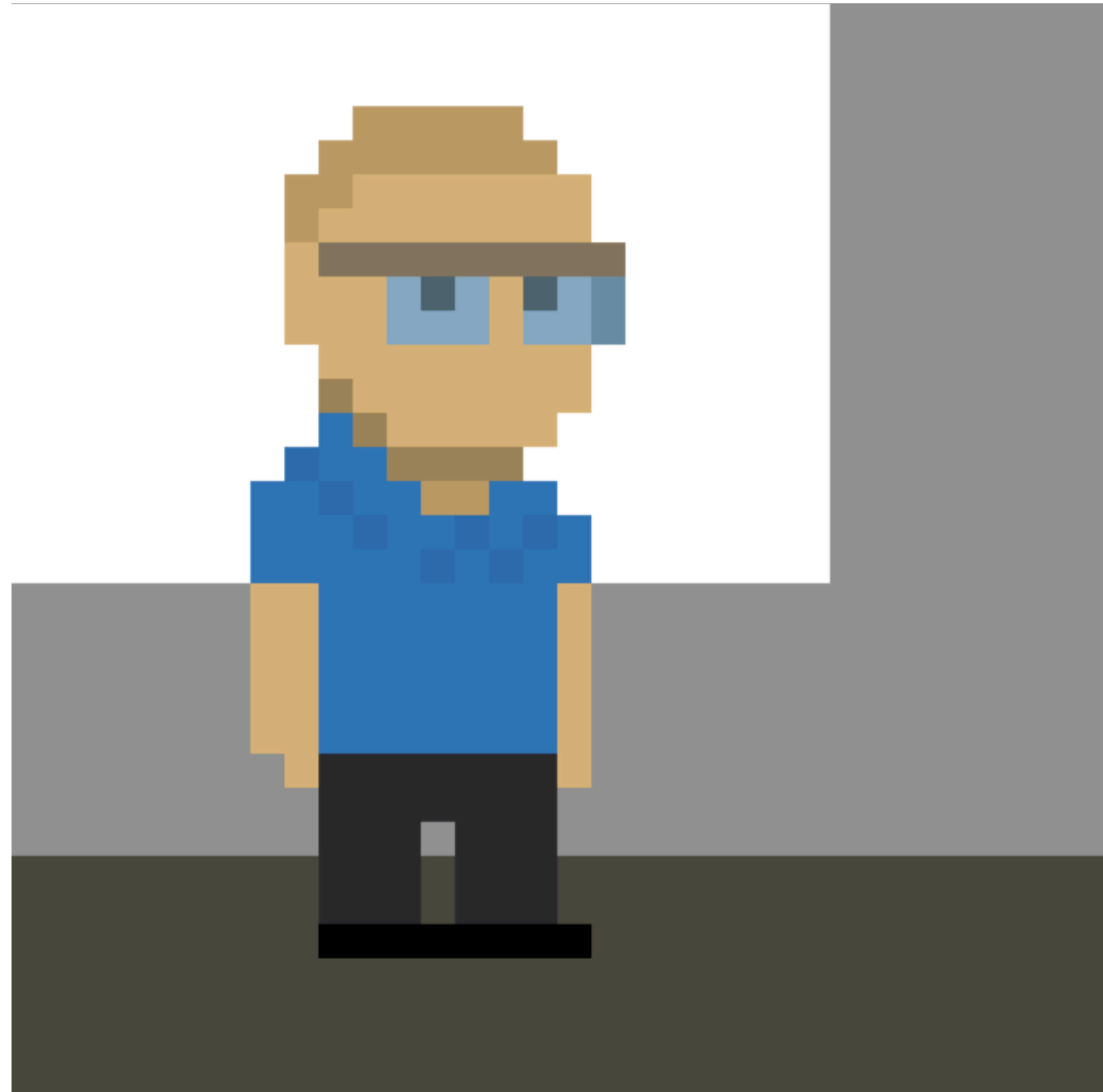


TESTING IN PRODUCTION

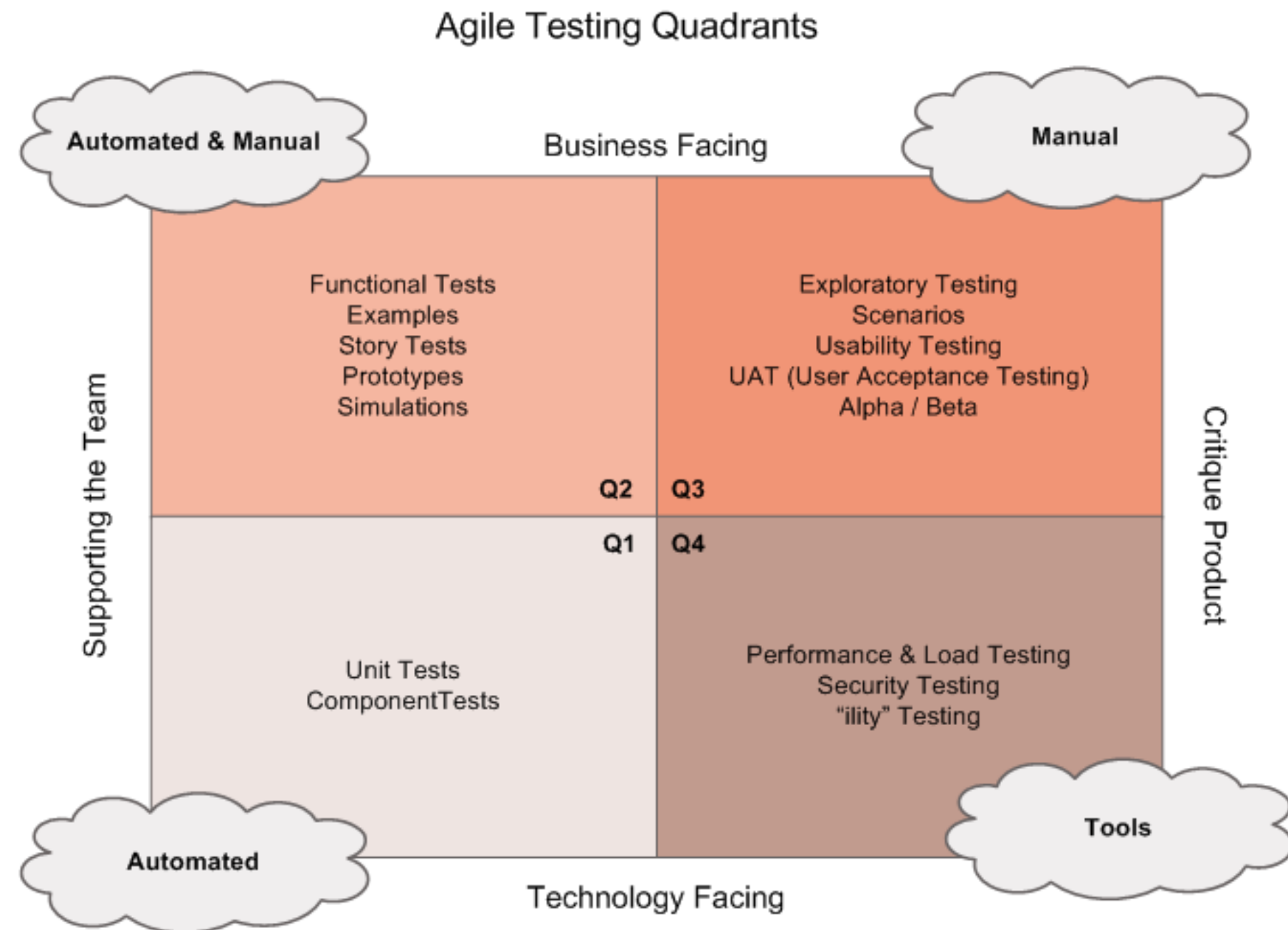
Gojko Adzic

gojko.net | @gojkoadzic

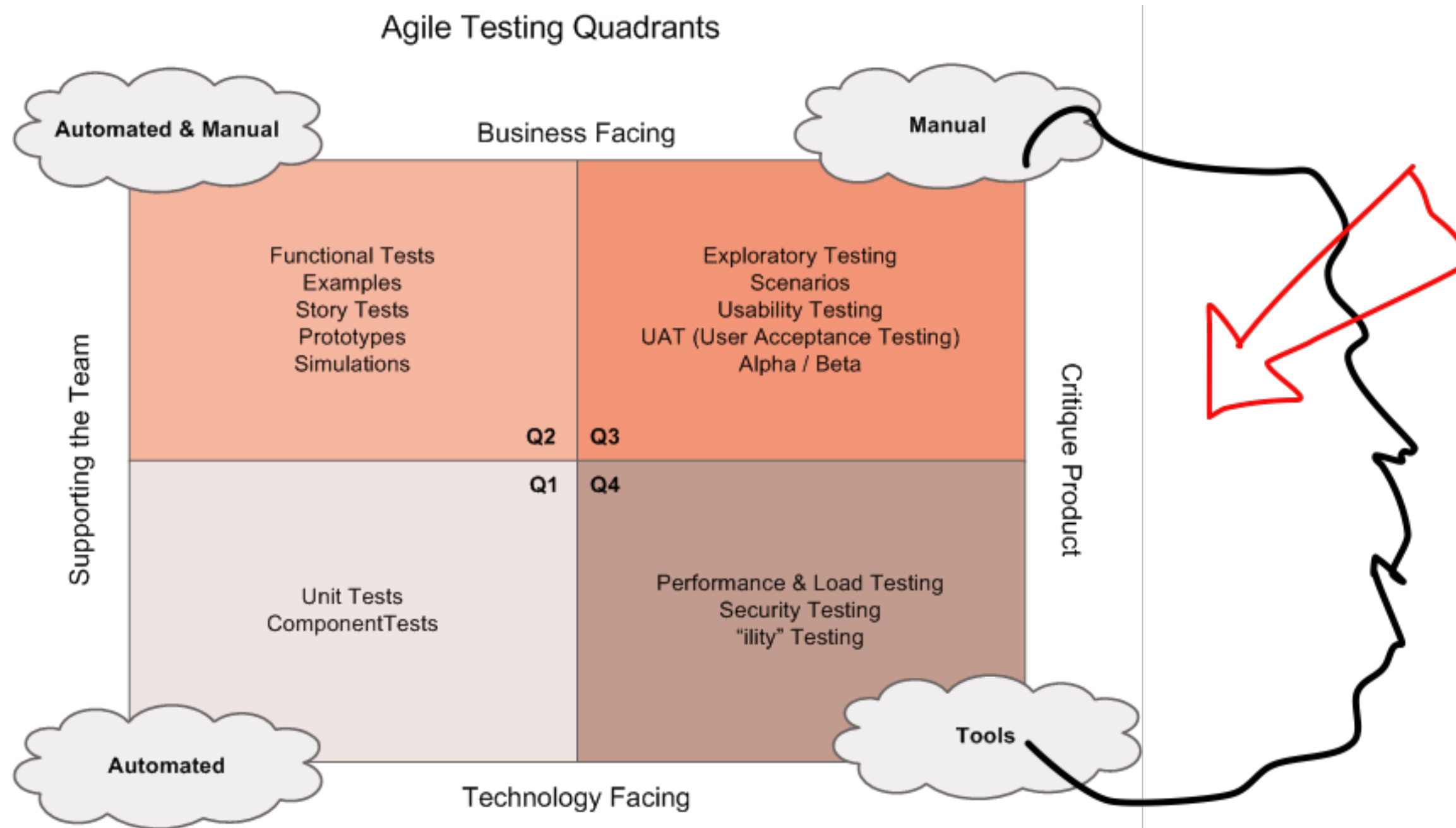
Agile Tour Vienna 2021



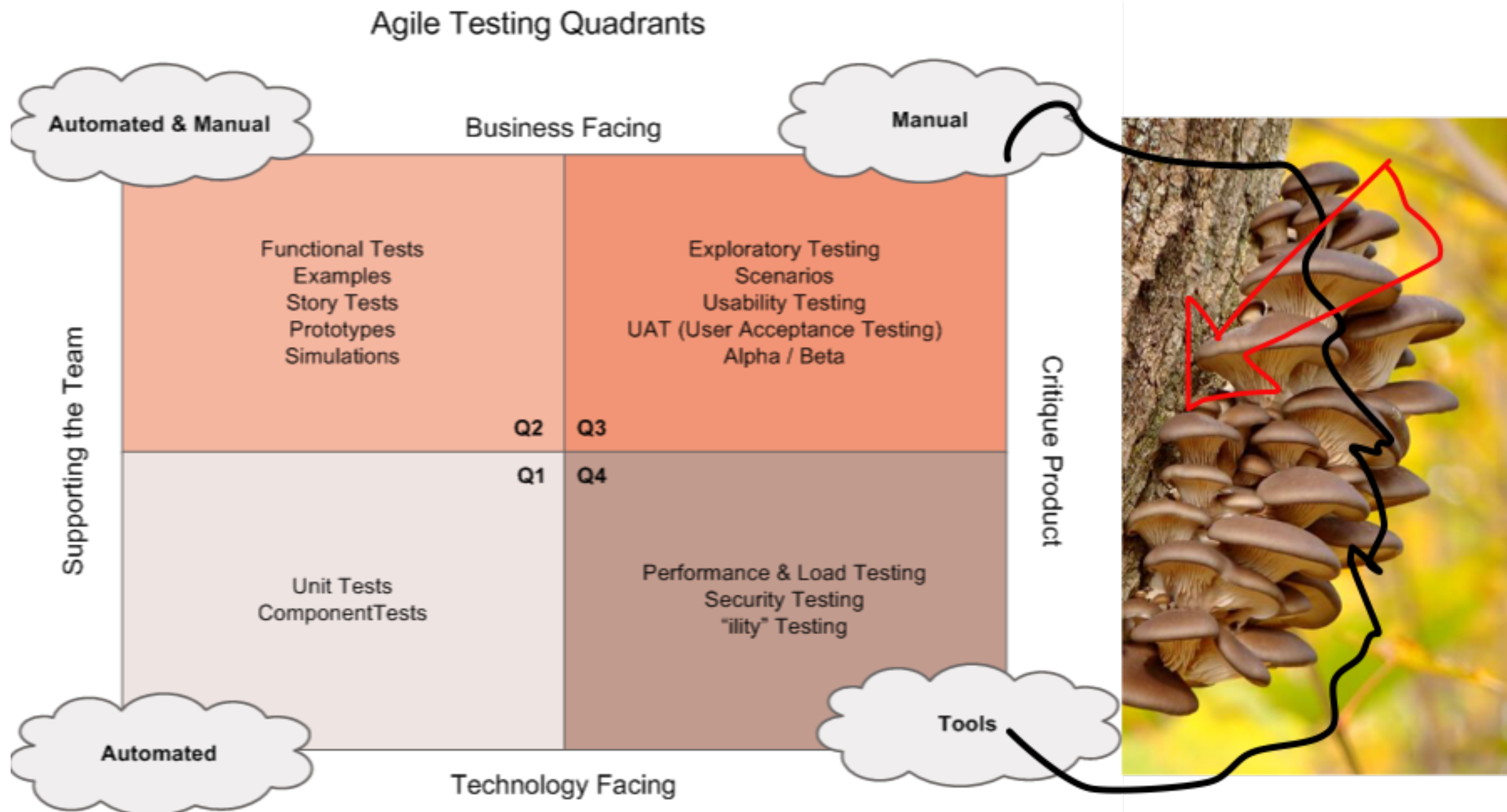
TESTING QUADRANTS, 2010 VERSION



TESTING QUADRANTS, 2021 VERSION!



TESTING QUADRANTS, 2021 VERSION!



A grayscale background image showing a hand holding a smartphone. The hand is positioned in the lower right, with the thumb and index finger visible. The phone is held horizontally. The text is overlaid on the left side of the image, partially obscuring the hand and phone.

**MAJOR RISKS HAPPEN
AFTER DEPLOYMENT
...AND CAN ONLY BE TESTED
IN PRODUCTION**

**THE MOST DANGEROUS
MUSHROOMS BUGS
ARE...**





PHOTO BY WIKIIMAGES FROM PIXABAY



Tweet



Brian Ragazzi

@brianragazzi



Anyone else unable to turn on their Christmas lights because of the AWS outage?

8:32 PM · Nov 25, 2020 · [Twitter Web App](#)

2 Retweets

4 Quote Tweets

12 Likes





Tweet



Stuart Thomas

@stuartthomas



Mmm. Can't turn some of my lights on at home cos [@IFTTT](#) is down. Welcome to the future!

[@internetofshit](#)

There was a problem with your
request. Please try again.



7:14 PM · Feb 28, 2017 · Tweetbot for iOS



Tweet



SJP (๖_๖)

@SJP1804



My fucking doorbell doesn't work because AWS us-east-1 is having issues 🙄

5:58 PM · Nov 25, 2020 · Twitter Web App



286 Retweets **208** Quote Tweets **3,269** Likes





**~~MUSHROOMS BUGS~~
CONNECT TO OTHER
~~MUSHROOMS BUGS~~
UNDERGROUND...**

Select log group(s)



5m

30m

1h

3h

12h

Custom (1w)



/ecs/nkprod-composer X

Clear

```
1 fields @timestamp, `voice.provider`, `voice.name`, `error.details`, @logstream
2 | filter ispresent(ttsError)
3 | sort @timestamp desc
4 | limit 100
```

Run query

Save

History

Queries are allowed to run for up to 15 minutes.

Logs

Visualization

Export results

Add to dashboard



Showing 3 of 3 records

1,139,538 records (147.7 MB) scanned in

Hide histogram

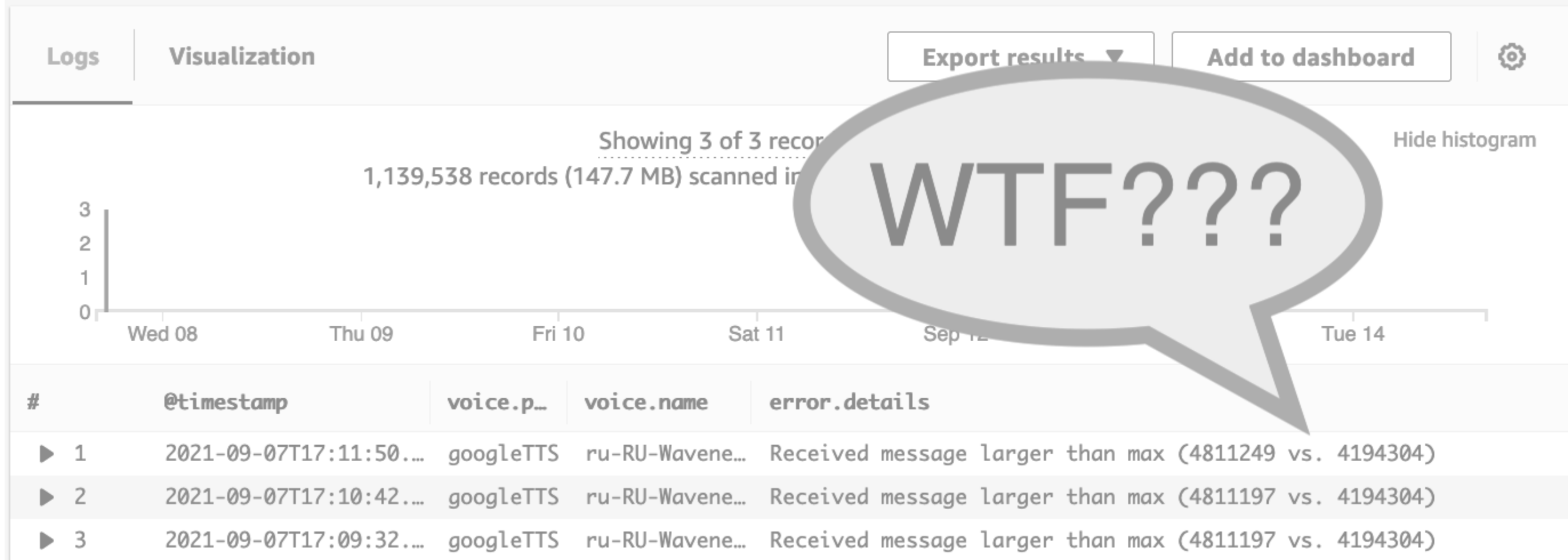


WTF???

#	@timestamp	voice.p...	voice.name	error.details
▶ 1	2021-09-07T17:11:50....	googleTTS	ru-RU-Wavene...	Received message larger than max (4811249 vs. 4194304)
▶ 2	2021-09-07T17:10:42....	googleTTS	ru-RU-Wavene...	Received message larger than max (4811197 vs. 4194304)
▶ 3	2021-09-07T17:09:32....	googleTTS	ru-RU-Wavene...	Received message larger than max (4811197 vs. 4194304)

**WE CAN'T PREDICT UNKNOWNNS, BUT WE CAN:
SPOT WHEN THEY HAPPEN AND
PREVENT FROM HAPPENING AGAIN**

CAN WE TELL IF THIS IS DIFFERENT FROM A RANDOM NETWORK GLITCH?



STRUCTURED LOGGING

```
{
  "_aws": {
    "Timestamp": 1574109732004,
    "CloudWatchMetrics": [
      {
        "Namespace": "lambda-function-metrics",
        "Dimensions": [["functionVersion"]],
        "Metrics": [
          {
            "Name": "time",
            "Unit": "Milliseconds"
          }
        ]
      }
    ]
  },
  "functionVersion": "$LATEST",
  "time": 100,
  "requestId": "989ffbf8-9ace-4817-a57c-e4dd734019ee"
}
```

AWS X-Ray

Getting started

Insights new

Service map

Traces

Analytics

Configurati

Sampling

Encryption

Groups

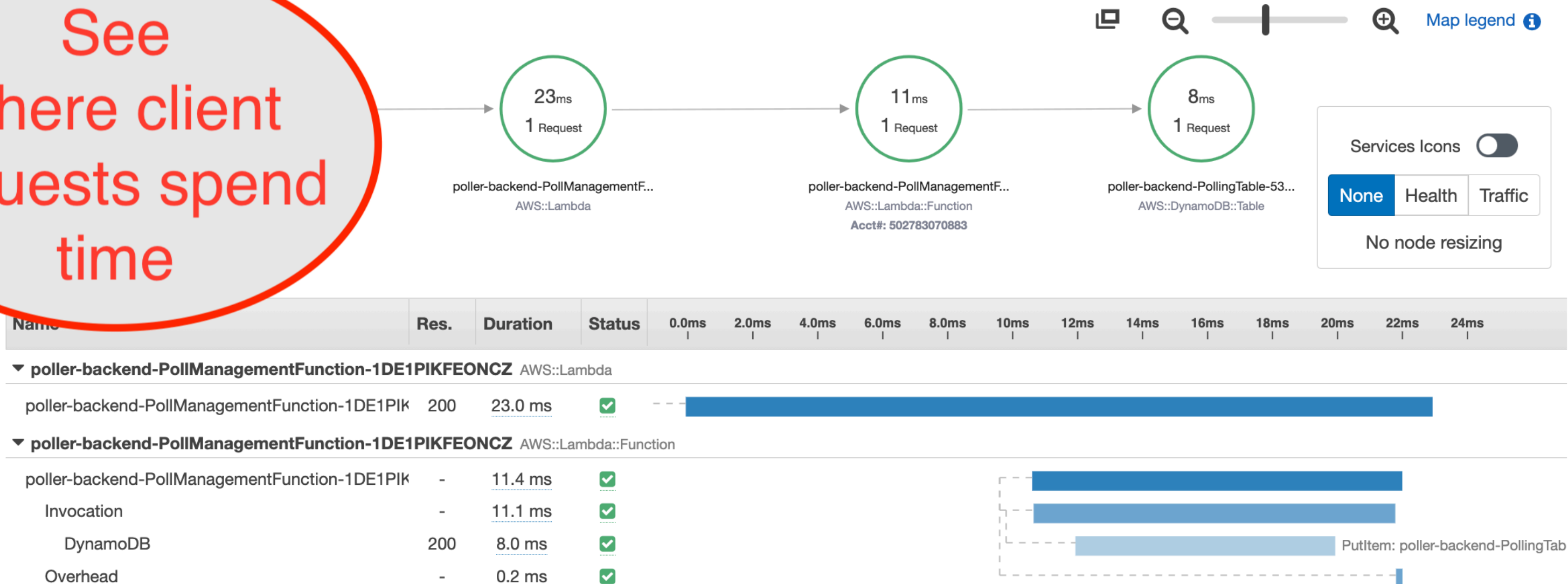
◀ Traces > Details

1-6060bcc9-28663d93793e2b292d7a0b29

Timeline

Raw data

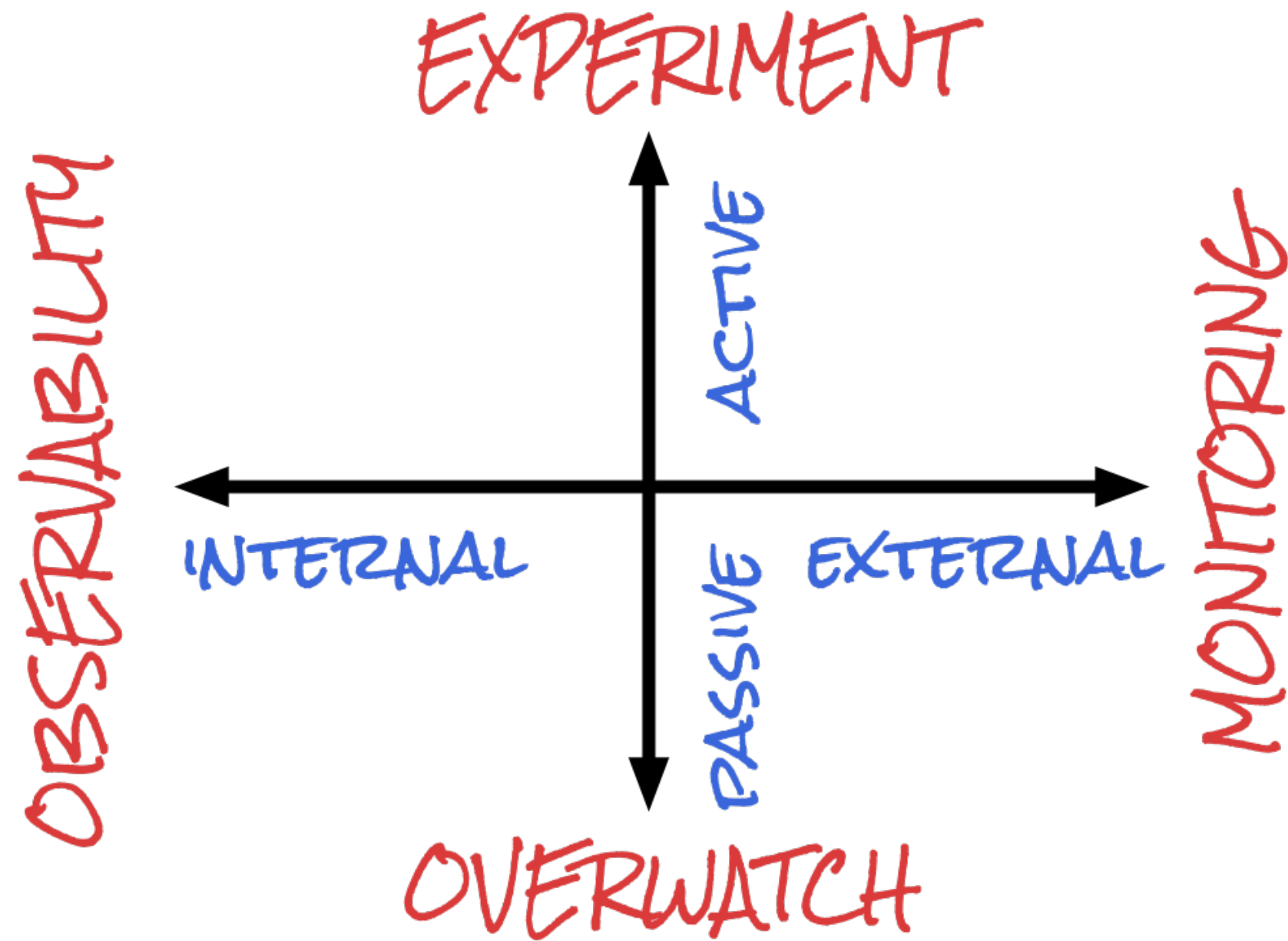
See
where client
requests spend
time





**IF A ~~TREE~~
MICROSERVICE FALLS IN
THE FOREST, MAKE SURE
THERE'S SOMEONE TO
HEAR IT**

TESTING IN PRODUCTION COMPASS





**OBSERVABILITY IS
KEY TO TESTING IN PRODUCTION
- BUT IT HAS TO BE
DESIGNED IN!**

MUSHROOMS BUGS
GROW IN CLUSTERS

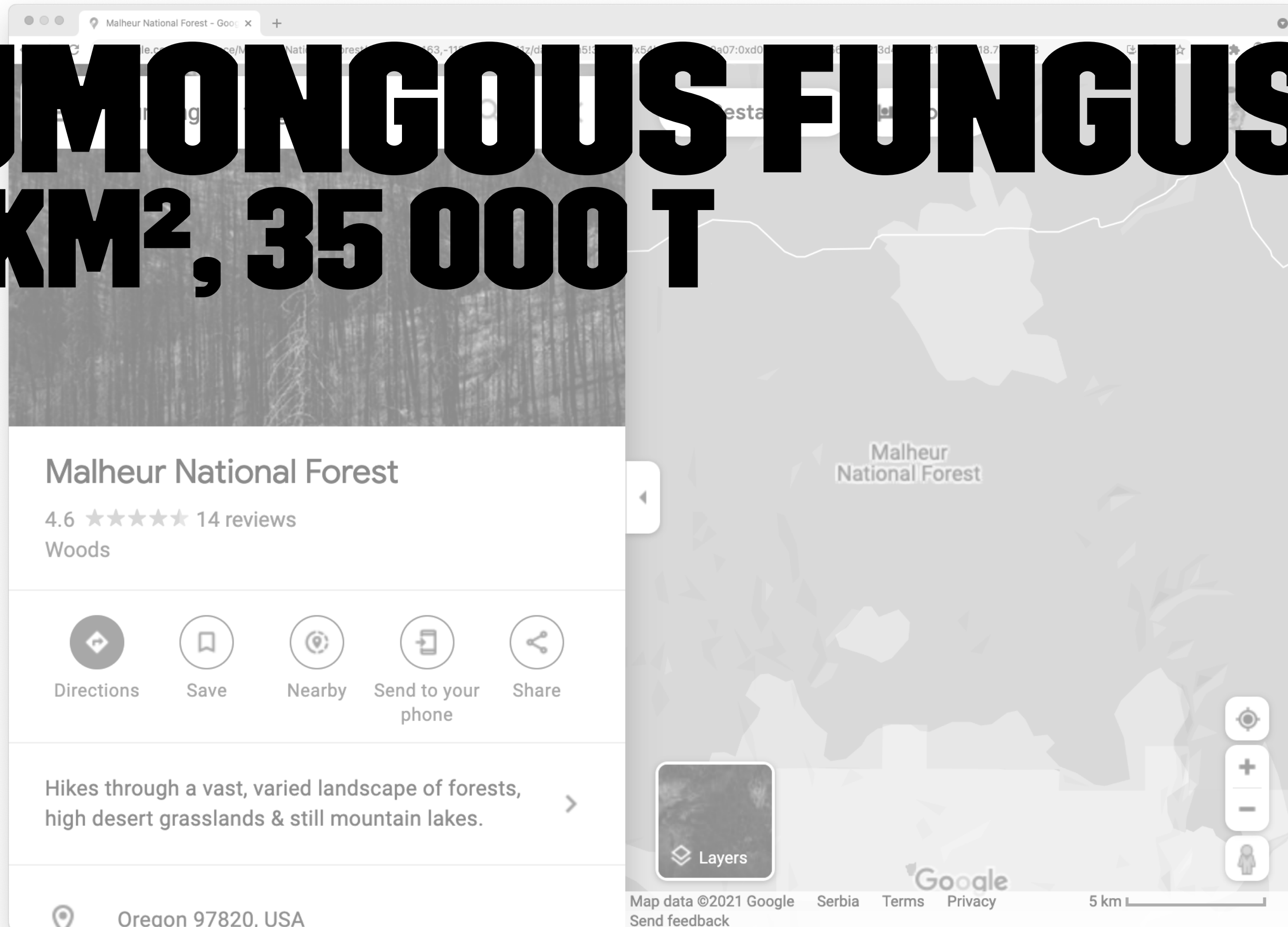


WHAT'S YOUR EMAIL?

- » gmailcom
- » gmail.comm
- » gmail.ru
- » gamil.com
- » gma1.com

HUMONGOUS FUNGUS


10 KM², 35 000 T



Malheur National Forest - Google

google.com/maps/place/Malheur+National+Forest/@44.0923463,-118.7713949,11z/data=!4m5!3m4!1s0x54bafd0a1f9b0a07:0xd0967c6e1277f565!8m2!3d44.2832129!4d-118.7843893

☰ humongous fungus 🔍 ✕



Malheur National Forest

4.6 ★★★★★ 14 reviews

Woods

📍

Directions

🔖

Save

📍

Nearby

📱

Send to your phone

🔗

Share

Hikes through a vast, varied landscape of forests, high desert grasslands & still mountain lakes. >

📍 Oregon 97820, USA

🍴 Restaurants

🏨 Hotels

Malheur National Forest

Layers

📏 5 km

Map data ©2021 Google Serbia Terms Privacy Send feedback

CloudWatch

New menu experience

Favorites

Dashboards

Alarms

In alarm

All alarms

Billing

Logs

Log groups

Logs Insights

Metrics

All metrics

Explorer

Streams

Events

Rules

Event Buses

Application monitoring

ServiceLens Map

Traces

Resource Health

Synthetics Canaries

Insights

Container Insights

Lambda Insights

Contributor Insights

Application Insights

Settings

Getting Started

CloudWatch

>

Logs Insights

Select log group(s)

5m30m1h3h12hCustom

/aws/lambda/nkprod-web-cdn-ReportingFunction-LE84XOQGAZVG

Clear

1fields @timestamp, `csp-report.document-uri` as document, `csp-report.blocked-uri` as blocked, coalesce(`csp-report.effective-directive`, `csp-report.violated-directive`) as directive, `userAgent`, @logStream

2| filter isPresent(reportType)

3| sort @timestamp desc

4| limit 200

Run query

Save

History

Queries are allowed to run for up to 15 minutes.

Logs

Visualization

Export results

Add to dashboard

Showing 200 of 341 records matched ⓘ

1,364 records (531.4 kB) scanned in 3.1s @ 446 records/s (174.0 kB/s)

Hide histogram

300

200

100

0

11 PM

Wed 15

01 AM

02 AM

03 AM

04 AM

05 AM

06 AM

07 AM

08 AM

09 AM

10 AM

#	@timestamp	document	blocked	directi...	userAgent	@logStream
▶ 1	2021-09-15T08:48:48...	https://www.narakeet.com/	inline	script-s...	Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:92.0) Gecko/20100101 F...	2021/09/15/[\$LATEST]8e567839f3b84609bcd8b81154130810
▶ 2	2021-09-15T08:48:46...	https://www.narakeet.com/	inline	script-s...	Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:92.0) Gecko/20100101 F...	2021/09/15/[\$LATEST]8e567839f3b84609bcd8b81154130810
▶ 3	2021-09-15T08:16:36...	https://www.narakeet.com/	eval	script-s...	Mozilla/5.0 (Windows NT 10.0; WOW64) AppleWebKit/537.36 (KHTML, lik...	2021/09/15/[\$LATEST]01a74209de934af99769e98ad91644b6
▶ 4	2021-09-15T06:50:41...	https://www.narakeet.com/docs/best-size-for-vid...	inline	script-s...	Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:92.0) Gecko/20100101 F...	2021/09/15/[\$LATEST]0ae6e0beff104f619b626a76854c5bc0
▶ 5	2021-09-15T06:50:41...	https://www.narakeet.com/docs/best-size-for-vid...	inline	style-src	Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:92.0) Gecko/20100101 F...	2021/09/15/[\$LATEST]09ae13bf2ec849b99bbe650e834902d7
▶ 6	2021-09-15T06:50:41...	https://www.narakeet.com/docs/best-size-for-vid...	inline	style-src	Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:92.0) Gecko/20100101 F...	2021/09/15/[\$LATEST]0ae6e0beff104f619b626a76854c5bc0
▶ 7	2021-09-15T06:50:41...	https://www.narakeet.com/docs/best-size-for-vid...	inline	style-src	Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:92.0) Gecko/20100101 F...	2021/09/15/[\$LATEST]0ae6e0beff104f619b626a76854c5bc0
▶ 8	2021-09-15T06:50:41...	https://www.narakeet.com/docs/best-size-for-vid...	inline	style-src	Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:92.0) Gecko/20100101 F...	2021/09/15/[\$LATEST]09ae13bf2ec849b99bbe650e834902d7
▶ 9	2021-09-15T06:50:41...	https://www.narakeet.com/docs/best-size-for-vid...	inline	style-src	Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:92.0) Gecko/20100101 F...	2021/09/15/[\$LATEST]0ae6e0beff104f619b626a76854c5bc0
▶ 10	2021-09-15T06:50:41...	https://www.narakeet.com/docs/best-size-for-vid...	inline	style-src	Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:92.0) Gecko/20100101 F...	2021/09/15/[\$LATEST]09ae13bf2ec849b99bbe650e834902d7
▶ 11	2021-09-15T06:50:41...	https://www.narakeet.com/docs/best-size-for-vid...	inline	style-src	Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:92.0) Gecko/20100101 F...	2021/09/15/[\$LATEST]09ae13bf2ec849b99bbe650e834902d7
▶ 12	2021-09-15T06:50:41...	https://www.narakeet.com/docs/best-size-for-vid...	inline	style-src	Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:92.0) Gecko/20100101 F...	2021/09/15/[\$LATEST]09ae13bf2ec849b99bbe650e834902d7
▶ 13	2021-09-15T06:50:41...	https://www.narakeet.com/docs/best-size-for-vid...	inline	style-src	Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:92.0) Gecko/20100101 F...	2021/09/15/[\$LATEST]0ae6e0beff104f619b626a76854c5bc0
▶ 14	2021-09-15T06:50:41...	https://www.narakeet.com/docs/best-size-for-vid...	inline	style-src	Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:92.0) Gecko/20100101 F...	2021/09/15/[\$LATEST]fd39757f67884aa98685d1cffbb736b3
▶ 15	2021-09-15T06:50:41...	https://www.narakeet.com/docs/best-size-for-vid...	inline	style-src	Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:92.0) Gecko/20100101 F...	2021/09/15/[\$LATEST]fd39757f67884aa98685d1cffbb736b3
▶ 16	2021-09-15T06:50:41...	https://www.narakeet.com/docs/best-size-for-vid...	inline	style-src	Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:92.0) Gecko/20100101 F...	2021/09/15/[\$LATEST]fd39757f67884aa98685d1cffbb736b3
▶ 17	2021-09-15T06:50:41...	https://www.narakeet.com/docs/best-size-for-vid...	inline	style-src	Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:92.0) Gecko/20100101 F...	2021/09/15/[\$LATEST]0ae6e0beff104f619b626a76854c5bc0
▶ 18	2021-09-15T06:50:41...	https://www.narakeet.com/docs/best-size-for-vid...	inline	style-src	Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:92.0) Gecko/20100101 F...	2021/09/15/[\$LATEST]0ae6e0beff104f619b626a76854c5bc0
▶ 19	2021-09-15T06:50:41...	https://www.narakeet.com/docs/best-size-for-vid...	inline	style-src	Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:92.0) Gecko/20100101 F...	2021/09/15/[\$LATEST]0ae6e0beff104f619b626a76854c5bc0
▶ 20	2021-09-15T06:50:41...	https://www.narakeet.com/docs/best-size-for-vid...	inline	style-src	Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:92.0) Gecko/20100101 F...	2021/09/15/[\$LATEST]0ae6e0beff104f619b626a76854c5bc0
▶ 21	2021-09-15T06:50:41...	https://www.narakeet.com/docs/best-size-for-vid...	inline	style-src	Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:92.0) Gecko/20100101 F...	2021/09/15/[\$LATEST]fd39757f67884aa98685d1cffbb736b3
▶ 22	2021-09-15T06:50:41...	https://www.narakeet.com/docs/best-size-for-vid...	inline	style-src	Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:92.0) Gecko/20100101 F...	2021/09/15/[\$LATEST]09ae13bf2ec849b99bbe650e834902d7
▶ 23	2021-09-15T06:50:41...	https://www.narakeet.com/docs/best-size-for-vid...	inline	style-src	Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:92.0) Gecko/20100101 F...	2021/09/15/[\$LATEST]09ae13bf2ec849b99bbe650e834902d7
▶ 24	2021-09-15T06:50:41...	https://www.narakeet.com/docs/best-size-for-vid...	inline	style-src	Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:92.0) Gecko/20100101 F...	2021/09/15/[\$LATEST]09ae13bf2ec849b99bbe650e834902d7



CloudWatch

☒ New menu experience

Favorites ▶

Dashboards

▼ Alarms



0



0



0

In alarm

All alarms

Billing

▼ Logs

Log groups

Logs Insights

▼ Metrics

All metrics

Explorer

Streams

▼ Events

Rules

Event Buses

▼ Application monitoring

300

200

100

0

11 PM

Wed 15

01 AM

02 AM

03 AM

04 AM

05 AM

06 AM

07 AM

08 AM

09 AM

10 AM

#

@timestamp

document

blocked

directi...

userAgent



1

2021-09-15T08:48:48...

https://www.narakeet.com/

inline

script-s...

Mozilla/5.0



2

2021-09-15T08:48:46...

https://www.narakeet.com/

inline

script-s...

Mozilla/5.0



3

2021-09-15T08:16:36...

https://www.narakeet.com/

eval

script-s...

Mozilla/5.0



4

2021-09-15T06:50:41...

https://www.narakeet.com/docs/best-size-for-vid...

inline

script-s...

Mozilla/5.0

Field

Value

@ingestionTime

1631681446721

@log

284375238109:/aws/lambda/nkn...

@logStream

2021/09/15/[\$LATEST]0ae6...

@message

2021-09-15T04:50:41.277Z [Type]:"csp

@requestId

071d7209-5388-48ee-b...

@timestamp

1631681441228

csp-report.blocked-uri

inline

csp-report.column-number

1841

csp-report.document-uri

https://www.narakeet.com/

csp-report.line-number

1

csp-report.original-policy

block-all-mixed-content; b...

csp-report.referrer

https://www.google.com/

csp-report.script-sample

window[Symbol.for('MARIO_POST_CLIEN...

csp-report.source-file

moz-extension

csp-report.violated-directive

script-src

reportType

csp-report

userAgent

Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:92.0) Gecko/20100101 Firefox/92.0



5

2021-09-15T06:50:41...

https://www.narakeet.com/docs/best-size-for-vid...

inline

style-src

Mozilla/5.0



6

2021-09-15T06:50:41...

https://www.narakeet.com/docs/best-size-for-vid...

inline

style-src

Mozilla/5.0



7

2021-09-15T06:50:41...

https://www.narakeet.com/docs/best-size-for-vid...

inline

style-src

Mozilla/5.0

WTF???

BIGGEST CHALLENGE: SEPARATING SIGNAL FROM NOISE

WTF???

Field	Value
@ingestionTime	1631681446721
@log	284375238109:/aws/lambda/nknp...
@logStream	2021/09/15/[\$LATEST]0ae6...
@message	2021-09-15T04:50:41.227...
@requestId	071d7209-5388-48ee-b...
@timestamp	1631681441228
csp-report.blocked-uri	inline
csp-report.column-number	1841
csp-report.document-uri	https://www.narakeet.com/
csp-report.line-number	1
csp-report.original-policy	block-all-mixed-content; b...
csp-report.referrer	https://www.google.com/
csp-report.script-sample	window[Symbol.for('MARIO_POST_CLIEN...
csp-report.source-file	moz-extension
csp-report.violated-directive	script-src
reportType	csp-report
userAgent	Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:92.0) Gecko/20100101 Firefox/92.0

**OBSERVABILITY TOOLS
ARE POPPING UP LIKE
MUSHROOMS**



splunk[®]>





**SOME ~~MUSHROOMS~~
SURPRISES ARE GREAT
FOR YOU**



Create Narrated Videos Quickly!

Stop wasting time on recording voice, synchronising picture with sound and adding subtitles.

Let Narakeet do all the dull tasks, so you can focus on the content.

Edit videos as easily as editing text.

[CREATE A VIDEO NOW →](#)

Non-techies

PowerPoint or Google Slides to Video

Demo 1

School Lecture

Demo 2

Marketing

Demo 3

Language Lesson

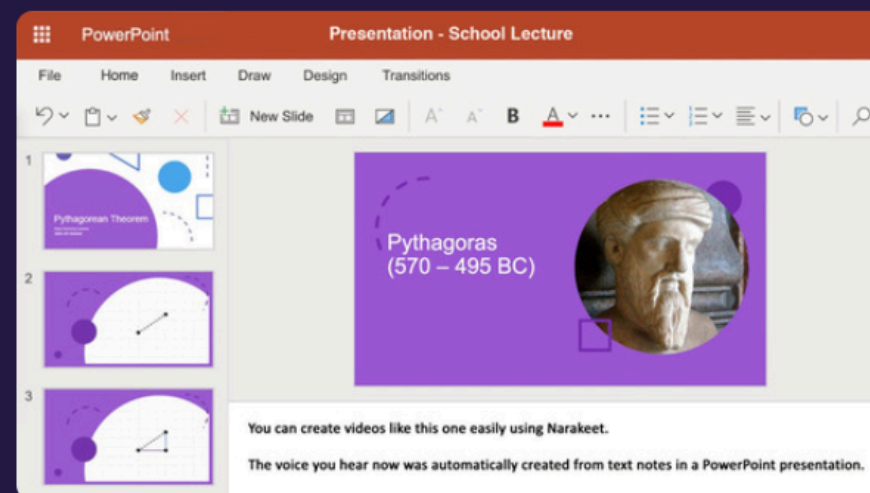
Demo 4

Video Quiz

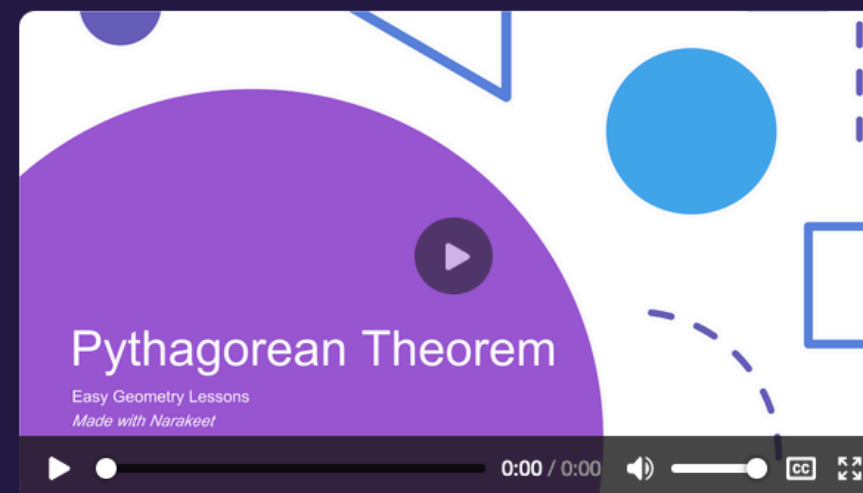
Techies

Markdown or text scripts to Video

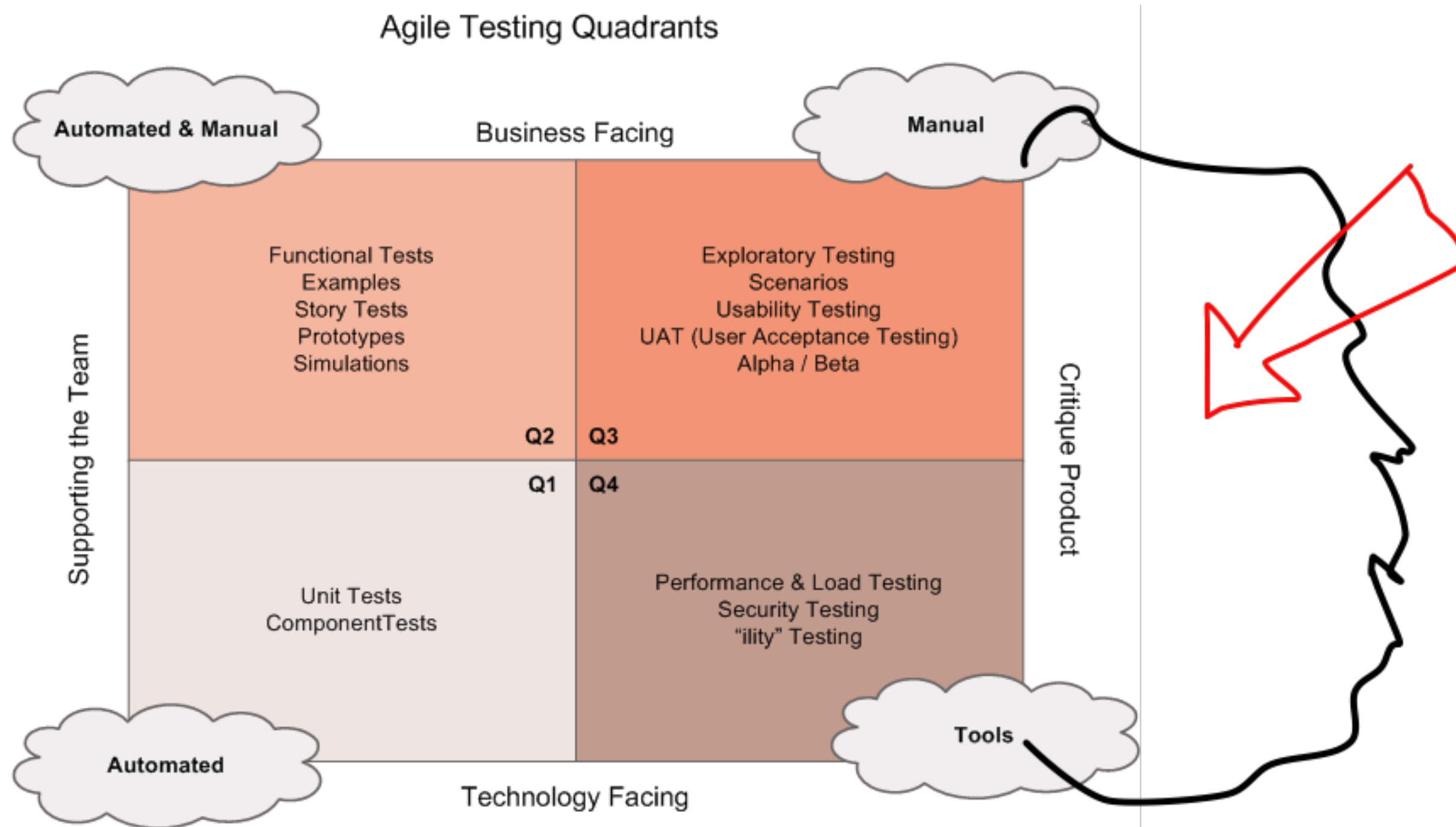
Turn this...

[DOWNLOAD DEMO SLIDES ▼](#)

Into this...

[LEARN MORE ►](#)

REAL TRAFFIC → HIGH CONFIDENCE



**BUT HOW DO WE KNOW
IF IT'S SAFE TO TRY?**





**NEW TECH LETS US TEST
IF A ~~MUSHROOM~~
RELEASE
IS POISONOUS
(ON ~~DOES~~ SMALL GROUP OF USERS)**

Developer Tools

CodeDeploy

Source • CodeCommit

Artifacts • CodeArtifact

Build • CodeBuild

Deploy • CodeDeploy

Getting started

Deployments

Deployment

Applications

Deployment configurations

On-premises instances

Pipeline • CodePipeline

Settings

Go to resource

Feedback

Developer Tools > CodeDeploy > Deployments > d-P3TMN2FN8

d-P3TMN2FN8

Stop deployment

Stop and roll back deployment

Deployment status

Step 1

Pre-deployment validation

100%

Completed Succeeded

Step 2

Traffic shifting

10%

10% complete In progress

Step 3

Post-deployment validation

0%

Not started

Traffic shifting progress

Next: The deployment will shift 90% of traffic from the current version to the replacement version at approximately 5 minute(s) after the deployment started.

Original

90%

Deployment results Info

90% of traffic

Replacement

10%

10% of traffic

Deployment details

Application	Deployment ID	Status
poller-backend-ServerlessDeploymentApplication-1NAD9VGQP8AVN	d-P3TMN2FN8	In progress

Deployments

CodeDeploy

Deployment groups

Deploy • CodeDeploy

Applications

Deployment configurations

On-premises instances

Pipeline • CodePipeline

Settings

Deployment progress

Step 1 Pre-deployment validation 100%

Step 2 In progress 10%

Step 3 Post-deployment validation 0%

Not started

Stop and roll back deployment

Deployment results Info

90% of traffic

10% of traffic

Deployment details		
Application	Deployment ID	Status
poller-backend-ServerlessDeploymentApplication-1NAD9VGQP8AVN	d-P3TMN2FN8	In progress

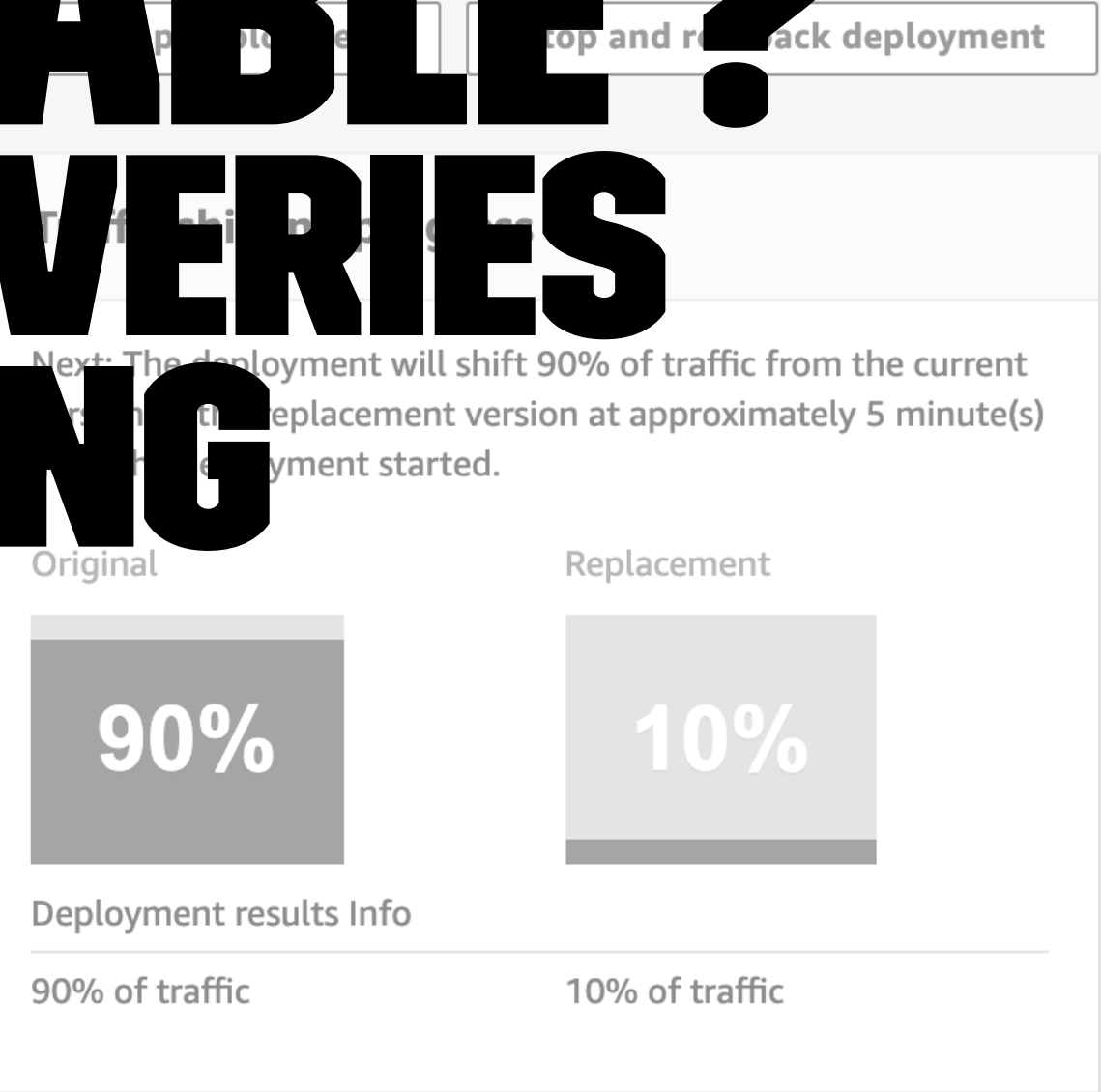
RISK < ACCEPTABLE?

- SMALL QUICK DELIVERIES

- GRADUAL RELEASING

- QUICK FIXING

- EASY ROLLBACK



Deployment details		
Application	Deployment ID	Status
poller-backend-ServerlessDeploymentApplication-1NAD9VGQP8AVN	d-P3TMN2FN8	In progress

A grayscale photograph of a forest floor covered in fallen leaves and several mushrooms. One large mushroom with a gilled cap and a thick stem is the central focus, with its cap partially obscured by the text. Other smaller mushrooms are visible in the foreground and background.

**MASSIVE OPPORTUNITY:
RELOCATE EXPENSIVE TESTS
AND MAKE THEM CHEAP**

GOJKO.NET
NARAKEET.COM

