trivago

Observability at trivago

QA Meetup, June 22nd, 2023

Image by Freepik

trivago

~ 100 people

trivago

trivago

trivago

trivago

trivago

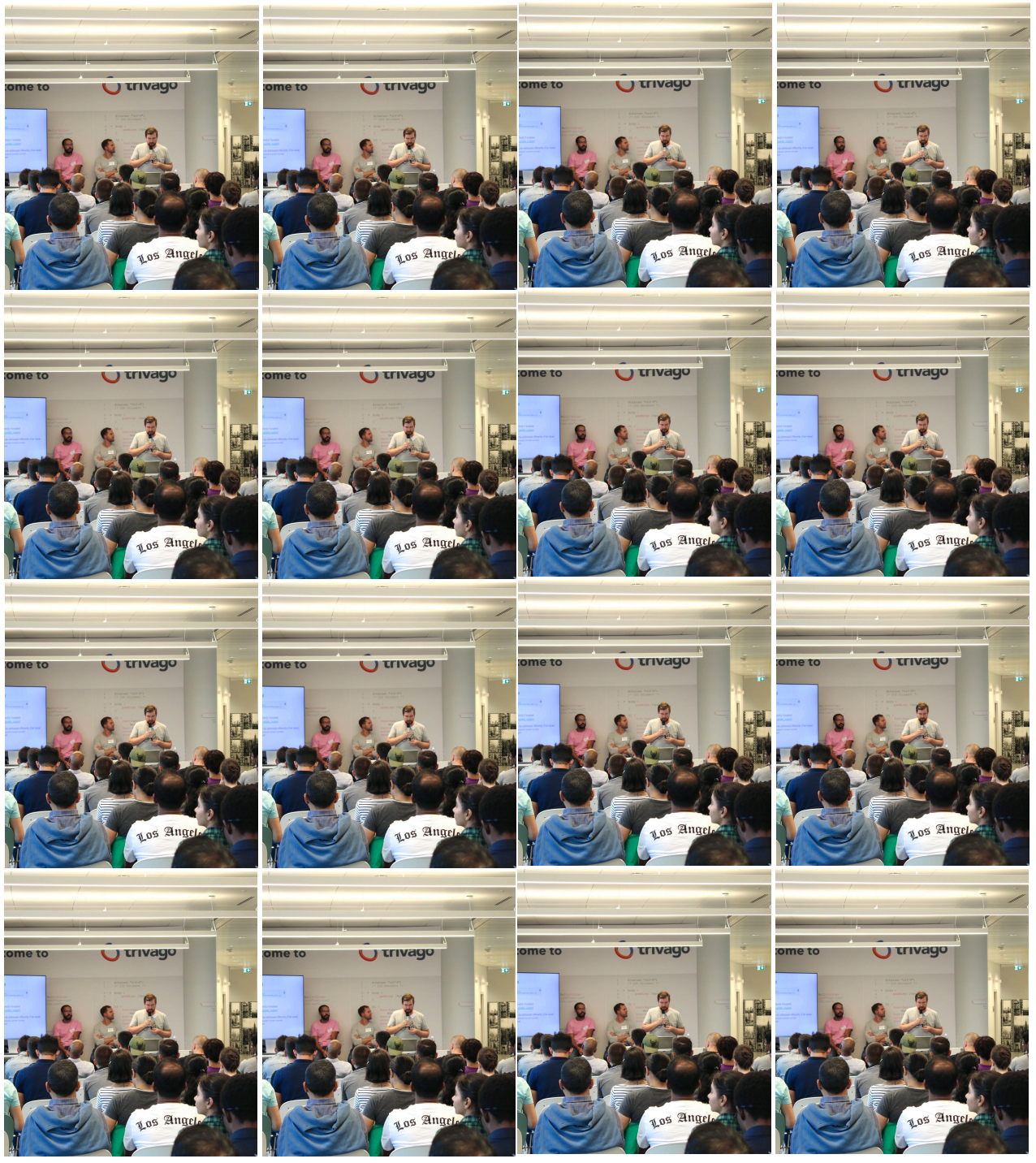
100 sessions

trivago

400 sessions

trivago

~1,5k sessions



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The Narendra Modi Stadium in Ahmedabad, India
Image by populous.com

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up to

4,000,000

sessions per day

trivago

How?

Image by
wayhomestudio
on Freepik

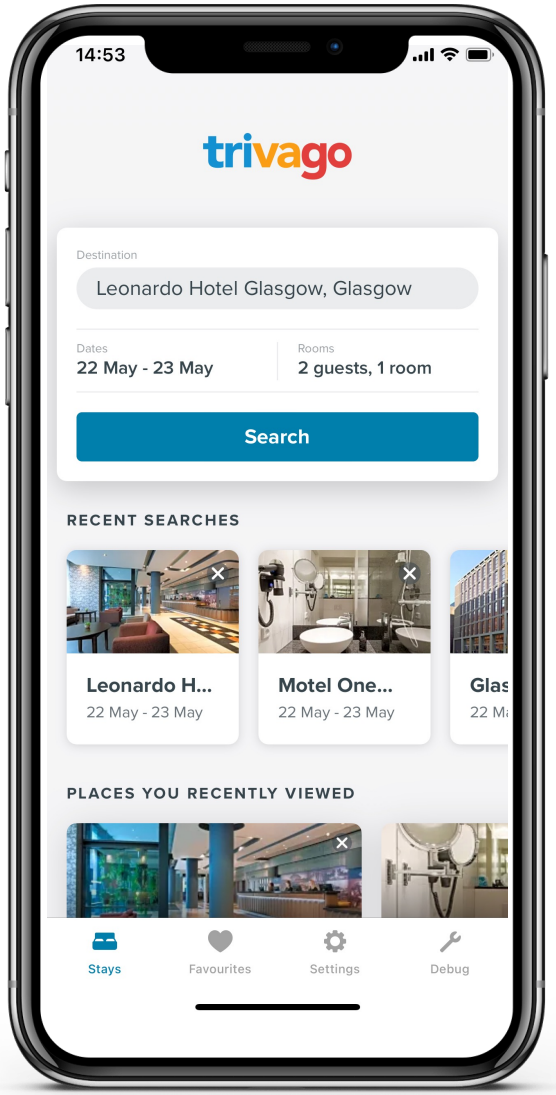
14:53
trivago
Destination
Leonardo Hotel Glasgow, Glasgow
Dates
22 May - 23 May
Rooms
2 guests, 1 room
Search
RECENT SEARCHES
Leonardo H...
22 May - 23 May
Motel One...
22 May - 23 May
PLACES YOU RECENTLY VIEWED
Stays
Favourites
Settings
Debug

Image by
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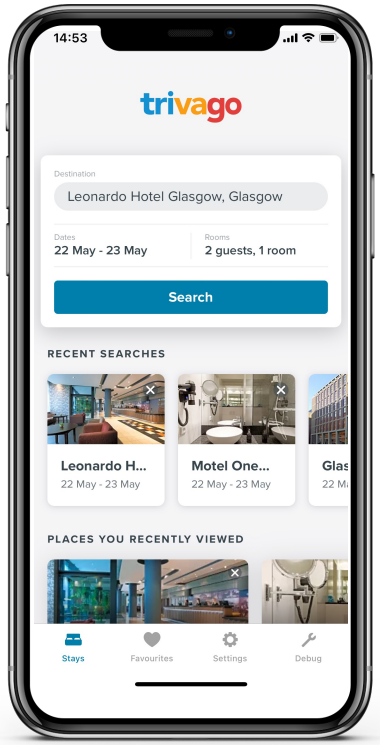
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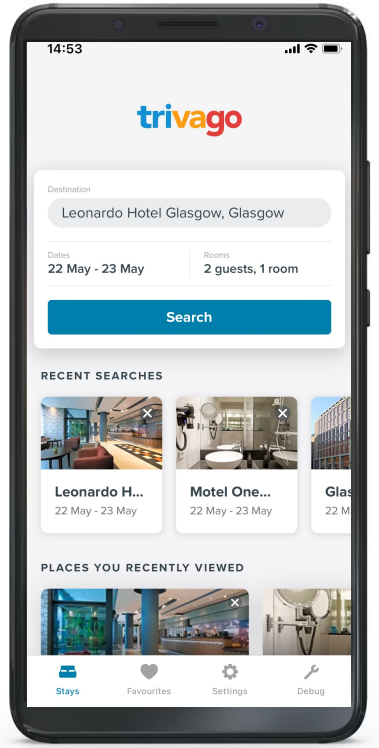
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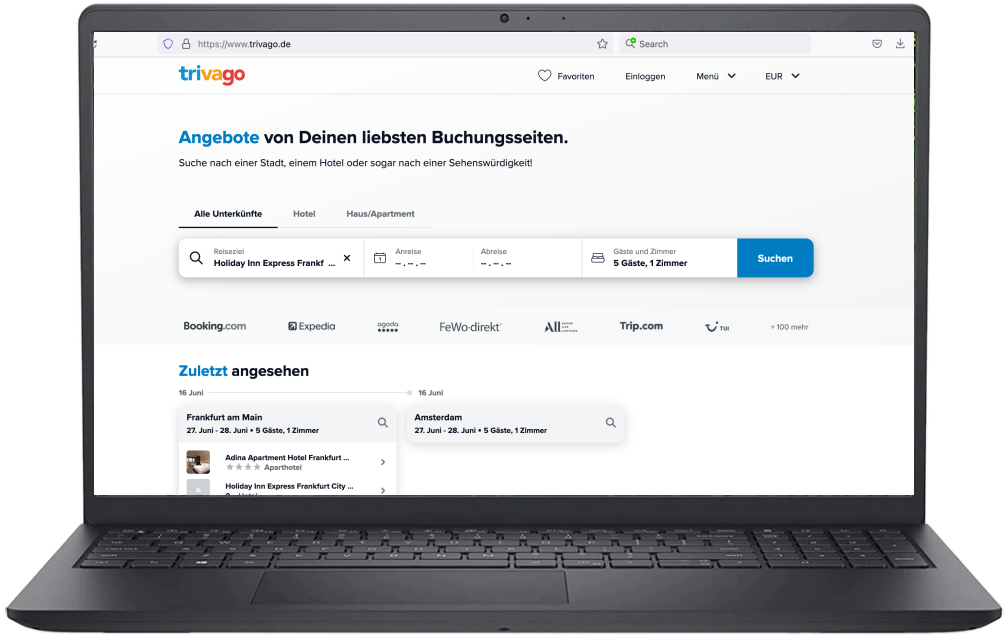
https://www.trivago.de
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Suche nach einer Stadt, einem Hotel oder sogar nach einer Sehenswürdigkeit!
Alle Unterkünfte
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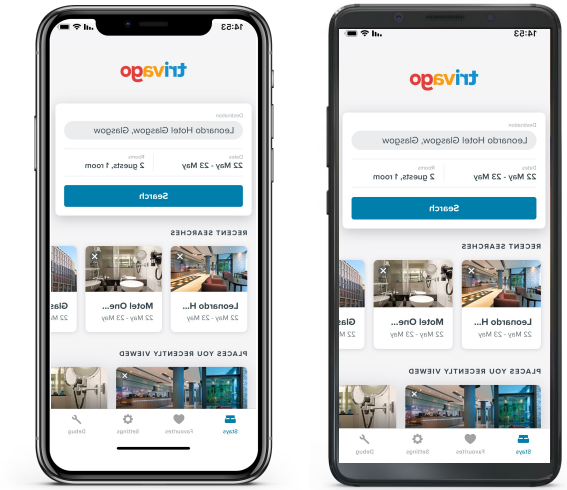
Reiseziel
Holiday Inn Express Frankf ...
Anreise
Abreise
Gäste und Zimmer
5 Gäste, 1 Zimmer
Suchen
Booking.com
Expedia
FeWo-direkt
Trip.com
+ 100 mehr
Zuletzt angesehen
16 Juni
16 Juni
Frankfurt am Main
27. Juni - 28. Juni • 5 Gäste, 1 Zimmer
Amsterdam
27. Juni - 28. Juni • 5 Gäste, 1 Zimmer
Adina Apartment Hotel Frankfurt ...
Aparthotel
Holiday Inn Express Frankfurt City ...



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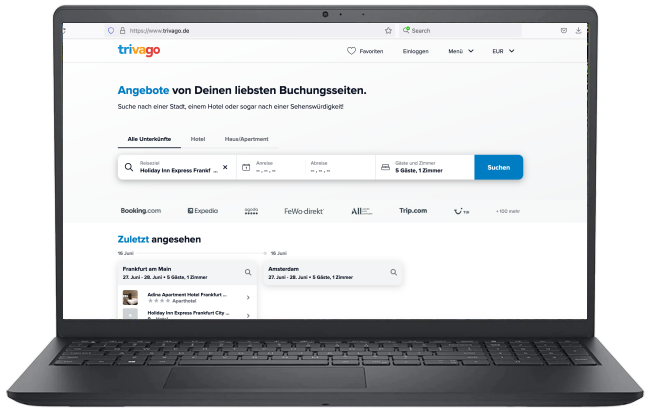
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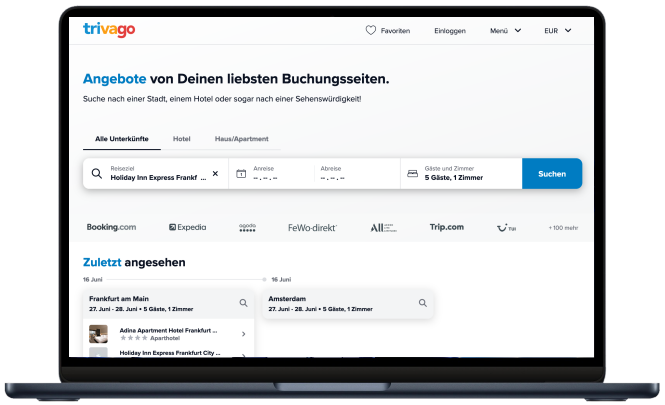
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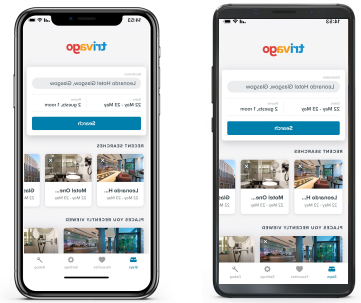

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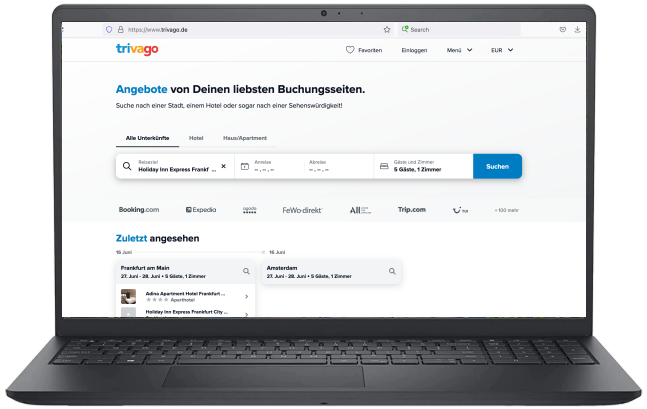
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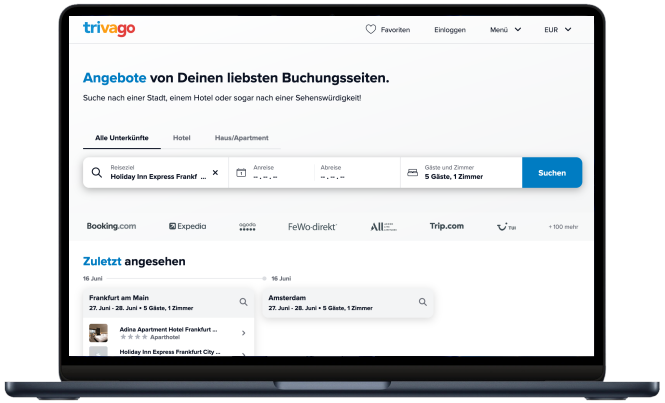
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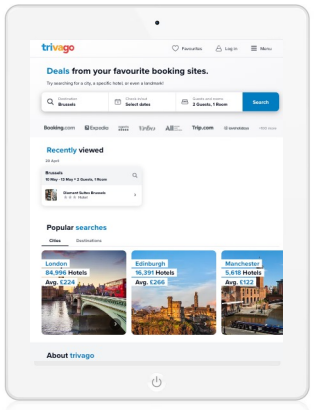
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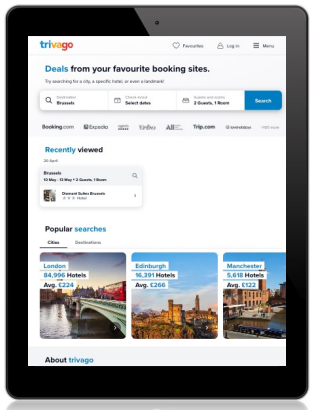
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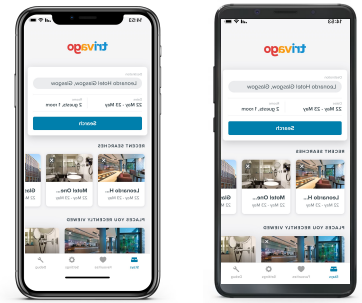
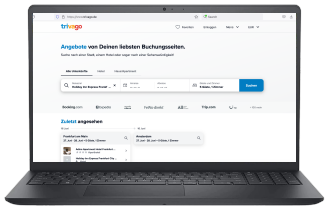
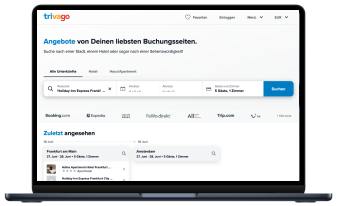
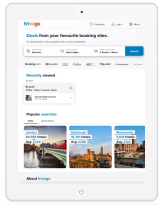
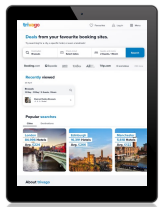
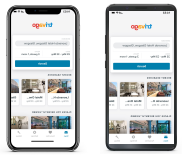
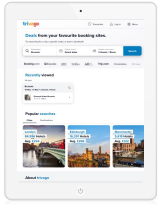
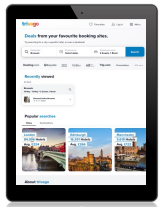
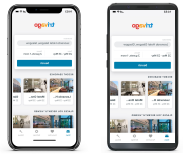


WEB Apps

Mobile Apps

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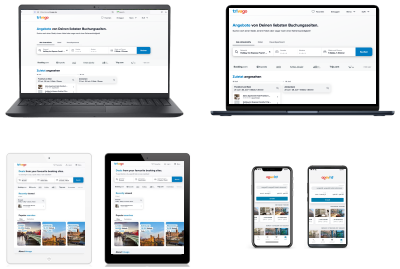

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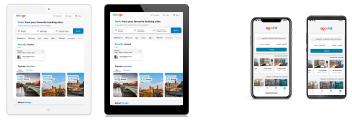

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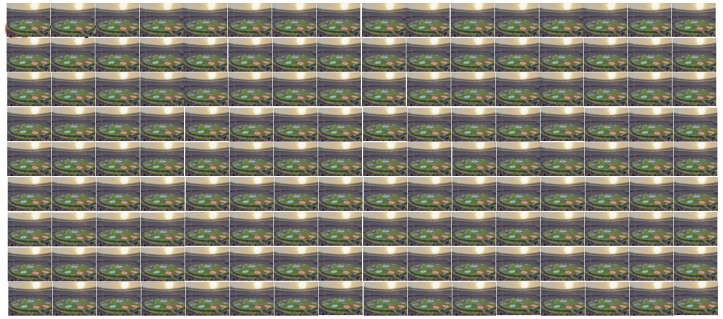

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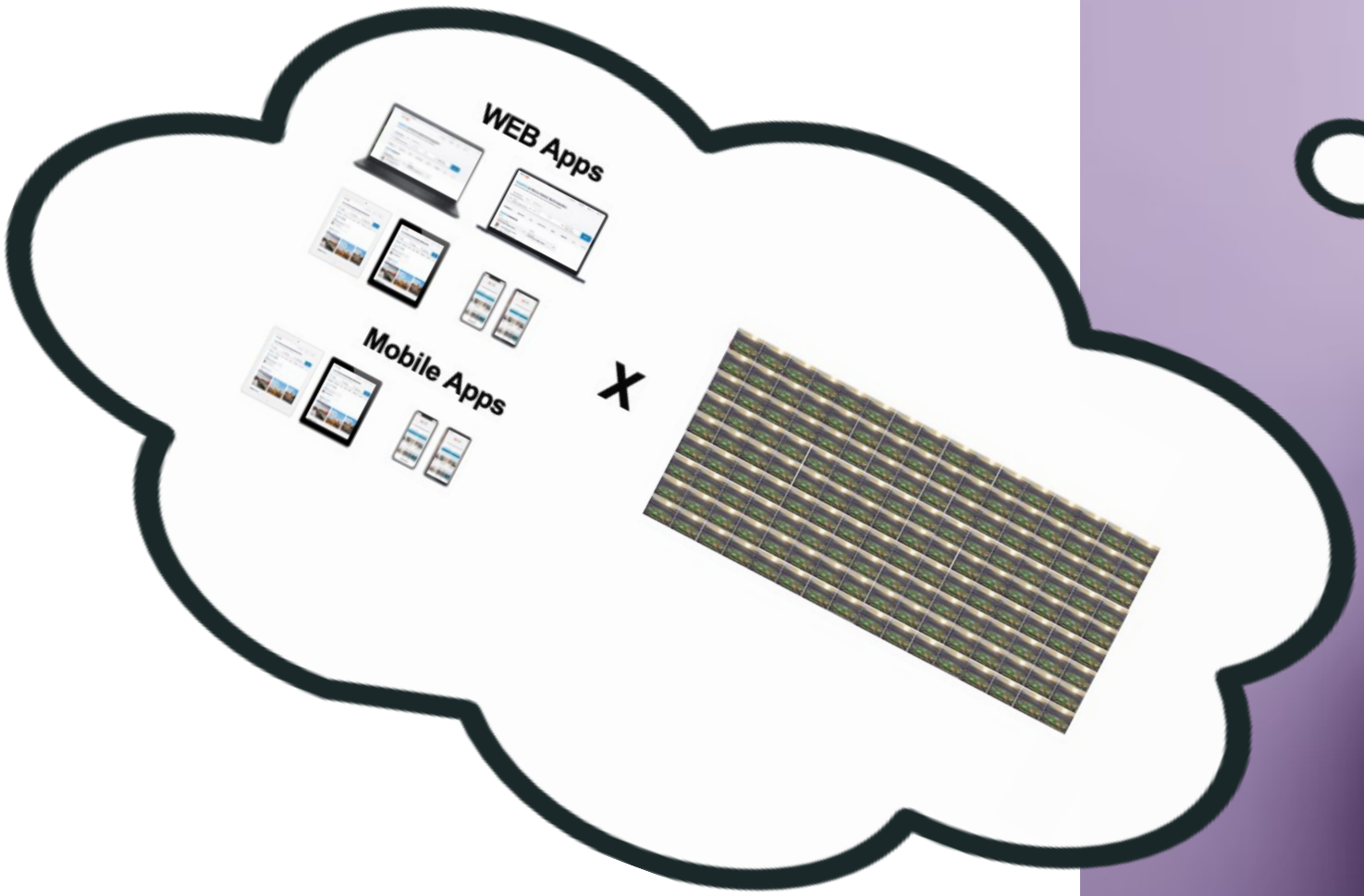
How?

How?



BUTTT…

trivago

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266 GitHub Repositories

We NOT gonna talk about 💔

- ⛔ Observability vs Traceability
- ⛔ Business Metrics and Analytics

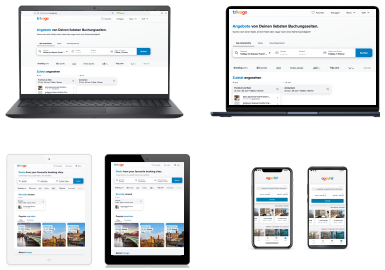
trivago

Kibana

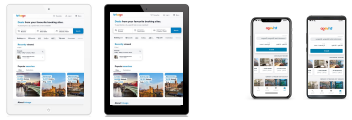
Image by Freepik

FRONTEND

WEB Apps



Mobile Apps



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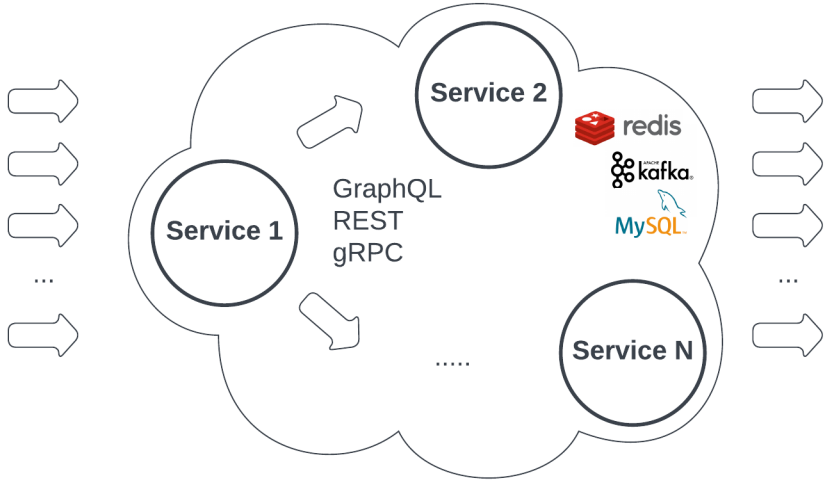

ADVERTISERS

Booking

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Hotelopia

Hilton

Quickrooms

Octopustravel

Lol travel

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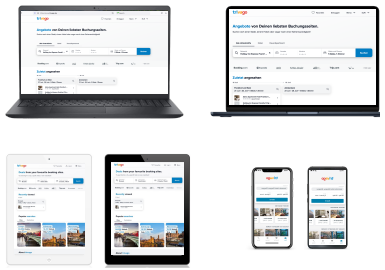
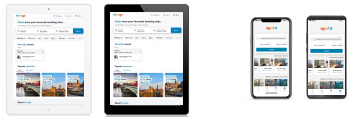
FRONTEND

WEB Apps



Mobile Apps



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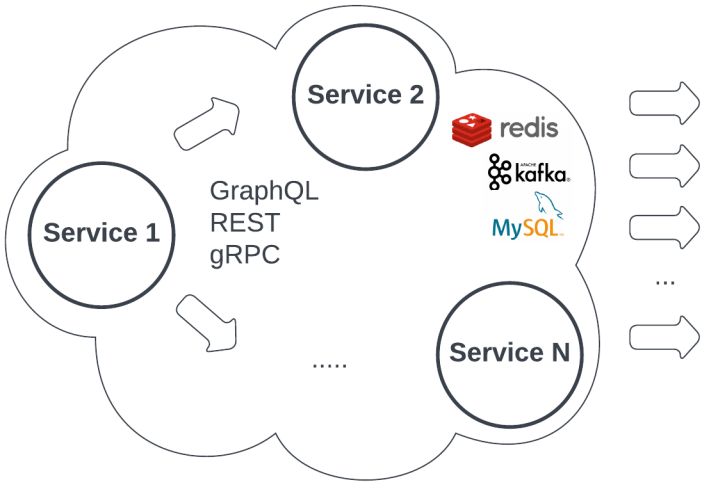

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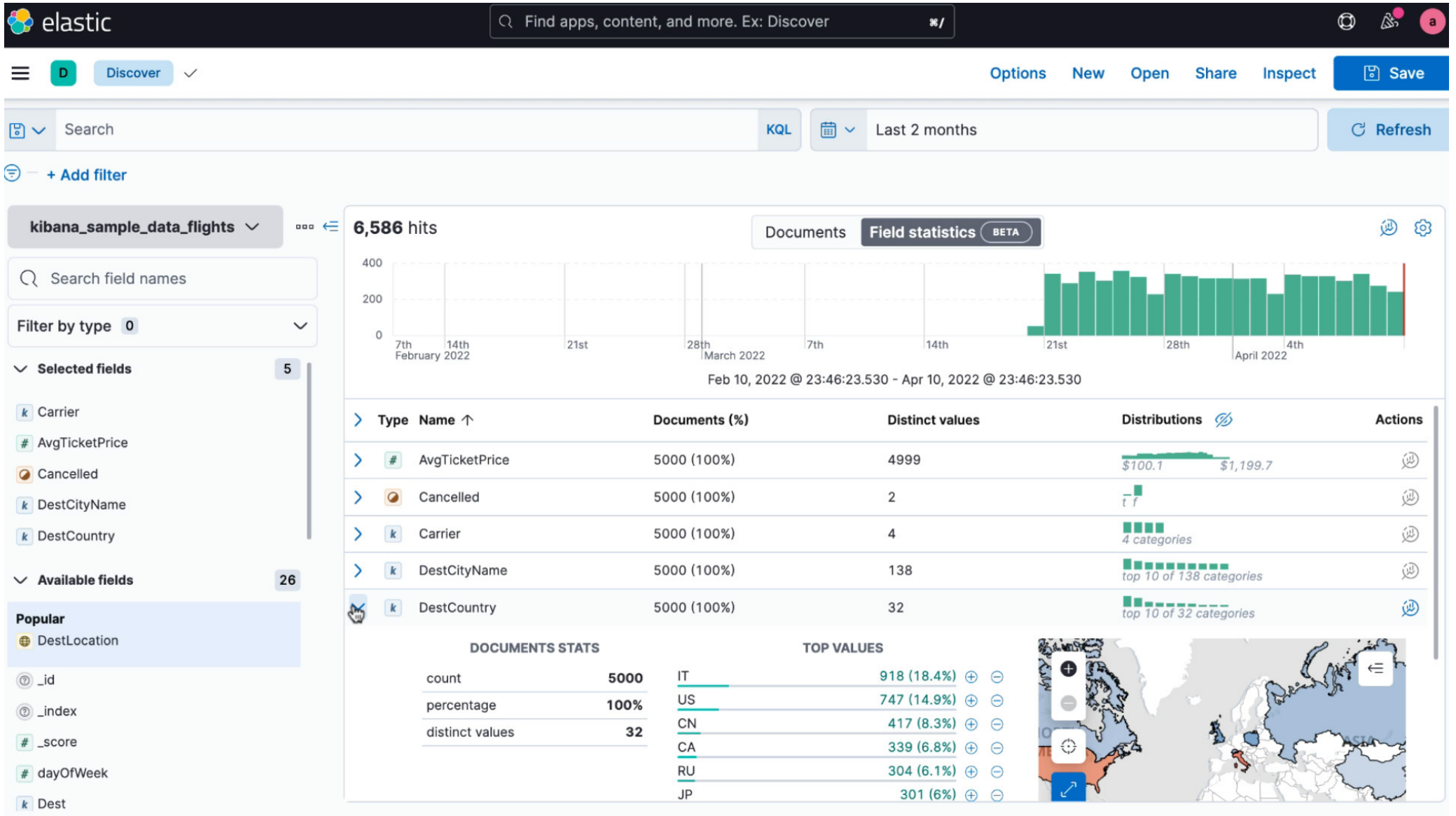
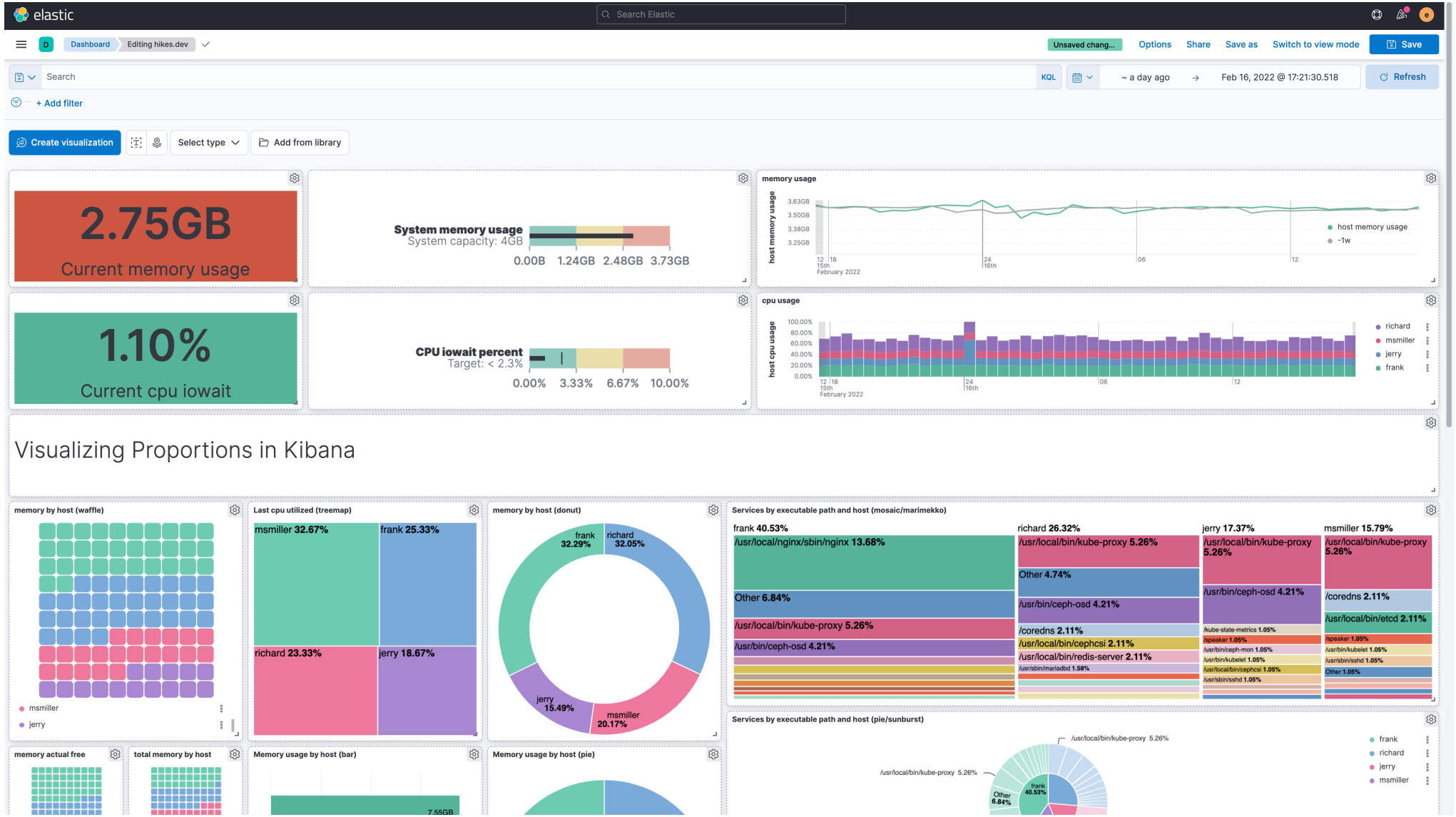
Elasticsearch



Kibana Dashboards



Kibana

- Investigations through Elasticsearch
- Dashboards
- Possibility of slack alerts

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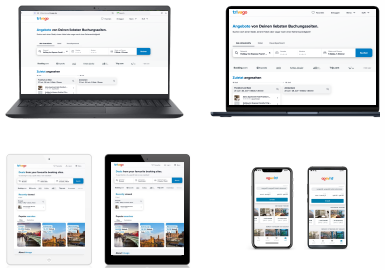
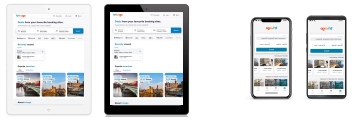
Grafana

FRONTEND

WEB Apps



Mobile Apps



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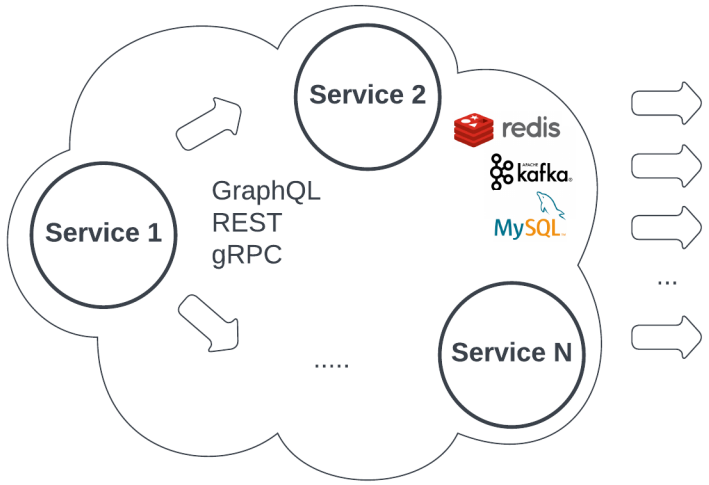

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Grafana

- **Red metrics is a MUST**
- **Dashboards is a MUST**
- **Integrated slack alerts**

*request **R**ate/**E**rrors/**D**uration

Grafana

Search or jump to...
cmd+k
Home › Dashboards › Website performance
Memory / CPU
8 B
6 B
4 B
2 B
0 B
6%
5%
4%
3%
2%
1%
0%
16:50
17:00
17:10
17:20
17:30
17:40
memory
cpu
logins
Last 20 minutes
70
60
50
40
30
20
10
17:30
17:35
17:40
17:45
logins
logins (-1 hour)
Memory
114 B
Google hits
57.1
Support calls
84.9
Sign ups
283
server requests
150
100
50
0
16:50
16:55
17:00
17:05
17:10
17:15
17:20
17:25
17:30
17:35
17:40
17:45
web_server_01
web_server_02
web_server_03
web_server_04
Google hits
0.400
27.7
37.1
66.5
21.2
A-series
B-series
C-series
D-series
E-series
client side full page load
5 s
4 s
3 s
2 s
1 s
0 ms
16:50
16:55
17:00
17:05
17:10
17:15
17:20
17:25
17:30
17:35
17:40
17:45
avg
upper_25 6.81 ms
upper_50 142 ms
upper_75 535 ms
upper_90 1.04 s
upper_95 1.46 s

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Honeycomb

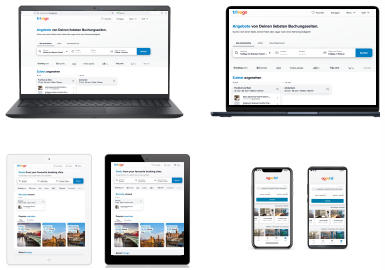
Image by Freepik

Honeycomb

- Uses a series of IDs/tags & timestamps to visually represent a request from begin to an end.
- Makes transparent for all team members the relationships among components/services.
- Helps debugging & investigating you see the way of the requests through all the components.

FRONTEND

WEB Apps



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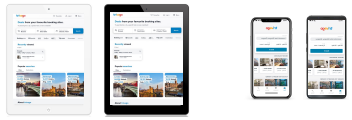

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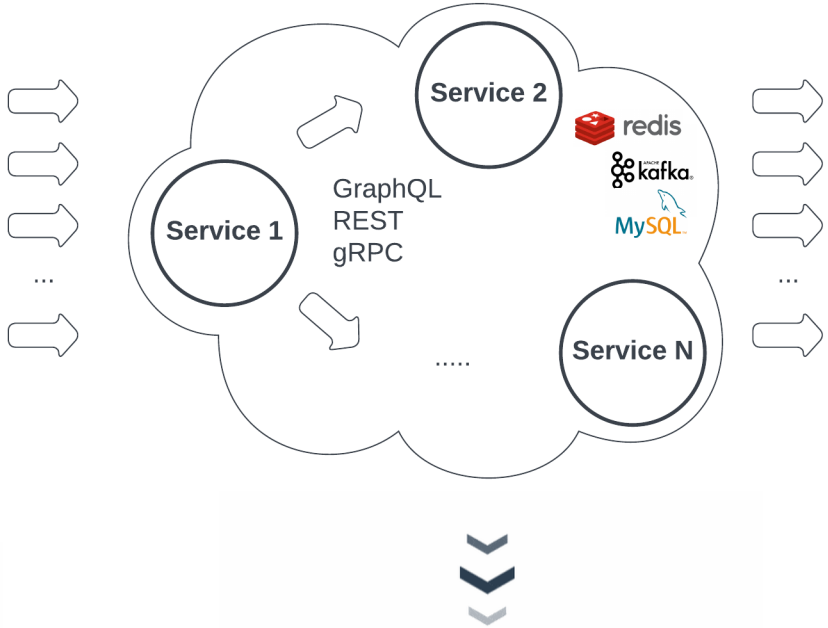

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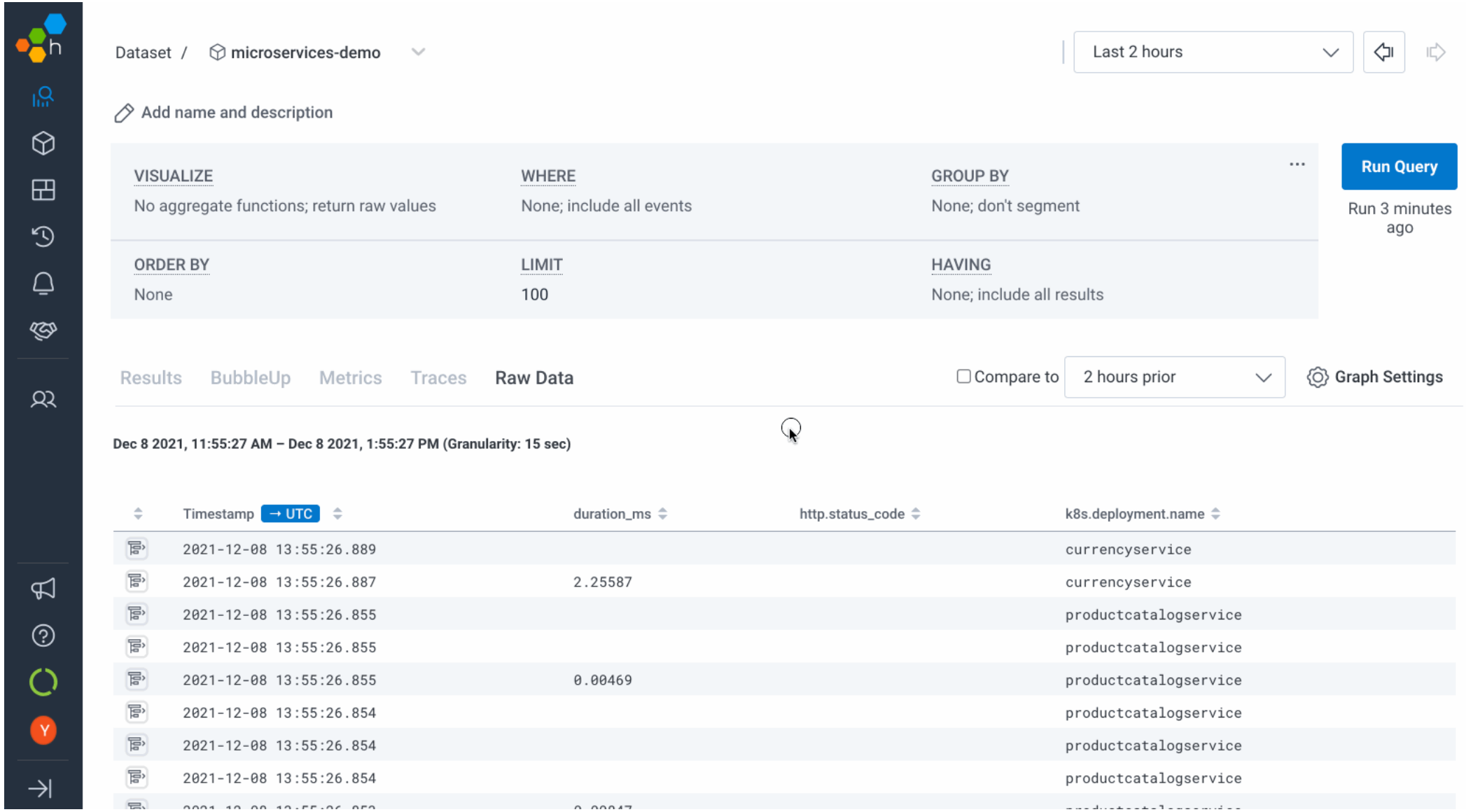
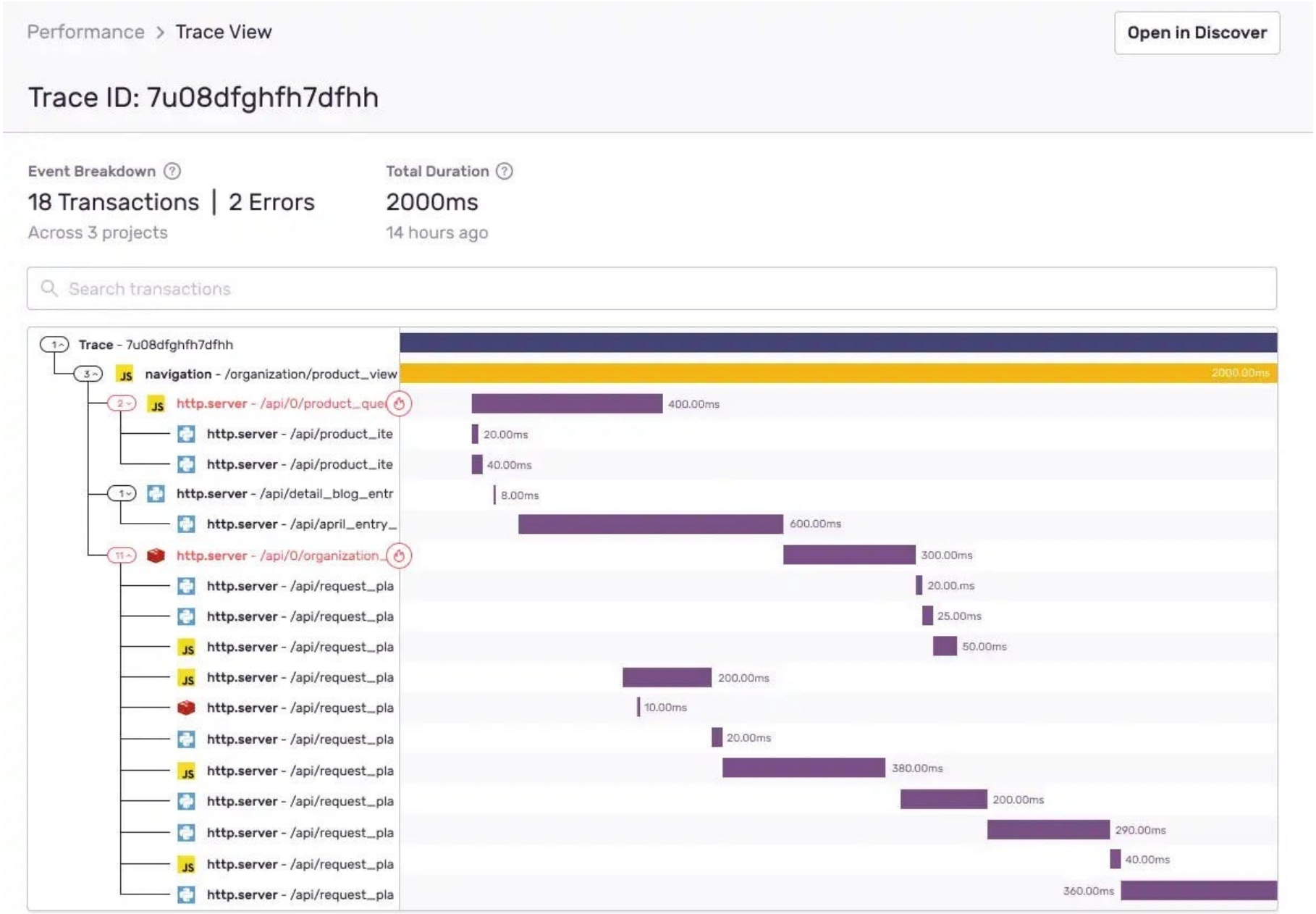
...

Honeycomb


Dataset / microservices-demo
Last 2 hours
Add name and description
VISUALIZE
No aggregate functions; return raw values
WHERE
None; include all events
GROUP BY
None; don't segment
Run Query
Run 3 minutes ago
ORDER BY
None
LIMIT
100
HAVING
None; include all results
Results
BubbleUp
Metrics
Traces
Raw Data
Compare to
2 hours prior
Graph Settings
Dec 8 2021, 11:55:27 AM – Dec 8 2021, 1:55:27 PM (Granularity: 15 sec)
Timestamp → UTC
duration_ms
http.status_code
k8s.deployment.name
2021-12-08 13:55:26.889 currencyservice
2021-12-08 13:55:26.887 2.25587 currencyservice
2021-12-08 13:55:26.855 productcatalogservice
2021-12-08 13:55:26.855 productcatalogservice
2021-12-08 13:55:26.855 0.00469 productcatalogservice
2021-12-08 13:55:26.854 productcatalogservice
2021-12-08 13:55:26.854 productcatalogservice
2021-12-08 13:55:26.854 productcatalogservice

Honeycomb


Performance > Trace View
Open in Discover
Trace ID: 7u08dfghfh7dfhh
Event Breakdown
18 Transactions | 2 Errors
Across 3 projects
Total Duration
2000ms
14 hours ago
Search transactions
Trace - 7u08dfghfh7dfhh
navigation - /organization/product_view
2000.00ms
http.server - /api/0/product_que
400.00ms
http.server - /api/product_ite
20.00ms
http.server - /api/product_ite
40.00ms
http.server - /api/detail_blog_entr
8.00ms
http.server - /api/april_entry_
600.00ms
http.server - /api/0/organization_
300.00ms
http.server - /api/request_pla
20.00ms
http.server - /api/request_pla
25.00ms
http.server - /api/request_pla
50.00ms
http.server - /api/request_pla
200.00ms
http.server - /api/request_pla
10.00ms
http.server - /api/request_pla
20.00ms
http.server - /api/request_pla
380.00ms
http.server - /api/request_pla
200.00ms
http.server - /api/request_pla
290.00ms
http.server - /api/request_pla
40.00ms
http.server - /api/request_pla
360.00ms

Honeycomb

- ⛔ Only % of traffic
- ⛔ Is not that straight forward, requires knowledge to get started

Jorge Betancourt

Software Engineer

at the Observability Team, trivago

linkedin.com/in/jorgelbgm

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Sentry

Sentry

Integrated through the Lazy Loading implementation.

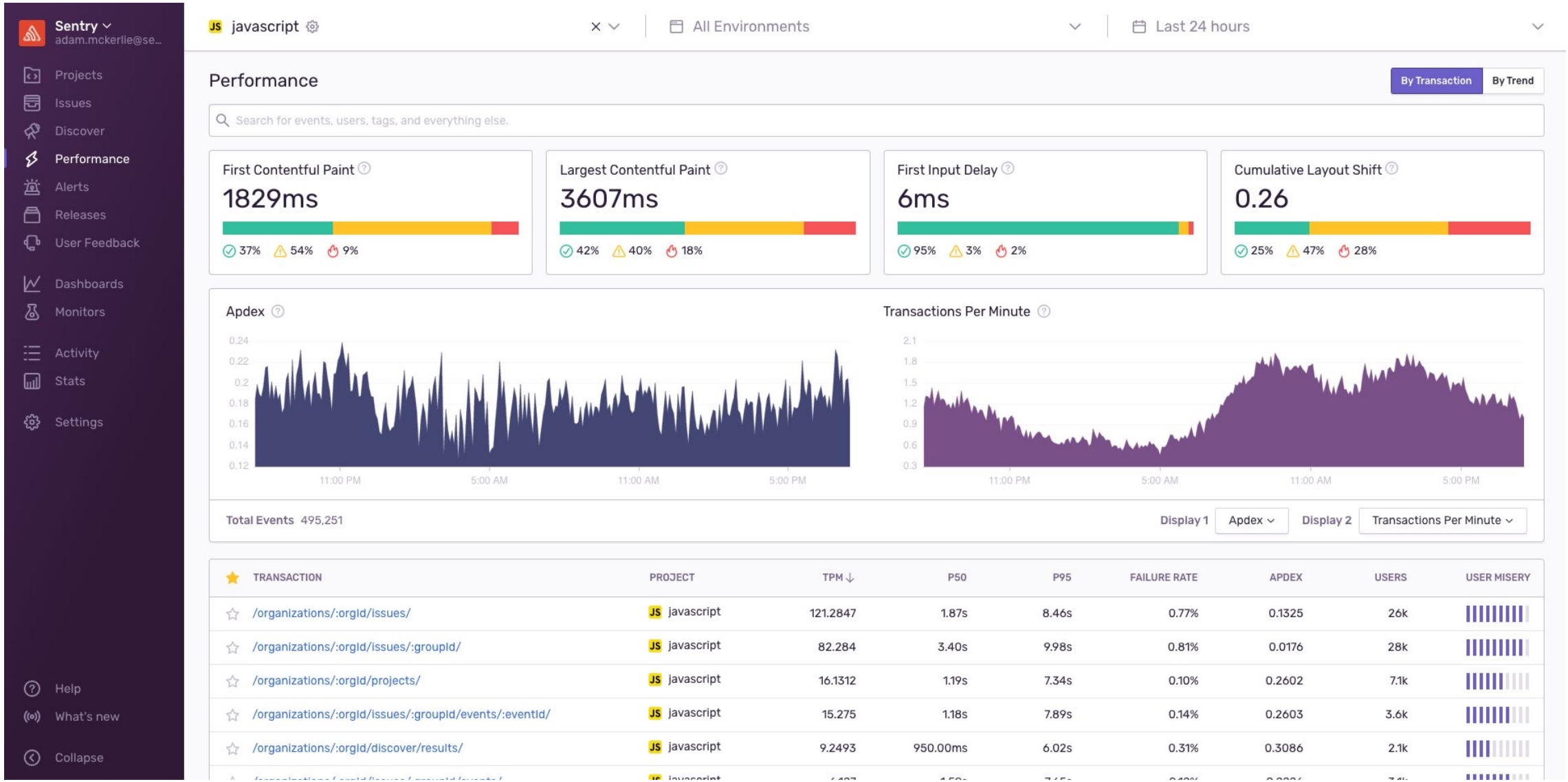
IF and **only if** an error occurs

THEN the bundle (*13kb*) is requested by the client

AND events are sent from the Sentry internal queue along with the **ID** of the requests

THEN we can match with our servers' logs by IDs.

Sentry


Sentry
adam.mckerlie@se...
Projects
Issues
Discover
Performance
Alerts
Releases
User Feedback
Dashboards
Monitors
Activity
Stats
Settings
Help
What's new
Collapse
javascript
All Environments
Last 24 hours
Performance
By Transaction
By Trend
Search for events, users, tags, and everything else.
First Contentful Paint
1829ms
37% 54% 9%
Largest Contentful Paint
3607ms
42% 40% 18%
First Input Delay
6ms
95% 3% 2%
Cumulative Layout Shift
0.26
25% 47% 28%
Apdex
0.24
0.22
0.2
0.18
0.16
0.14
0.12
11:00 PM
5:00 AM
11:00 AM
5:00 PM
Transactions Per Minute
2.1
1.8
1.5
1.2
0.9
0.6
0.3
11:00 PM
5:00 AM
11:00 AM
5:00 PM
Total Events 495,251
Display 1 Apdex
Display 2 Transactions Per Minute
TRANSACTION PROJECT TPM P50 P95 FAILURE RATE APDEX USERS USER MISERY
/organizations/:orgId/issues/ javascript 121.2847 1.87s 8.46s 0.77% 0.1325 26k
/organizations/:orgId/issues/:groupId/ javascript 82.284 3.40s 9.98s 0.81% 0.0176 28k
/organizations/:orgId/projects/ javascript 16.1312 1.19s 7.34s 0.10% 0.2602 7.1k
/organizations/:orgId/issues/:groupId/events/:eventId/ javascript 15.275 1.18s 7.89s 0.14% 0.2603 3.6k
/organizations/:orgId/discover/results/ javascript 9.2493 950.00ms 6.02s 0.31% 0.3086 2.1k

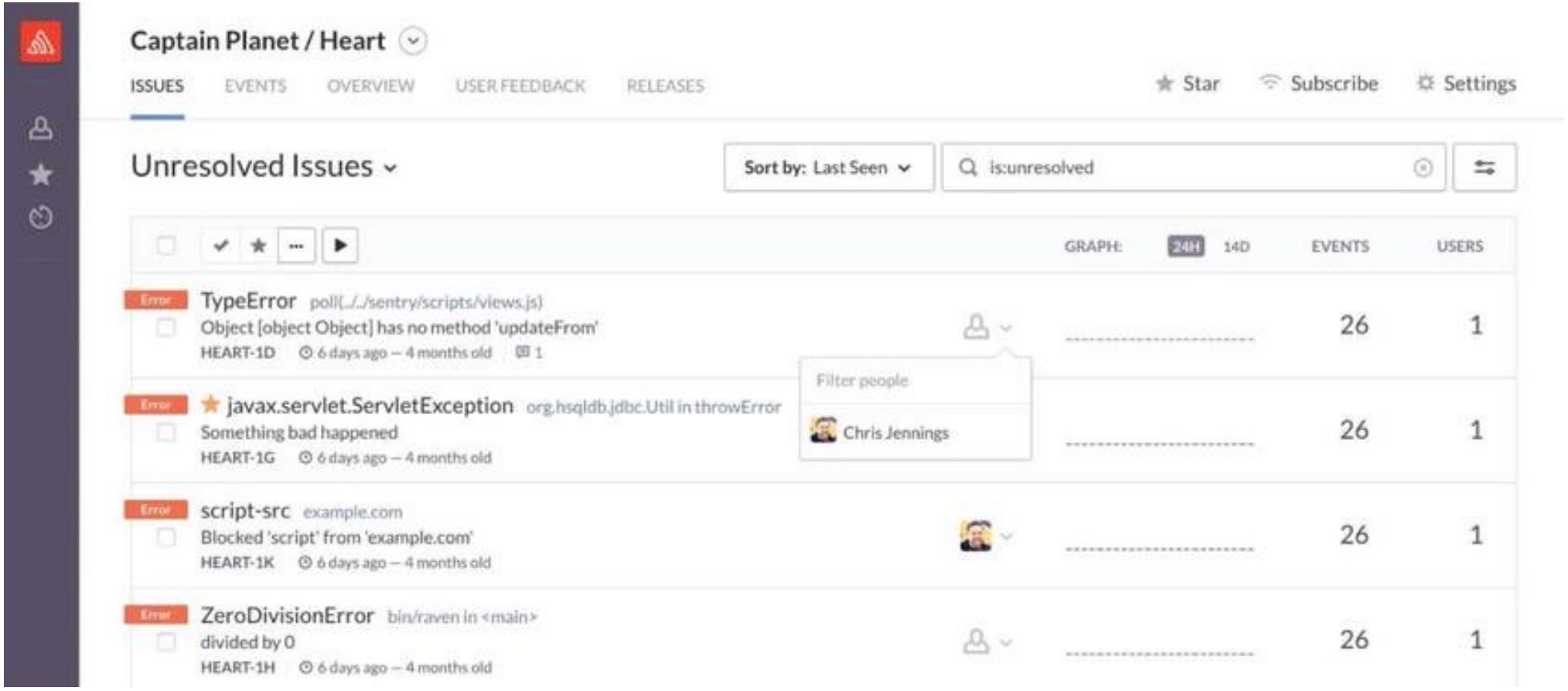
Sentry

- Real time monitoring in production
- Provides enough information on the session (browser, user id, location, etc)
- Integrates with Slack to setup alerts

Sentry

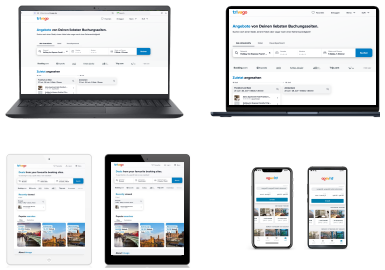
- ⛔ Only % of traffic
- ⛔ Finding the most meaningful errors could be time consuming

Sentry

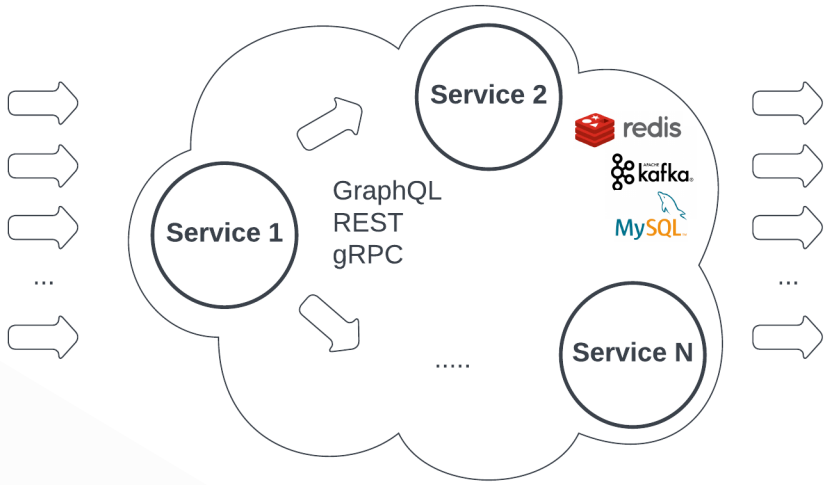

Captain Planet / Heart
ISSUES
EVENTS
OVERVIEW
USER FEEDBACK
RELEASES
Star
Subscribe
Settings
Unresolved Issues
Sort by: Last Seen
is:unresolved
GRAPH:
24H
14D
EVENTS
USERS
Error
TypeError poll(../../sentry/scripts/views.js)
Object [object Object] has no method 'updateFrom'
HEART-1D 6 days ago – 4 months old 1
26
1
Filter people
Chris Jennings
Error
javax.servlet.ServletException org.hsqldb.jdbc.Util in throwError
Something bad happened
HEART-1G 6 days ago – 4 months old
26
1
Error
script-src example.com
Blocked 'script' from 'example.com'
HEART-1K 6 days ago – 4 months old
26
1
Error
ZeroDivisionError bin/raven in <main>
divided by 0
HEART-1H 6 days ago – 4 months old
26
1

FRONTEND

WEB Apps



BACKEND



ADVERTISERS

- Booking
- Expedia
- Hotelopia
- Hilton
- Quickrooms
- Octopustravel
- Lol travel
- ...

SENTRY

Thomas Bartel

Dev Team Lead

for Core Frontend Team, trivago

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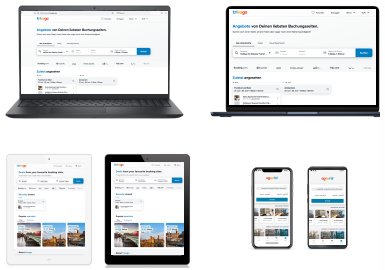
trivago

Backend Logs

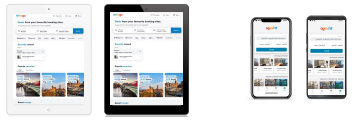
Image by Freepik

FRONTEND

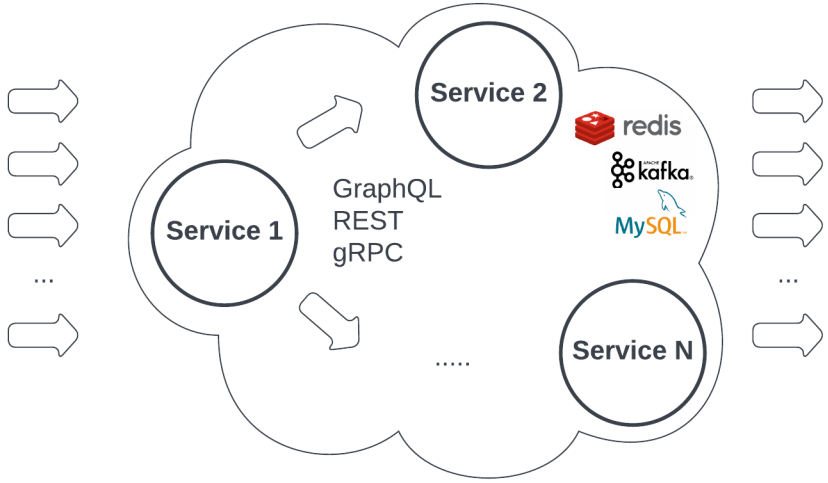
WEB Apps



Mobile Apps



BACKEND



ADVERTISERS

Booking

Expedia

Hotelopia

Hilton

Quickrooms

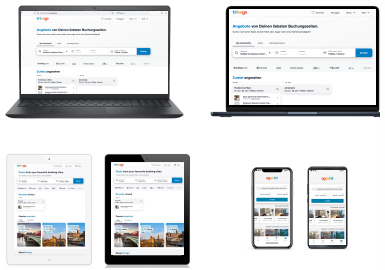
Octopustravel

Lol travel

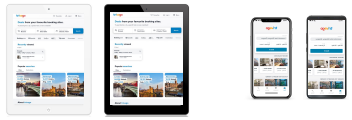
…

FRONTEND

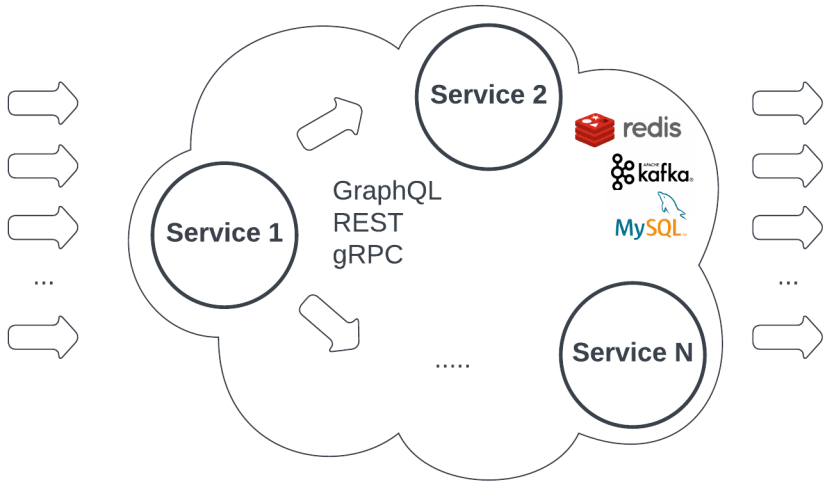
WEB Apps



Mobile Apps



BACKEND



Google Cloud

ADVERTISERS

Booking

Expedia

Hotelopia

Hilton

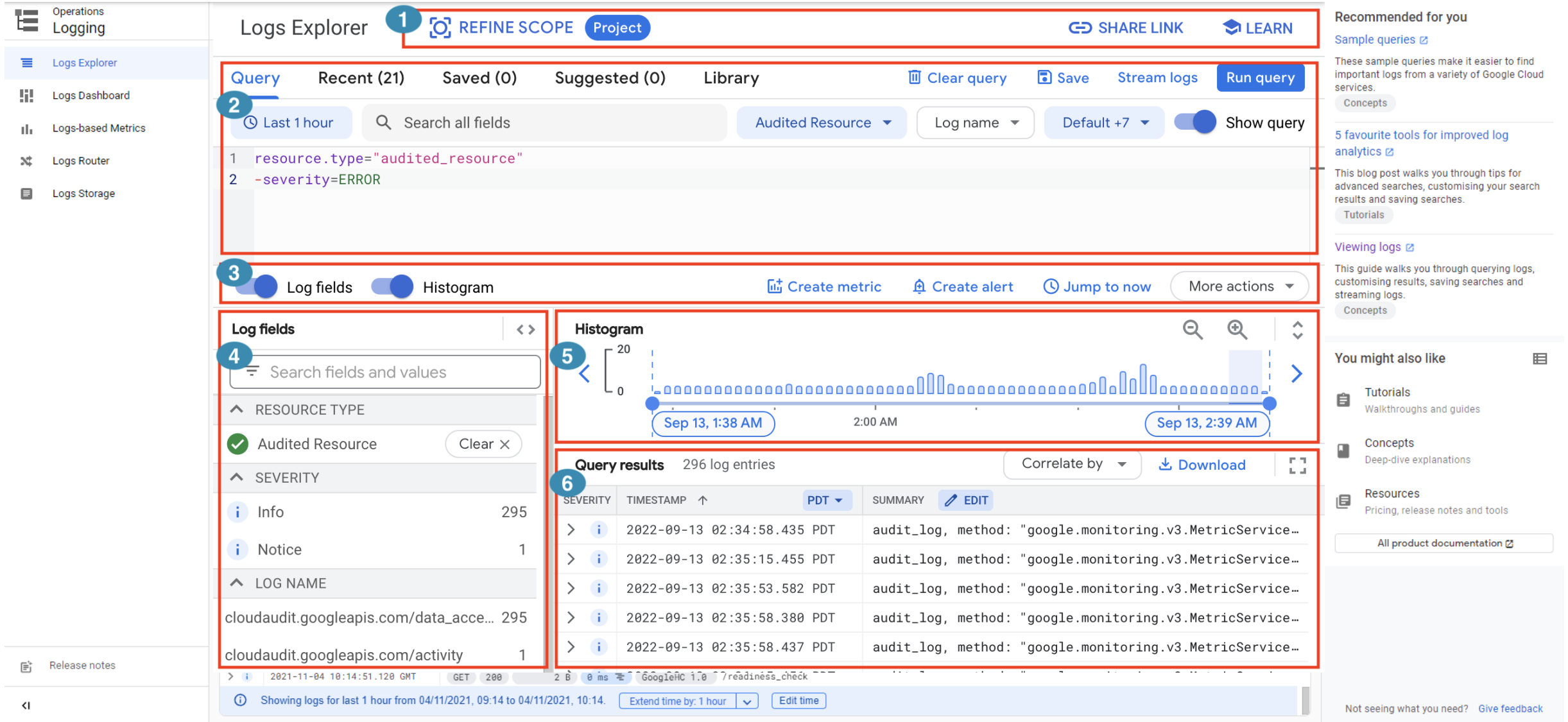
Quickrooms

Octopustravel

Lol travel

…

Google Cloud Logs Explorer



Google Cloud Logs Explorer

- Documentation:)

trivago

What about UX?

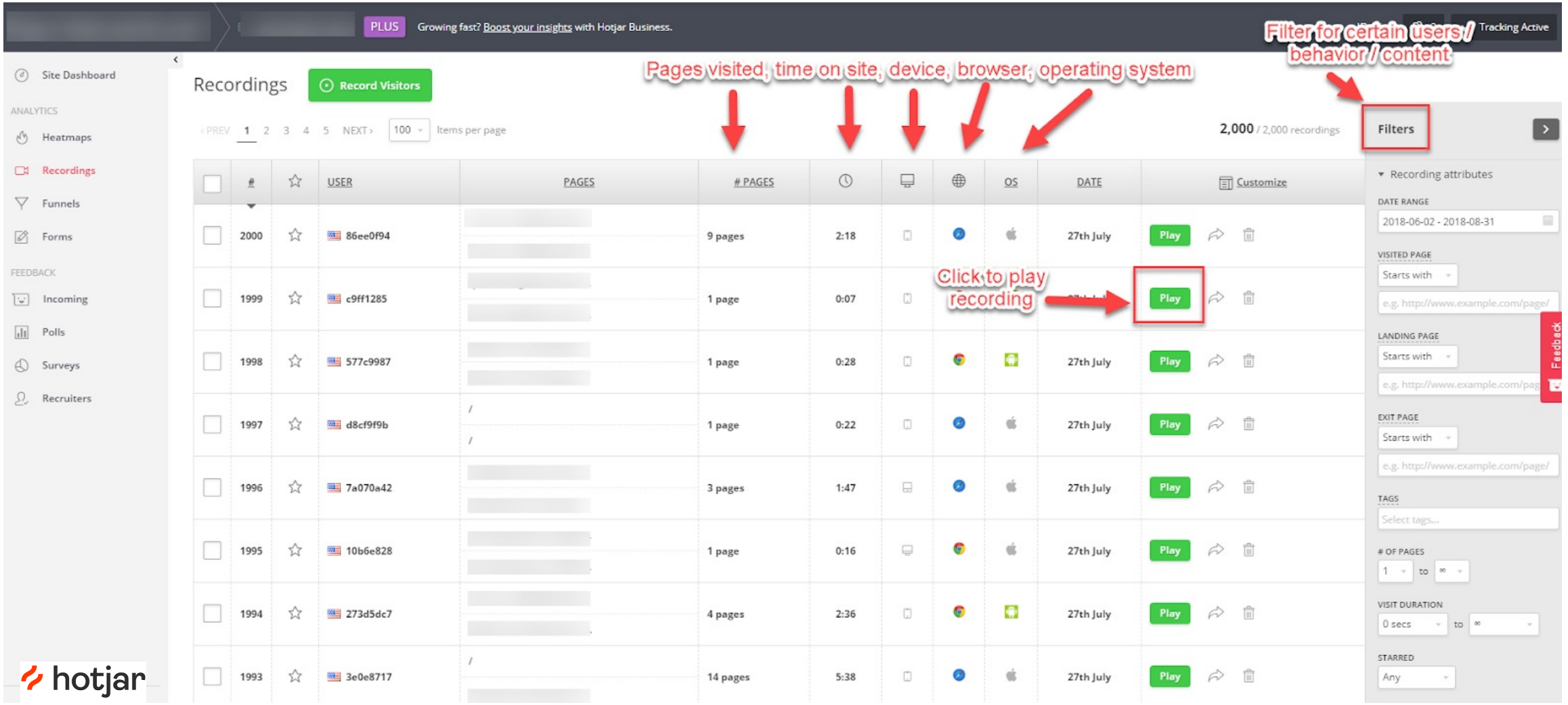
Image by Freepik

You can test so much in your little iPhone and Retina 4K. But there is always so much more in this world.

hotjar

- Watch videos of a specific traffic type
- See there what's really happening on user side
- Much more feedback than you can *ever create* in your testing session *on production*

hotjar


PLUS
Growing fast? Boost your insights with Hotjar Business.
Tracking Active
Filter for certain users / behavior / content
Pages visited, time on site, device, browser, operating system
Site Dashboard
ANALYTICS
Heatmaps
Recordings
Funnels
Forms
FEEDBACK
Incoming
Polls
Surveys
Recruiters
Recordings
Record Visitors
2,000 / 2,000 recordings
Filters
Click to play recording
Play
Recording attributes
DATE RANGE
2018-06-02 - 2018-08-31
VISITED PAGE
LANDING PAGE
EXIT PAGE
TAGS
OF PAGES
VISIT DURATION
STARRED
Feedback
hotjar

trivago

Test Automation

Image by Freepik

Synthetic Monitoring

- Simulating users: directing the path taken through the applicationf traffic
- Checking critical business transactions on schedule on prod
- Integrated slack monitoring uptime and performance

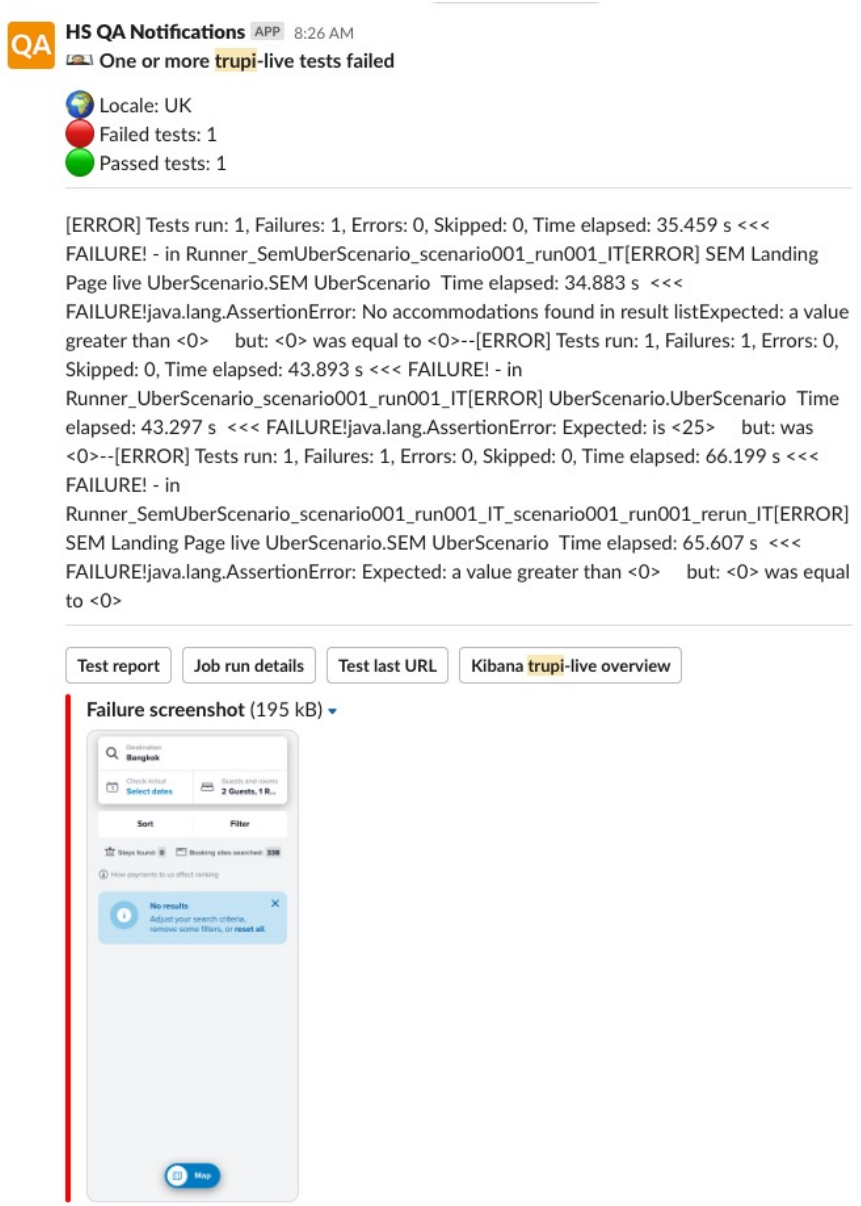
Karate

GitHub Actions

Synthetic Monitoring

- Screenshot
- Link to the report
- Failure message

P.S. and Kibana dashboard to monitor our monitoring :)



Giuseppe Donati

Test Automation Engineer

at trivago

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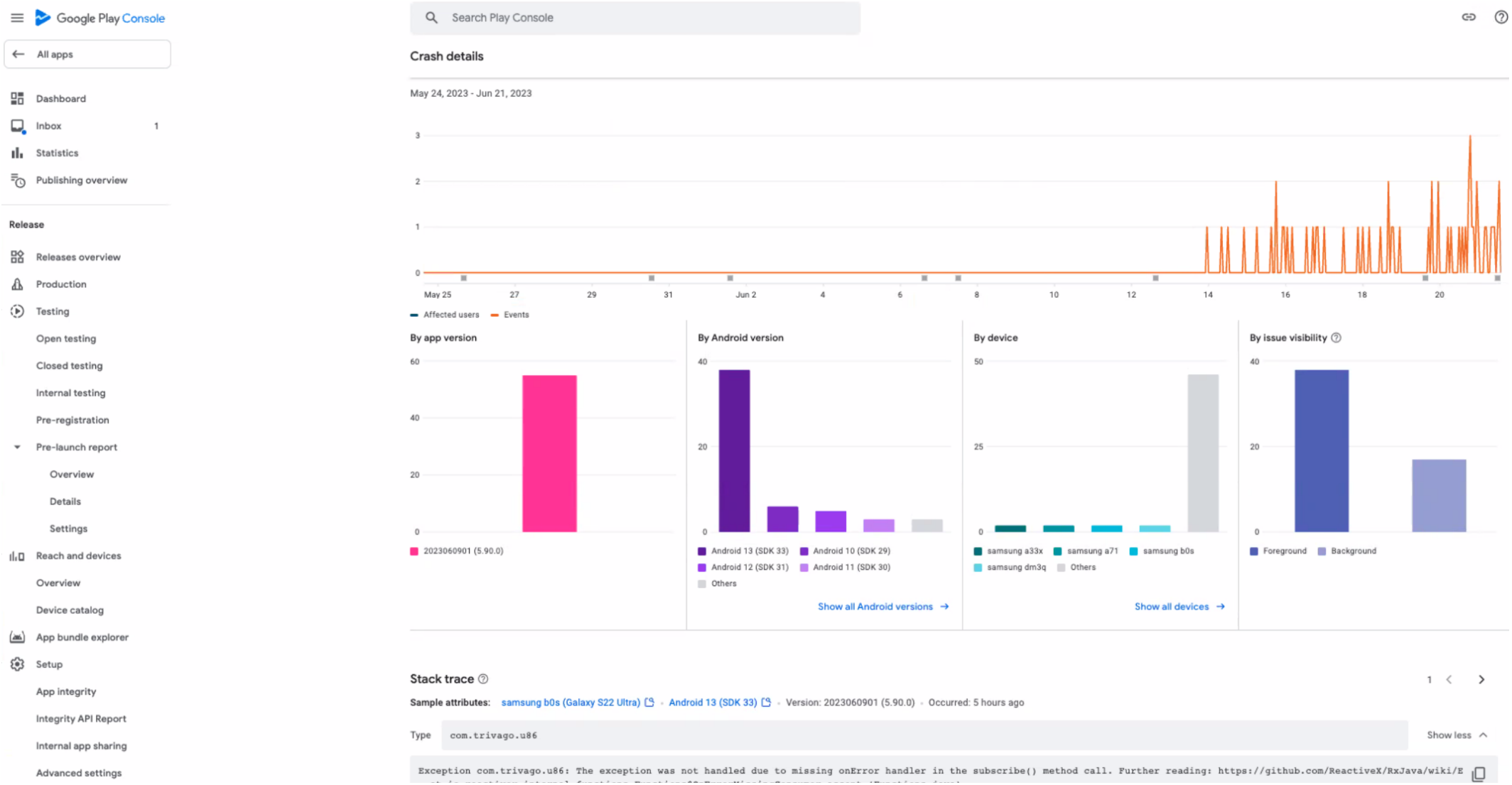
trivago

What about Mobile?

Image by Freepik

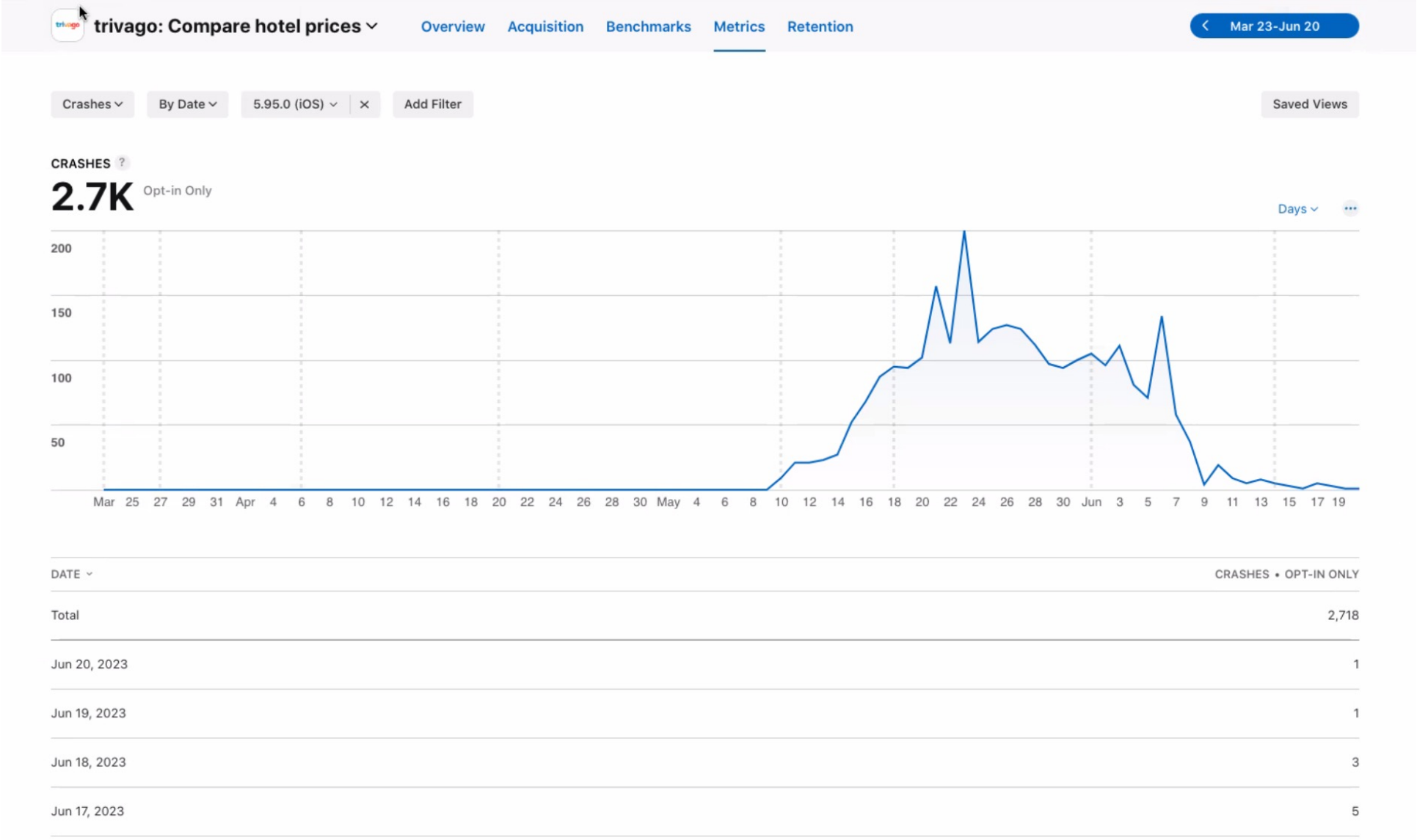
Google Play Console



Google Play Console

- Provides crash count per date/version
- Provides stack trace
- Provides additional data like the devices, operating system and manufacturers

App Store


trivago: Compare hotel prices
Overview
Acquisition
Benchmarks
Metrics
Retention
Mar 23-Jun 20
Crashes
By Date
5.95.0 (iOS)
Add Filter
Saved Views
CRASHES
2.7K
Opt-in Only
Days
200
150
100
50
Mar 25 27 29 31 Apr 4 6 8 10 12 14 16 18 20 22 24 26 28 30 May 4 6 8 10 12 14 16 18 20 22 24 26 28 30 Jun 3 5 7 9 11 13 15 17 19
DATE
CRASHES • OPT-IN ONLY
Total 2,718
Jun 20, 2023 1
Jun 19, 2023 1
Jun 18, 2023 3
Jun 17, 2023 5

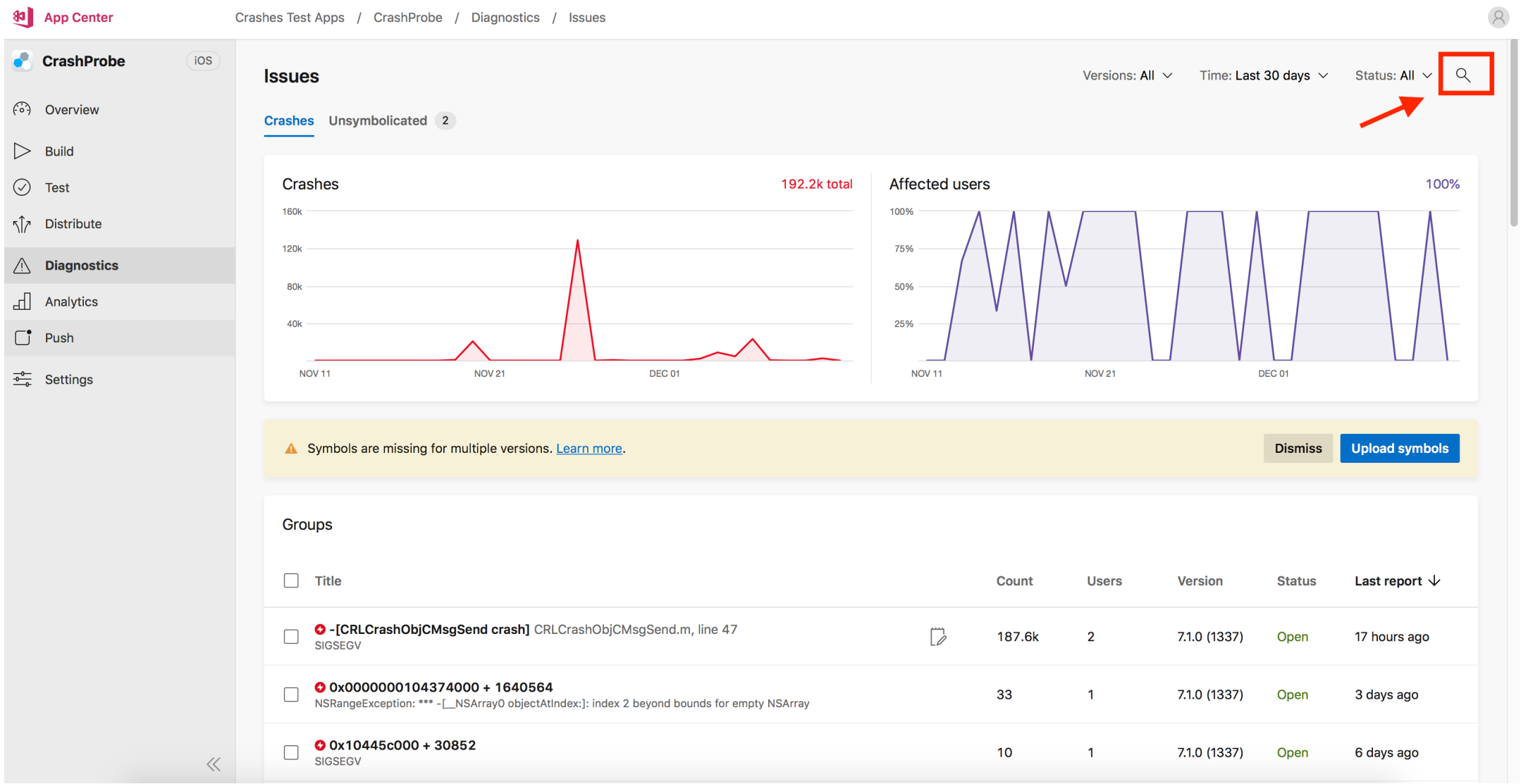
App Store

- By Apple:)
- Shows the number of crashes split by day and by version

App Store

- ⛔ Does NOT provide exact crush group exception
- ⛔ Does NOT provide any stack trace
- ⛔ No possibility to set alerts (which is a MUST)

App Center


App Center
Crashes Test Apps / CrashProbe / Diagnostics / Issues
CrashProbe
iOS
Overview
Build
Test
Distribute
Diagnostics
Analytics
Push
Settings
Issues
Versions: All
Time: Last 30 days
Status: All
Crashes
Unsymbolicated 2
Crashes
192.2k total
160k
120k
80k
40k
NOV 11
NOV 21
DEC 01
Affected users
100%
100%
75%
50%
25%
NOV 11
NOV 21
DEC 01
Symbols are missing for multiple versions. Learn more.
Dismiss
Upload symbols
Groups
Title
Count
Users
Version
Status
Last report
-[CRLCrashObjCMsgSend crash] CRLCrashObjCMsgSend.m, line 47
SIGSEGV
187.6k
2
7.1.0 (1337)
Open
17 hours ago
0x0000000104374000 + 1640564
NSRangeException: *** -[__NSArray0 objectAtIndex:]: index 2 beyond bounds for empty NSArray
33
1
7.1.0 (1337)
Open
3 days ago
0x10445c000 + 30852
SIGSEGV
10
1
7.1.0 (1337)
Open
6 days ago

App Center

- By Microsoft so can be installed any test device
- Shows crash analytics: size of crash groups per version/date
- Allows adding customizable parameters, fitting your app’s need and allowing and easier way to debug

App Center

- ⛔ User has to opt-in for sharing the Analytics + accept sending the reports
- ⛔ No alerts integration (which is a MUST)

Breno Bittencourt

Quality Assurance Lead

for Mobile Apps at trivago

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- Kibana
- Grafana
- Honeycomb
- Sentry
- GCP logs
- Hotjar
- Synthetic Monitoring
- App Store
- App Center
- Google Play Console

✅✅✅✅✅ THE TEAM ✅✅✅✅✅

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linkedin.com/in/qa-anastasia