

從零打造前端效能監控系統

Summer @WebConf Taiwan 2023



Summer

Front-End Developer

Summer。桑莫。夏天 cythilya.tw



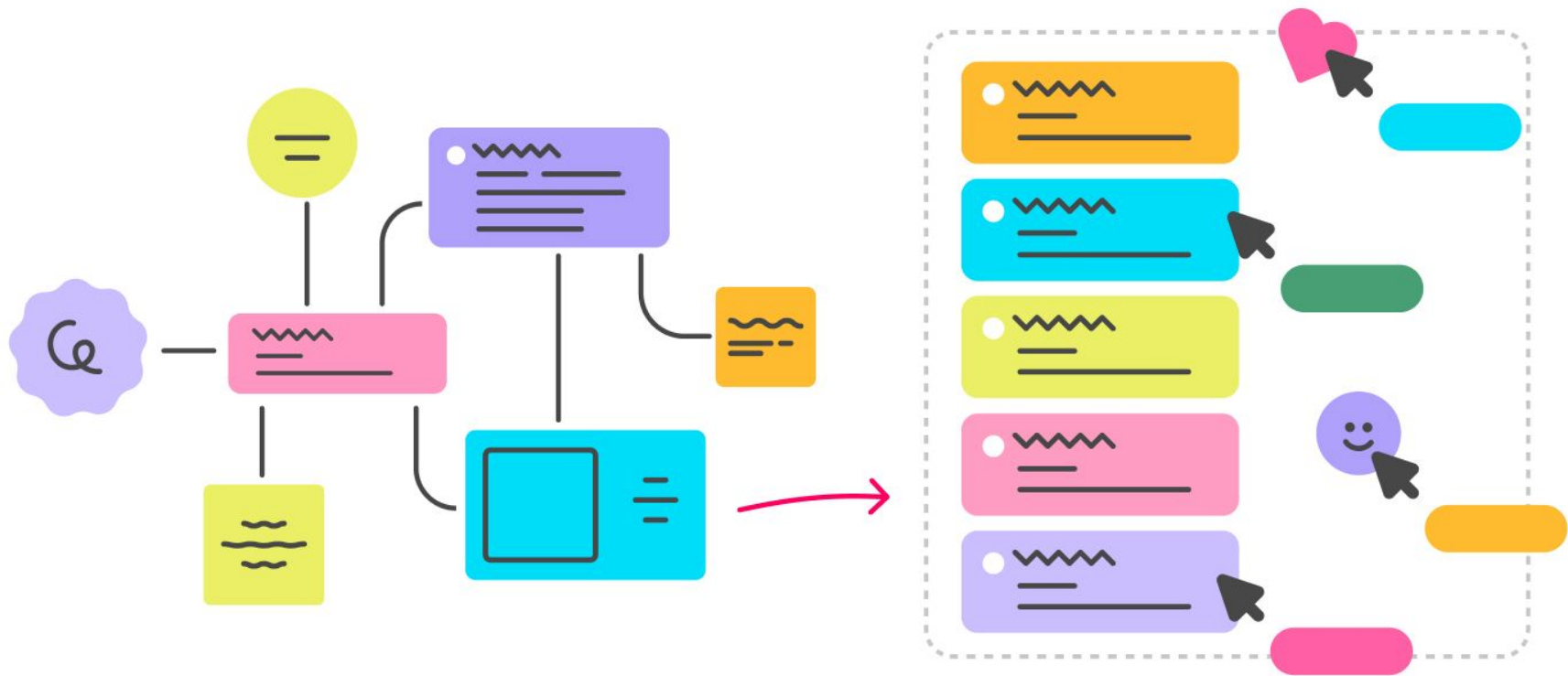
打造高速網站，從網站指標開始！全方位提升
使用者體驗與流量的關鍵

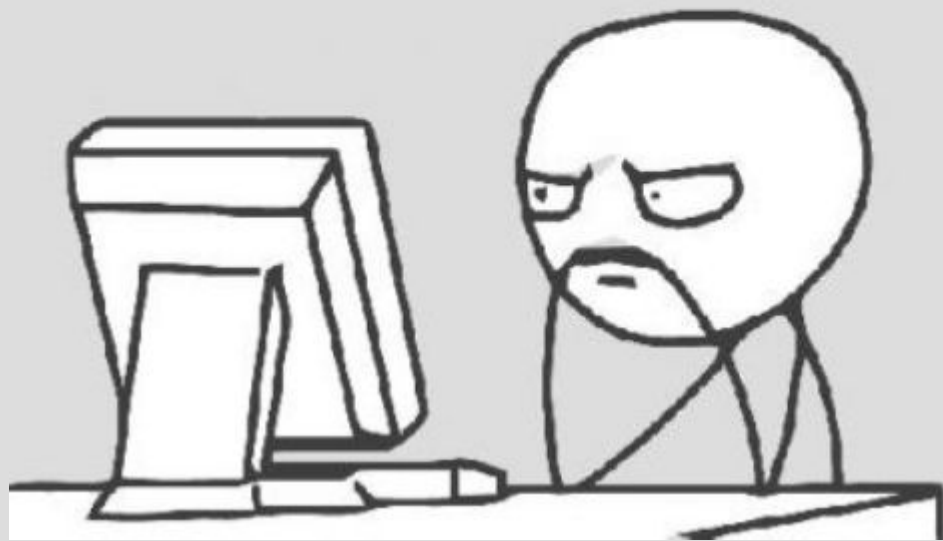


cythilya



cythilya@gmail.com

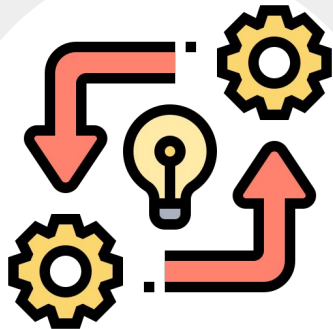








自動



每一個 Build



預知 + 通知



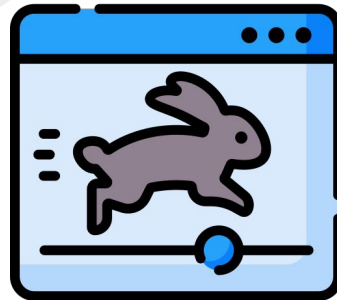
融合日常



LOADING

Loading
Performance

載入效能



Rendering
Performance

渲染效能

Core Web Vitals



(Loading)

LCP

Largest Contentful Paint



(Interactivity)

FID

First Input Delay



(Visual Stability)

CLS

Cumulative Layout Shift



60FPS

VS

30FPS



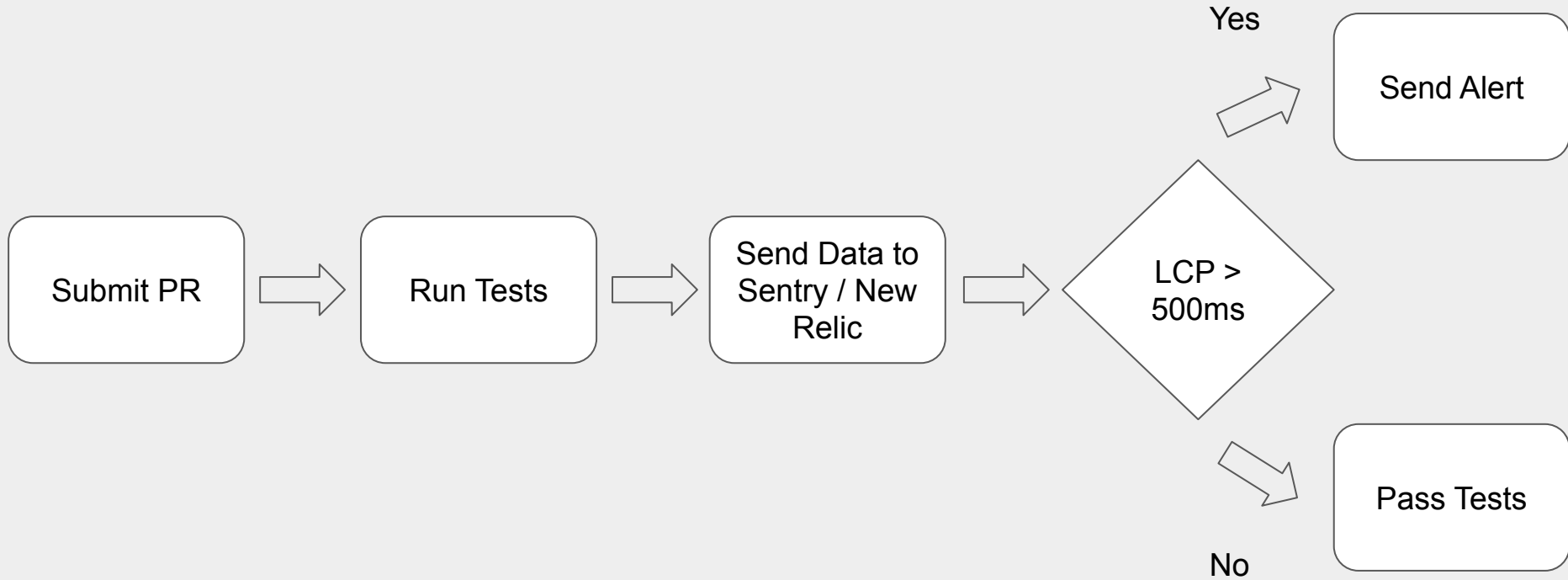
模擬 (Lab)



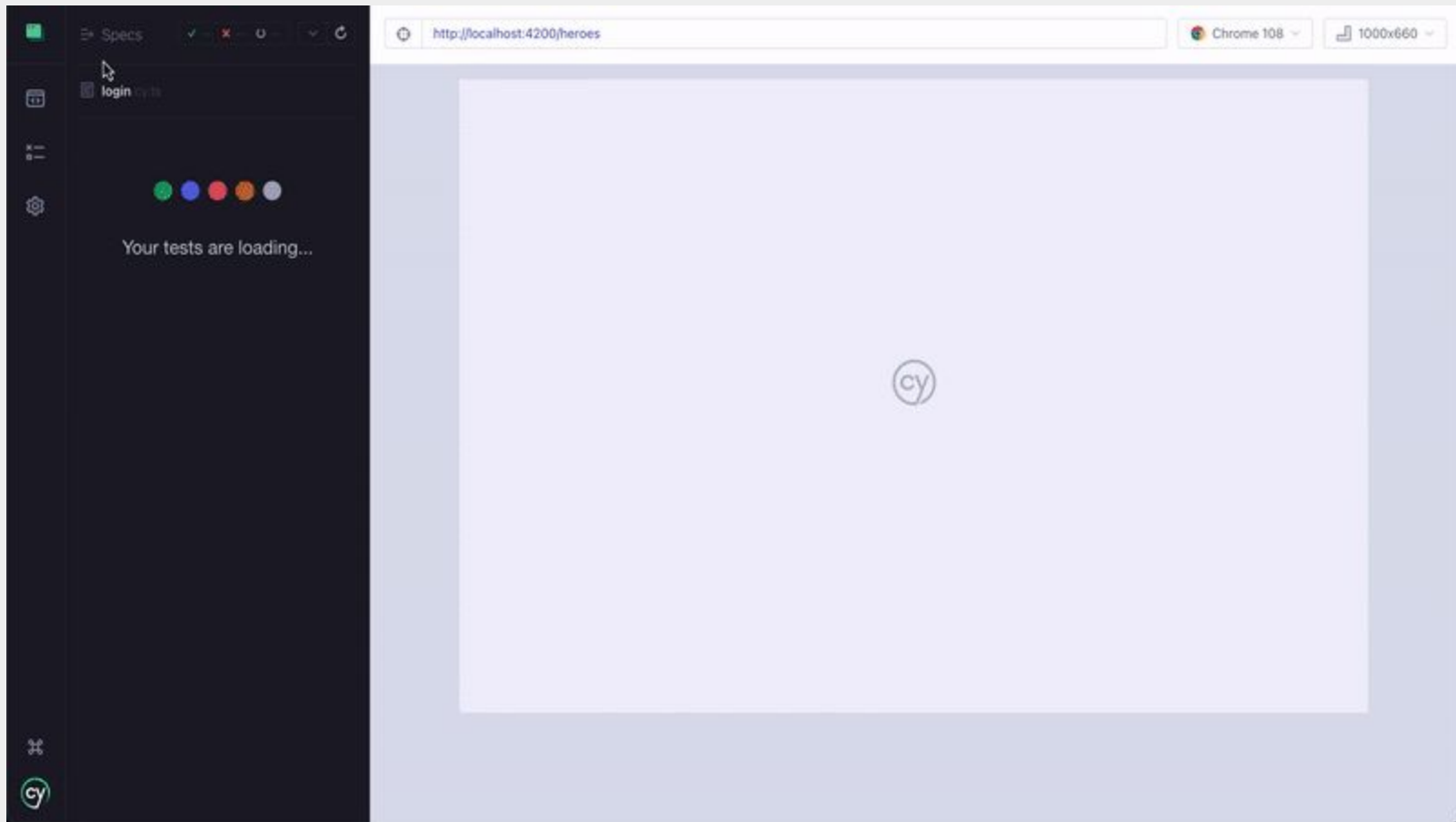
實地 (Field)



VS

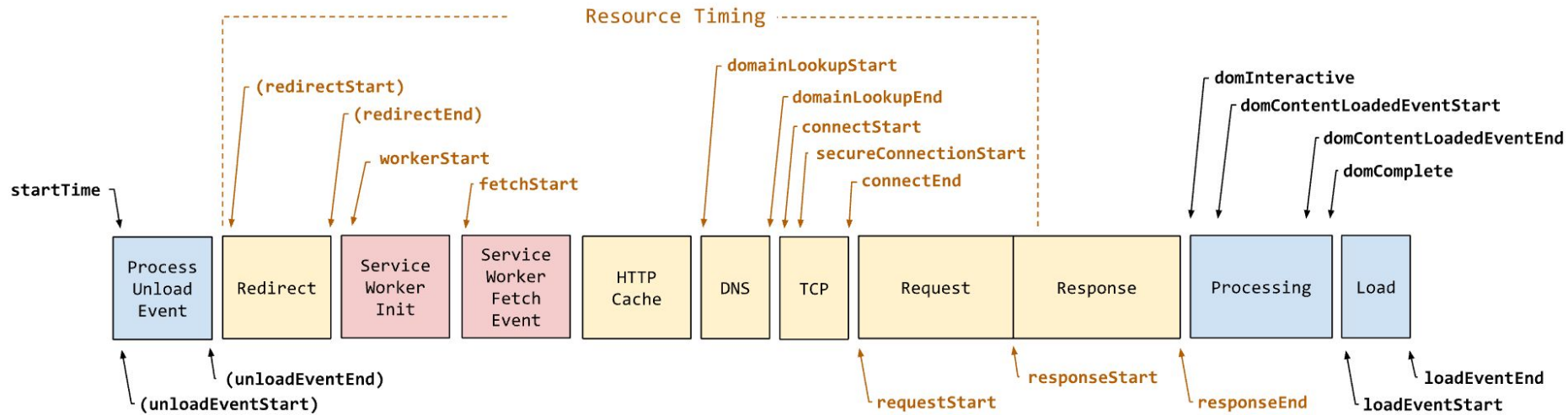






```
describe("photo list", () => {
  it("view this page", () => {
    cy.visit("https://sample.memori.com/");
    cy.intercept("GET", "**/display-record?serviceId=12345", {
      code: 200,
      message: "success",
      data: [
        {
          photoUrl: "https://sample.memori.com?id=abcdefg",
          imageId: "abcdefg",
          title: "蛋糕",
        },
        // ...
      ],
    });
  });
});
```

Mock
大量
資料



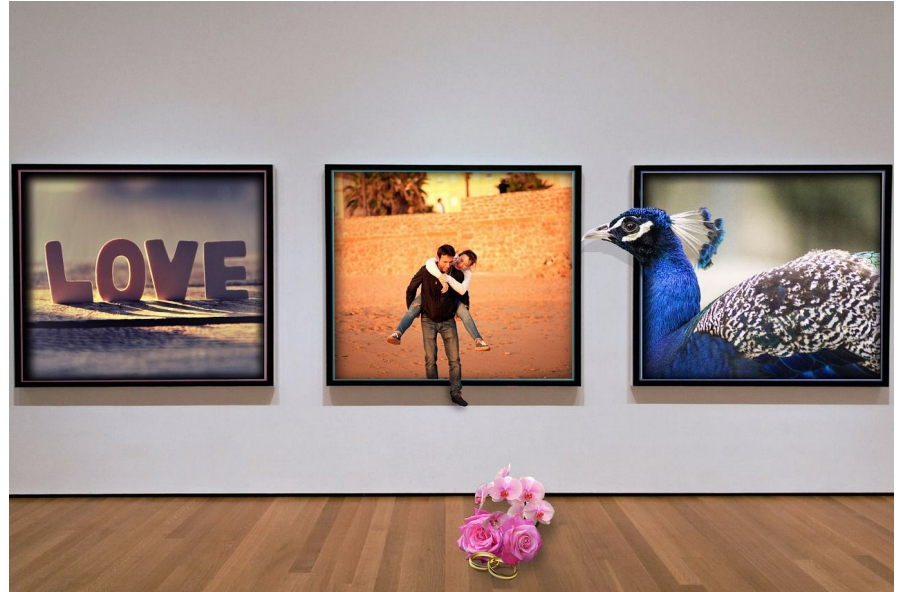
```
const observer = new PerformanceObserver(function(list, obj) {
  const entries = list.getEntries();
  entries.forEach(item => {
    if (item.name === 'first-contentful-paint') {
      console.log(item);
    }
  })
});
observer.observe({type: 'paint'});
```

```
PerformancePaintTiming {name: 'first-contentful-paint', entryType:
'paint', startTime: 1142.0999999977648, duration: 0}
```




SENTRY

MEMORI





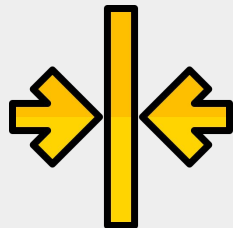
PANFL health challenge #weish UXHK

行前準備區 網站選擇



了解概況

Transaction
Summary



縮小範圍

Suspect Spans +
Suspect Tags



確認細節

Event

Performance 🔔

View Trends

All Transactions Web Vitals Frontend Backend Mobile

memori-masonry

All Envs

14D

Search Transactions

Worst LCP Web Vitals

Good 78% Meh 11% Poor 11%

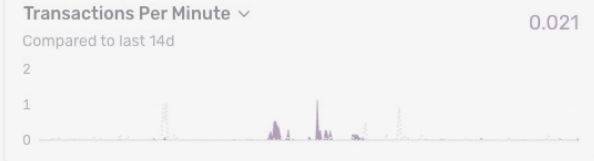
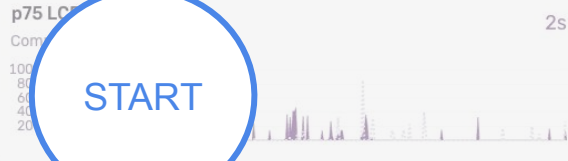
View All



Worst LCP Web Vitals

Good 78% Meh 11% Poor 11%

View All



START

★ TRANSACTION	PROJECT	TPM ↓	FCP	LCP	FID	CLS	USERS	USER MISERY
☆ /	memori-masonry	0.02	613.50ms	1.67s	4.73ms	0.2036	28 👤	



Overview All Events Tags Spans Web Vitals Replays

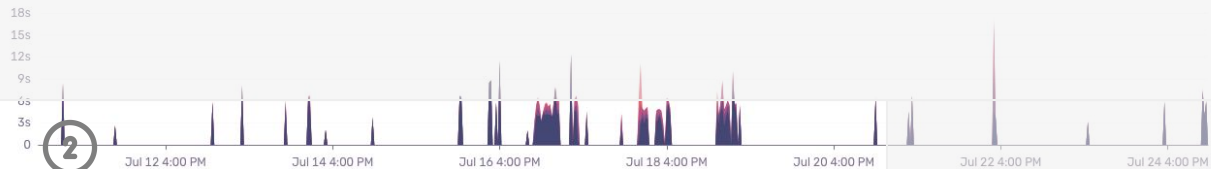
Filter

All Envs

14D

transaction.op:pageLoad

Duration Breakdown



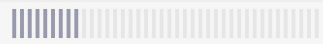
Percentage of Total Transactions

97.45%

Web Vitals



User Misery



Apdex

0.0807

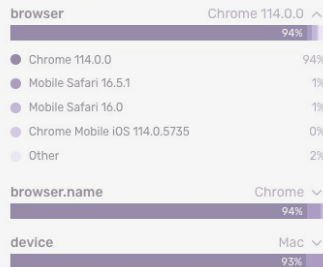


Failure Rate

4.04%



Tag Summary

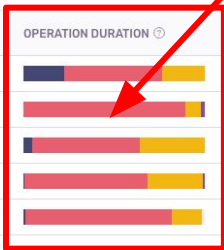


http

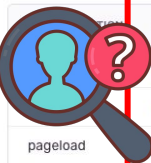
1

Suspect Spans 縮小範圍

Operation Duration 了解概況



Suspect Spans



pageload resource.img

SPAN NAME	FREQUENCY	P75 SELF TIME	TOTAL SELF TIME
GET https://script.google.com/macros/s/AKfycbwqEwBMBuxVTTEWSzgekY1g08G1XD2faUtlfkzAYStcyQit2T1rM8L4F...	83.81%	3.57s	19.46min
GET https://firebase.googleapis.com/v1alpha/projects/-/apps/1:559593920526:web:932eb49460033ea193845f/we...	92.86%	198.15ms	1.34min
pageload	100%	145.13ms	1.27min
resource.img https://drive.google.com/thumbnail?id=1uZePrGyI82LGLhYnD6HcJ50N0hkxGFNq&sz=w900	20.71%	857.45ms	52.27s



②

Suspect Tags ?

- user
- effectiveConnectionType
- hardwareConcurrency
- deviceMemory
- cls.source.1
- visibilitychange

Other Tags ?

- browser.name
- device
- device.family
- environment
- level
- os
- os.name
- transaction

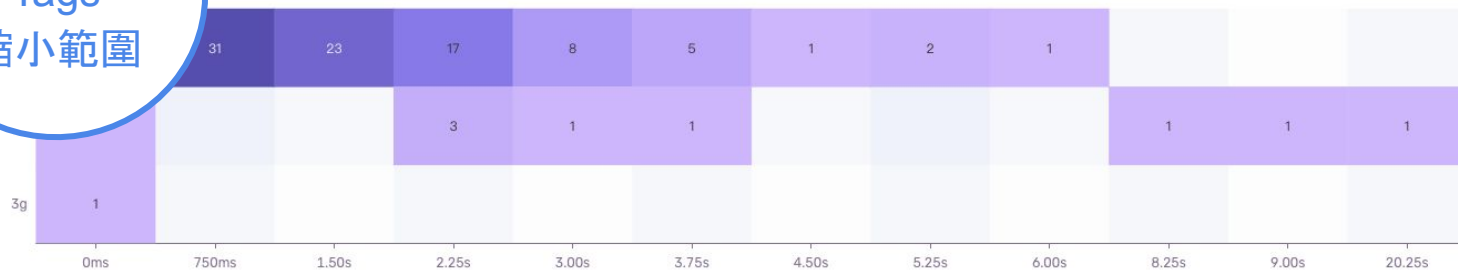


Suspect
Tags
縮小範圍

has:measurements.lcp



X-Axis: LCP ▾



EFFECTIVECONNECTIONTYPE	FREQUENCY ↓	EVENTS	AVG LCP	
4g	94%	144	1.47s	+ Add to filter
2g	6%	9	5.98s	+ Add to filter
3g	1%	1	365.00ms	+ Add to filter



Hide Details

JSON (18.7 KIB)

Event ID [?](#)
adab8ad7 [🔗](#)
memori-masonry

Event Duration [?](#)
7.11s
[8 hours ago](#)

Browser [?](#)
Chrome
114.0.0

Trace Navigator [?](#)
This Event [???](#)
[View Full Trace: c4e60585 \(1 event\)](#)

Filter [v](#)

Search for spans

● http.client	4112.9ms	59%
● browser	2041.5ms	29%
● ui.long-task	621ms	9%
● Other	171.6ms	2%



36 pageload - 968fad26cd68becb

33 spans out of view

→ http.client - GET https://script.google.com/macros/s/AKfycbwqEWBMBuxVTT

2 spans out of view

Web Vitals

First Contentful Paint
2.526 seconds

First Paint
2.526 seconds

Largest Contentful Paint
2.572 seconds

Time to First Byte
79.800 milliseconds

An iceberg floating in the ocean. The small tip above the water represents the visible part of a website, while the much larger mass below the water represents the hidden, slow-loading components. The background is a clear blue sky with some clouds.

loading 2 秒等有點久...

圖檔太大
網路只有 3G
伺服器遠在美國
前端大量計算
DOM 結構太複雜
電腦太久沒關
沒壓縮
多餘的程式碼
沒快取
都是同步載入
沒 CDN
沒 image server

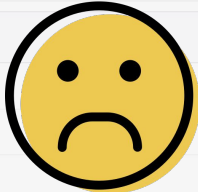


User Misery
痛苦指數



Threshold & Alert
閾值 & 通知

★ TRANSACTION	PROJECT	TPM	FCP	LCP	FID	USERS	USER MISERY ↓
☆ /*/*/javascript-find-item-in-an-array/	JS blog	0	990.80ms	1.02s	13.45ms	80 👤	
☆ /*/*/git-merge-branch-into-master/	JS blog	0	1.44s	1.67s	58.95ms	77 👤	
☆ /*/*/vue-list-rendering/	JS blog	0	1.15s	1.10s	6.00ms	76 👤	
☆ /*/*/javascript-date-timezone/	JS blog	0	1.33s	1.43s	0.83ms	45 👤	
☆ /*/*/shimanami-kaido/	JS blog	0	1.31s	1.31s	76.10ms	39 👤	
☆ /*/*/uuid/	JS blog	0	1.09s	1.11s	0.70ms	36 👤	
☆ /*/*/what-happens-when-you-type-an-url-in-the-browser-and-press-enter/	JS blog	0	1.26s	1.29s	0.00ms	32 👤	
☆ /	JS blog	0	881.00ms	800.95ms	3.27ms	31 👤	
☆ /*/*/encode-decode/	JS blog	0	1.25s	1.34s	114.60ms	0.4405	
☆ /*/*/array-and-object-handling/	JS blog	0	1.06s	1.06s	7.10ms	0.5397	
☆ /*/*/bootstrap-grid-system/	JS blog	0	1.68s	1.82s	0.40ms	0.6666	
☆ /*/*/*/	JS blog	0	1.18s	1.38s	0.70ms	0.0319	
☆ /about/	JS blog	0	516.47ms	502.70ms	1.00ms	0.2444	



USER MISERY ↓

|||||

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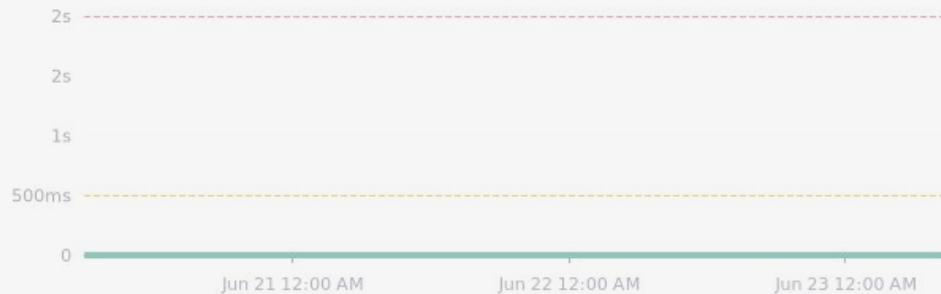
|||

|||



Warning: LCP alert

Triggered June 23, 2023, 10:07 a.m.



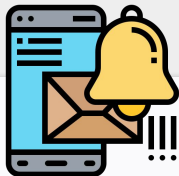
Alert Rule Details

Project	memori
Environment	production
Threshold	> 500.0
Time Interval	1 hour
Metric	p95(measurements.lcp)

閾値



通知


 Duplicate

 Edit Rule

Date Range: Last 7 days



Largest Contentful Paint

● p95(measurements.lcp) event.type:transaction over 1 hour


 Summary ✔ 82.59% ⚠ 4.05% 🔥 13.36%
[Open in Discover](#)

ALERT	REASON	DURATION	DATE TRIGGERED
#3	Largest Contentful Paint above 2000	-36min	Jun 23, 2023 10:07:50 AM UTC
#2	Largest Contentful Paint above 500	60min	Jun 20, 2023 12:41:51 AM UTC
#1	Largest Contentful Paint above 2000	11min	Jun 18, 2023 8:48:50 AM UTC

Alert Status

 Critical


Last Triggered

5 hours ago

 Critical Conditions

When Largest Contentful Paint is above 2000 in 1 hour

Then Send a notification to memori.service.tw@gmail.com
Change alert status to Critical

 Warning Conditions

When Largest Contentful Paint is above 500 in 1 hour

Then Send a notification to memori.service.tw@gmail.com
Change alert status to Warning

Alert Rule Details

Environment	production
Date created	Jun 13, 2023
Created By	Memori
Last Modified	10 days ago
Team	M

```
import * as Sentry from '@sentry/react';

Sentry.init({
  dsn: "https://test-sample-123456789.ingest.sentry.io/123456789",
  integrations: [
    new Sentry.BrowserTracing({
      tracePropagationTargets: ["localhost",
        /^https:\/\/test-sample\.web\.app/],
    }),
  ],
  tracesSampleRate: 1.0,
  replaysSessionSampleRate: 1.0,
  replaysOnErrorSampleRate: 1.0,
});
```

判斷在
GHA 環境
送出 tag

```
if (process.env['PERFORMANCE TEST'] === 'cypress') {
  Sentry.setTag('test', 'performance-test');
}
```



Overview All Events Tags Spans Web Vitals Replays 0

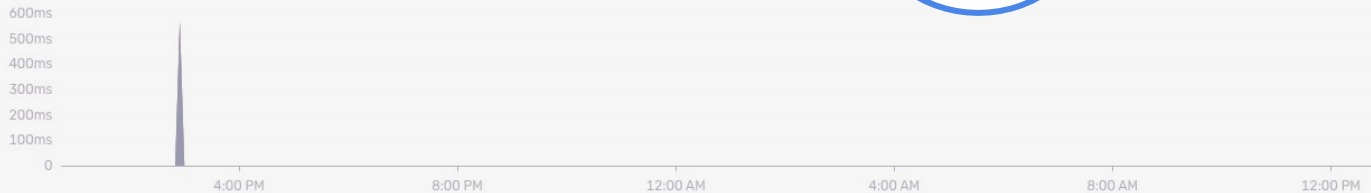
Filter ▾

All Envs ▾

24H ▾

transaction.op:pageload test:performance-test

✕ ⚠️

Duration Breakdown ?

Display: Duration Breakdown ▾

Filter: Slow Transactions (p95) ▾

View All Events

⏪ ⏩

EVENT ID	USER	OPERATION DURATION ?	TOTAL DURATION	TRACE ID	TIMESTAMP	REPLAY
750b289f	172.177.65.71		569.00ms	ac6497ed	Jul 9, 2023 2:55:49 PM UTC	(no value)

Suspect Spans

View All Spans

⏪ ⏩

SPAN OPERATION	SPAN NAME	FREQUENCY	P75 SELF TIME	TOTAL SELF TIME
resource.script	/static/js/bundle.js	100%	376.40ms	376.40ms
ui.long-task	Main UI thread blocked	100%	102.00ms	102.00ms
pageload	/	100%	65.90ms	65.90ms
browser	request	100%	12.60ms	12.60ms

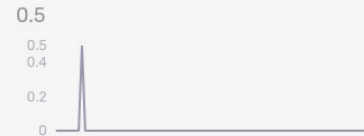
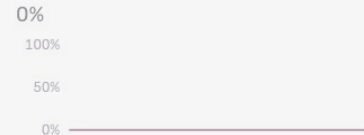
Tag
篩選

Percentage of Total Transactions

9.09%

Web Vitals ?

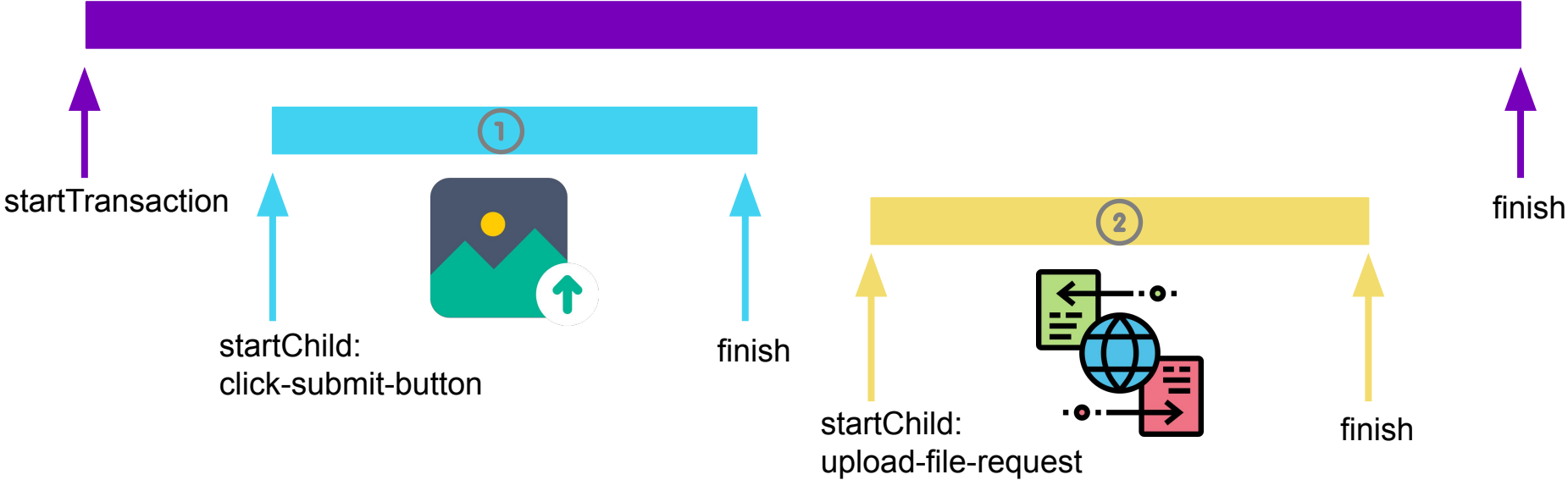
Good 100% Meh 0% Poor 0%

User Misery ?Apdex ?Failure Rate ?

Tag Summary

browser	Chrome 114.0.0 ^	100%
	● Chrome 114.0.0	100%
browser.name	Chrome ▾	100%

transaction: upload-photo-transaction



upload-photo-transaction

Overview All Events Tags Spans Web Vitals Replays 0

Filter

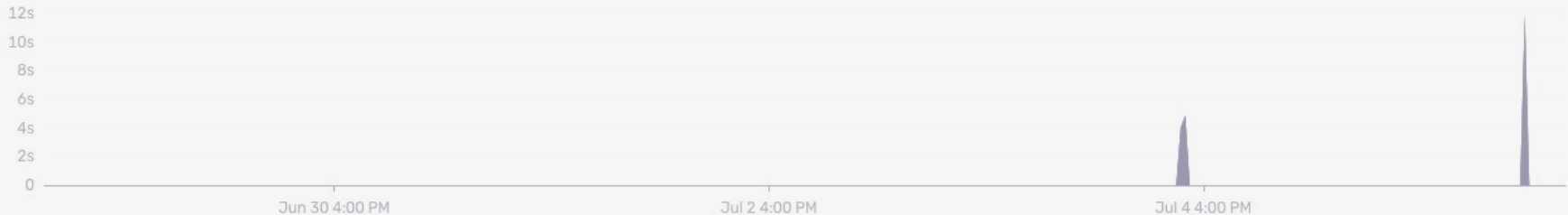
All Envs

7D

transaction:upload-photo-transaction



Duration Breakdown



Display: Duration Breakdown

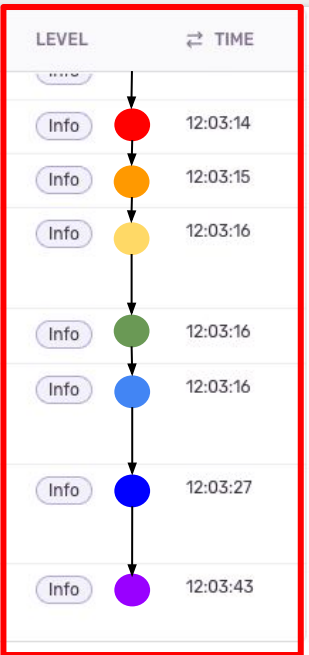
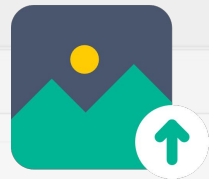
Filter: Slow Transactions (p95)

View All Events

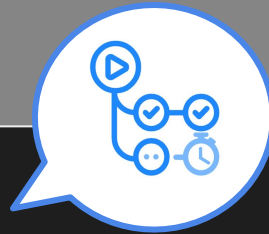


EVENT ID	USER	OPERATION DURATION	TOTAL DURATION	TRACE ID	TIMESTAMP	REPLAY
1cebb534	1 118.160.2.178	(no value)	4.87s	78243205	Jul 4, 2023 2:06:27 PM UTC	(no value)
25571e59	1 118.160.2.178	(no value)	4.02s	dd2cee31	Jul 4, 2023 1:51:29 PM UTC	(no value)

TYPE	CATEGORY	DESCRIPTION	LEVEL	⇌ TIME
	ui.input	input#message.MuiInputBase-input.MuiOutlinedInput-input.css-1x5jdmq[type="text"]	Info	12:03:14
	ui.click	span.MuiTypography-root.MuiTypography-caption.css-oblobm	Info	12:03:15
	ui.click	button.MuiButtonBase-root.MuiButton-root.MuiButton-contained.MuiButton-containedPrimary.MuiButton-containedSizeMedium.MuiButton-root.MuiButton-contained.MuiButton-containedPrimary.MuiButton-containedSizeMedium.css-1oueqvu[type="button"]	Info	12:03:16
	ui.click	div.MuiFormControl-root.css-npgb78 > input[type="file"]	Info	12:03:16
	ui.click	button.MuiButtonBase-root.MuiButton-root.MuiButton-contained.MuiButton-containedPrimary.MuiButton-containedSizeMedium.MuiButton-root.MuiButton-contained.MuiButton-containedPrimary.MuiButton-sizeMedium.MuiButton-containedSizeMedium.css-1oueqvu[type="button"]	Info	12:03:16
	ui.click	button.MuiButtonBase-root.MuiButton-root.MuiButton-contained.MuiButton-containedPrimary.MuiButton-sizeMedium.MuiButton-containedSizeMedium.MuiButton-fullWidth.MuiButton-root.MuiButton-contained.MuiButton-containedPrimary.MuiButton-sizeMedium.MuiButton-containedSizeMedium.MuiButton-fullWidth.css-1qelgoy[type="button"]	Info	12:03:27
	xhr	POST https://script.google.com/macros/s/AKfycbwqEwBMBuxVTTEWSzgekY1g08G1XD2fauTU1fkzAYsTcyQit2T1rM8L4FbpwEtrMi98oA/exec?api=upload-record [200]	Info	12:03:43



```
name: Performance Test
on:
  push:
    branches:
      - performance-test
env:
  PERFORMANCE_TEST: cypress
jobs:
```



```
  cypress-run:
    runs-on: ubuntu-22.04
    steps:
      - name: Checkout
        uses: actions/checkout@v3
        with:
          ref: performance-test
      - name: Cypress run with env
        uses: cypress-io/github-action@v5
        with:
          browser: chrome
          headed: true
          start: yarn start
          wait-on: 'http://localhost:3000'
```

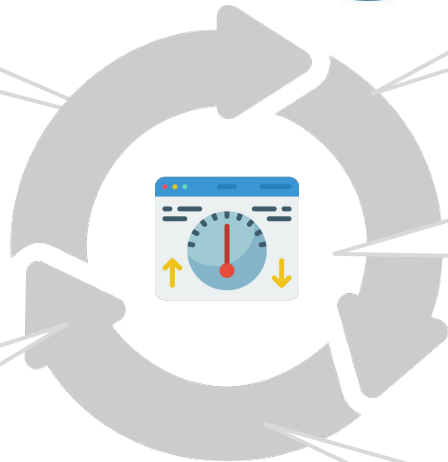
利用 Sentry 了解長期走向
與發掘潛問題，必要時通知



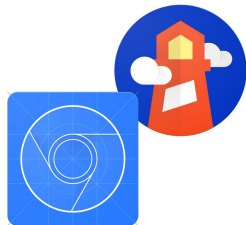
利用 Cypress + Sentry +
CI/CD 在 PR 階段檢測即將
部署的程式碼，確保品質



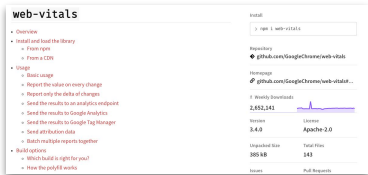
從 Sentry 找出需要關注的議題
User Misery / Threshold & Alert



利用 Sentry 蒐集資訊找出問題
Transaction, Event, Suspect Spans / Tags



進入開發或除錯階段，利用
Lighthouse 與 Chrome DevTools
模擬特定條件來實作與驗證



web-vitals library



VS



自定義
流程

cythilya / performance-monitoring-demo

Code Issues Pull requests Actions Projects Wiki Security Insights Settings

performance-monitoring-demo (Private) Unwatch 1 Fork 0 Star 0

main 1 branch 0 tags Go to file Add file Code

File	Commit	Author	Date
feat: init project	e5a585c	cythilya	yesterday
cypress	feat: init project	cythilya	yesterday
public	feat: init project	cythilya	yesterday
src	feat: init project	cythilya	yesterday
.gitignore	feat: init project	cythilya	yesterday
LICENSE	Initial commit	cythilya	yesterday
README.md	feat: init project	cythilya	yesterday
cypress.config.js	feat: init project	cythilya	yesterday
package.json	feat: init project	cythilya	yesterday

cythilya feat: init project e5a585c yesterday 2 commits

README.md

Performance Monitoring Demo

Setup

- Clone this project.
- Install dependencies by using `yarn`.

Run Cypress Test

- Run `yarn start` in one console.
- In another console,
 - Run `yarn cypress` in local for silence mode in CI.
 - Run `yarn cypress:open` in local for interactive mode to see what is going on.

About

No description, website, or topics provided.

Readme MIT license Activity 0 stars 1 watching 0 forks

Releases

No releases published [Create a new release](#)

Packages

No packages published [Publish your first package](#)

Languages

- JavaScript 63.6%
- HTML 23.2%
- CSS 13.2%

Suggested Workflows

Based on your tech stack

Actions Importer Set up

Automatically convert CI/CD files to YAML for GitHub Actions.

Performance Monitoring Demo <https://github.com/cythilya/performance-monitoring-demo>



特別感謝

MEMORI

♥ Sean Chou ♥ Yvonne Huang ♥ Shelly Chen



Thank you!

