Making sense of Long Animation Frames

Andy Davies · Feb 2025

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Photo by Patrick Fore on Unsplash

It’s tempting to focus on what we can easily measure

It’s tempting to focus on what we can easily measure

But what if we really need to focus on things that are harder to measure?

Some things can measured in lab and field

```
www.kayak.com... (0 bytes)
www.kayak.de...in (0 bytes)
www.kayak.de... (105 KB)
content.r9cdn.net...combined.css (69 KB)
content.r9cdn.net...combined.css (4 KB)
content.r9cdn.net...combined.js (126 KB)
content.r9cdn.net...combined.js (787 KB)
www.kayak.de...context (573 bytes)
www.kayak.de...get (0 bytes)
content.r9cdn.net...hoves-variable.woff2 (140 KB)
72164059993b.cdn4.forter.com...script.js
(159 KB)
www.kayak.de...consent (484 bytes)
www.kayak.de...rStateProviderAction (2 KB)
www.kayak.de...nearby (233 bytes)
www.kayak.de...destinations (1 KB)
www.kayak.de...gStateProviderAction (527 bytes)
www.kayak.de...pLinksProviderAction (295 bytes)
www.kayak.de...[illegible]ProviderAction ([illegible] bytes)
www.kayak.de...sStateProviderAction (277 bytes)
www.kayak.de...ads.js (43 bytes)
www.kayak.de...CookiesDataProvider (126 bytes)
content.r9cdn.net...combined.css (954 bytes)
content.r9cdn.net...combined.css (1 KB)
```

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Others are more difficult…

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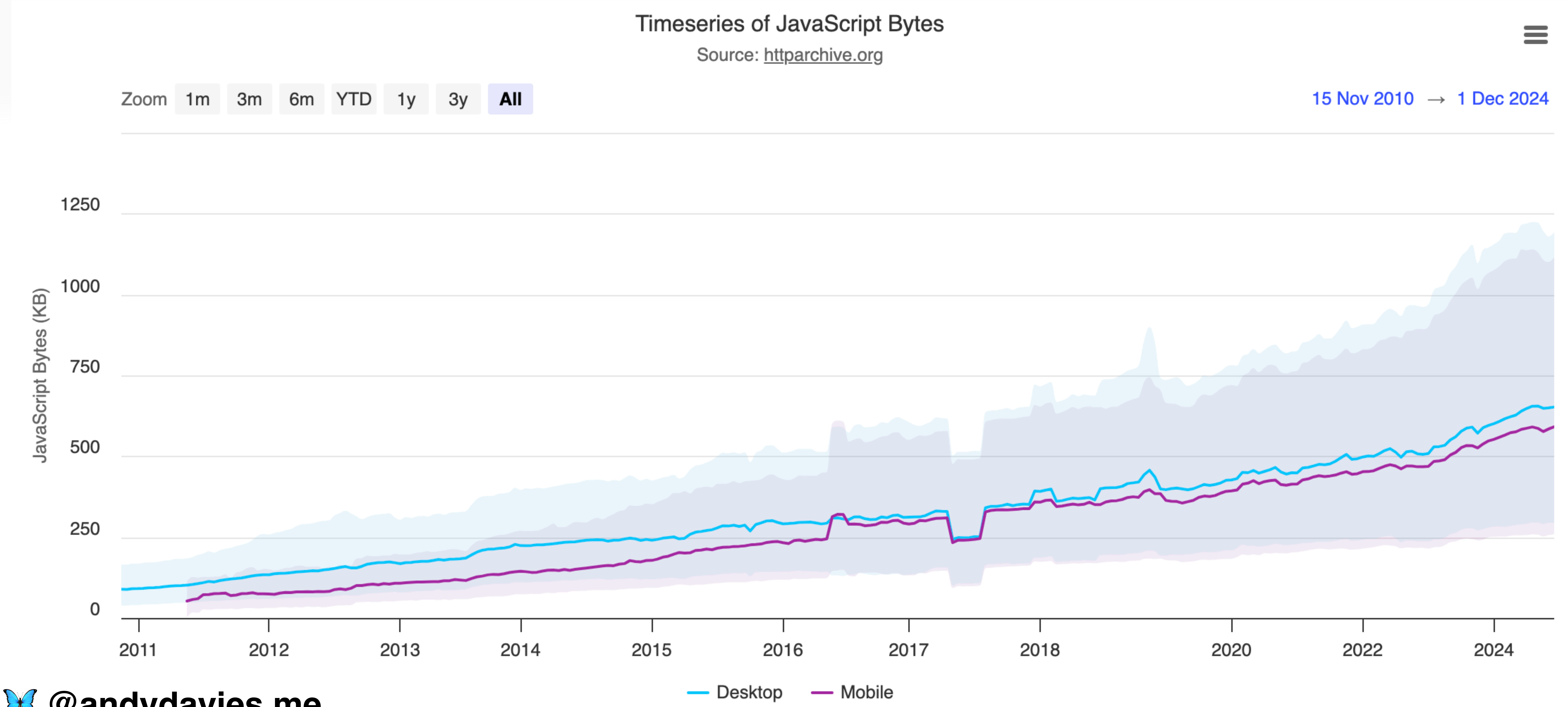
Photo by Lucas Davies on Unsplash

We’re shipping more and more JavaScript



Timeseries of JavaScript Bytes

Source: httparchive.org

And download size is just the beginning!

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Photo by Felix M. Dorn on Unsplash

JavaScript’s runtime costs matter too

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Photo by Jay Heike on Unsplash

A long time ago… someone suggested…

“The solution to worrying about JS lib/framework size is to include one less .jpg on your site”

But have you seen a JPEG that can do this…

```
document.addEventListener("mousemove", function() {
    for(var a = Date.now() + 2E3; Date.now() < a;)
        ;
    });
```

OK, so it's a bit of a silly example but you get the idea…

How do scripts affect visitors experience?

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Photo by Julien L on Unsplash

We tried to measure scripts before…

W3C Editor's Draft

TABLE OF CONTENTS

Long Tasks API

Editor's Draft, 24 May 2024

▼ More details about this document

This version:
https://w3c.github.io/longtasks/

Test Suite:
http://w3c-test.org/longtask-timing/

Issue Tracking:
GitHub
Inline In Spec

Editor:
Noam Rosenthal (Google)

Former Editors:
Shubhie Panicker (Google)
Ilya Grigorik (Google)
Domenic Denicola (Google)

Abstract

…that monopolize the UI thread for extended periods of time and b…ck other critical tasks from being executed - e.g. reacting to user input.

Status of this document

This is a public copy of the editors' draft. It is provided for discuss… publication here does not imply endorsement of its contents by W… in progress.

https://w3c.github.io/longtasks/

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6,140 ms
6,640 ms
7,140 ms
7,640 ms
8,140 ms
8,640 ms
9,140 ms
9,640 ms
10,140 ms
10,640 ms
Frames
.8 ms
216.7 ms
700.4 ms
1,618.0 ms
333.6 ms
284.0 ms
833.0 ms
1,000.9 ms
Animations
Layout shifts
Main — https://www.selfridges.com/NL/en/
T...k
Task
T...
Task
Task
Task
Task
Task
Task
Task
R...e
Layout
P...t
Evaluate script
Re...le
R...
La...t
P...t
Eval...ript
R...e
La...ut
P...t
Run microtasks
(an...us)
(...)
d.t
d
88617
2...0
41335
99563
3...
9746
8...
15125
15...5

Long Task = Main Thread Task > 50ms

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Captured at 4x slowdown in Chrome DevTools

6,140 ms
6,640 ms
7,140 ms
7,640 ms
8,140 ms
8,640 ms
9,140 ms
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T...k
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R...e
Layout
P...t
Evaluate script
Run microtasks
Re...le
R...
La...t
P...t
Eval...ript
(an...us)
R...e
La...ut
P...t
d.t
d
88617
2...0
41335
99563
3...
9746
8...
15125
15...5

Long Task = Main Thread Task > 50ms

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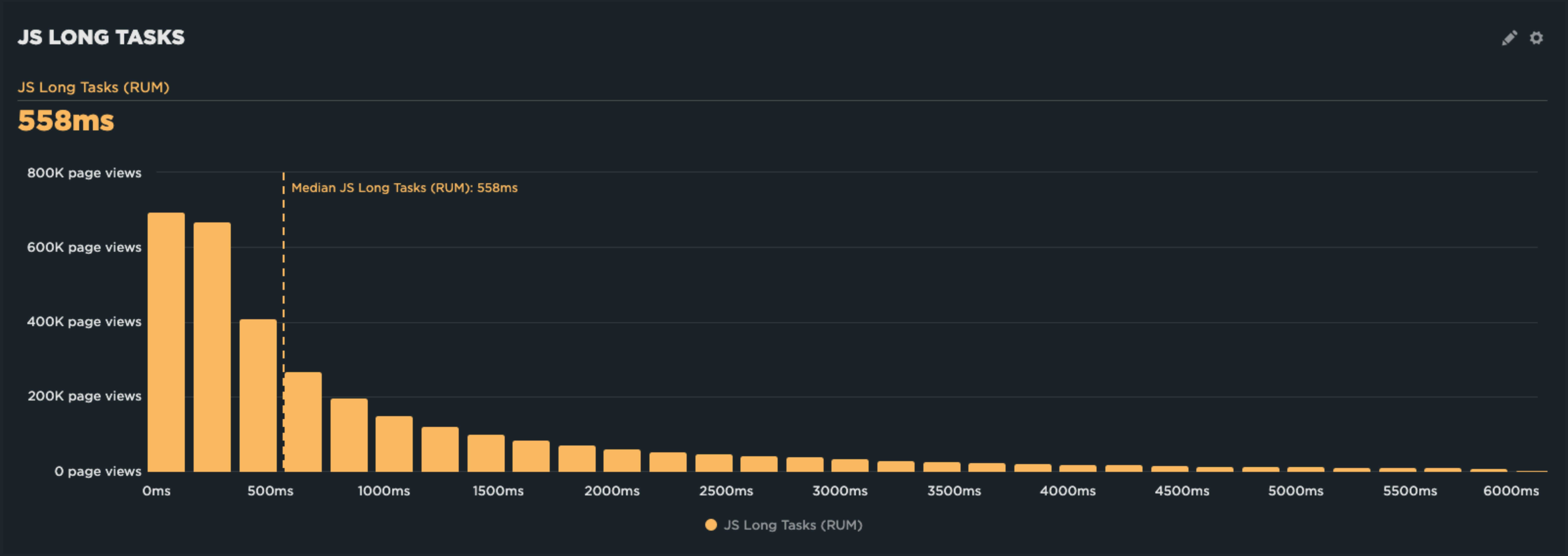
Captured at 4x slowdown in Chrome DevTools

We can measure Long Tasks in the wild…



JS LONG TASKS

JS Long Tasks (RUM)

558ms

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But we get no detail on their cause

```
{
    "name": "self",
    "entryType": "longtask",
    "startTime": 48723.60000002384,
    "duration": 67,
    "navigationId": "3ca0c548-7618-4423-87b7-41ae43415040",
    "attribution": [
        {
            "name": "unknown",
            "entryType": "taskattribution",
            "startTime": 0,
            "duration": 0,
            "navigationId": "3ca0c548-7618-4423-87b7-41ae43415040",
            "containerType": "window",
            "containerSrc": "",
            "containerId": "",
            "containerName": ""
        }
    ]
```

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Photo by Dušan veverkolog on Unsplash

Will Long Animation Frames rescue us?

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Photo by Matt Noble on Unsplash

Long Animation Frames (LoAF)

Flights
Stays
Cars
Flight+Hotel
Return
0 bags
Frankfurt am Main (FRA)
To?
Wed 26.2.
Wed 5.3.
1 adult, Economy
> 50ms

Measures when a frame render is delayed for more than 50ms

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In DevTools terms...

5,729 ms
5,749 ms
5,769 ms
5,789 ms
5,809 ms
5,829 ms
5,849 ms
5,869 ms
5,889 ms
5,909 ms
5,929 ms
5,949 ms
5,969 ms
5,989 ms
6,009 ms
6,029 ms
Network
fb4fc3f4b...
Frames
358.9 ms
177.9 ms
Selfridges Celebrates Valentine's Day
Layout shifts
Performance Timeline — Custom track
LoAF
LoAF
script
script
Rendering
LoAF
Rendering
Main — https://www.selfridges.com/NL/en/
Task
Task
Task
Task
Task
R...e
Parse HTML
Recalculate style
Layout
Pre-paint
Paint
Parse HTML
Recal...style
Evaluate script
Evaluate script
Compile script
Compile script
Compile code
Compile code

Frame start

Paint start

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Available in Chromium based browsers

Two ways to fetch the data

Query performance timeline:

```
performance.getEntriesByType("long-animation-frame");
```

Via a PerformanceObserver:

```
const observer = new PerformanceObserver((list) => {
    for (const entry of list.getEntries()) {
        console.log(entry)
    }
});

observer.observe({ type: 'long-animation-frame', buffered: true });
```

Example LoAF entry

```
{
    "name": "long-animation-frame",
    "entryType": "long-animation-frame",
    "navigationId": “95558f7f-38d7-4a06-b15e-67ccf1dec62e",
    "startTime": 300.39999997615814,
    "duration": 1573.4000000357628,
    "blockingDuration": 605.986,
    "renderStart": 1540,
    "styleAndLayoutStart": 1540.1000000238419,
    "paintTime": 1873.800000011921,
    "firstUIEventTimestamp": 0,
    "scripts": []
},
```

Example LoAF entry

```
{
    "name": "long-animation-frame",
    "entryType": "long-animation-frame",
    "navigationId": “95558f7f-38d7-4a06-
    "startTime": 300.39999997615814,
    "duration": 1573.4000000357628,
    "blockingDuration": 605.986,
    "renderStart": 1540,
    "styleAndLayoutStart": 1540.1000000238419,
    "paintTime": 1873.800000011921,
    "firstUIEventTimestamp": 0,
    "scripts": []
},
```

When the frame started and how long it was

Example LoAF entry

```
{
    "name": "long-animation-frame",
    "entryType": "long-animation-frame",
    "navigationId": “95558f7f-38d7-4a06-b15e-67ccf1dec62e",
    "startTime": 300.39999997615814,
    "duration": 1573.4000000357628,
    "blockingDuration": 605.986,
    "renderStart": 1540,
    "styleAndLayoutStart": 1540.100000
    "paintTime": 1873.800000011921,
    "firstUIEventTimestamp": 0,
    "scripts": []
},
```

Sum of each (Long Task - 50ms)

Essentially a summary of how long the Main Thread was blocked

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Example LoAF entry

```
{
    "name": "long-animation-frame",
    "entryType": "long-animation-frame",
    "navigationId": “95558f7f-38d7-4a06-b15e-67ccf1dec62e",
    "startTime": 300.39999997615814,
    "duration": 1573.4000000357628,
    "blockingDuration": 605.986,
    "renderStart": 1540,
    "styleAndLayoutStart": 1540.1000000023
    "paintTime": 1873.800000011921,
    "firstUIEventTimestamp": 0,
    "scripts": []
},
```

Timestamps for when the work to render and paint the frame stared

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Example LoAF entry

```
{
    "name": "long-animation-frame",
    "entryType": "long-animation-frame",
    "navigationId": “95558f7f-38d7-4a06-b15e-67ccf1dec62e",
    "startTime": 300.39999997615814,
    "duration": 1573.4000000357628,
    "blockingDuration": 605.986,
    "renderStart": 1540,
    "styleAndLayoutStart": 1540.100000023
    "paintTime": 1873.800000011921,
    "firstUIEventTimestamp": 0,
    "scripts": []
},
```

Non-zero if the visitor interacted during the frame

Example LoAF entry

```
{
    "name": "long-animation-frame",
    "entryType": "long-animation-frame",
    "navigationId": “95558f7f-38d7-4a06-b15e-67ccf1dec62e",
    "startTime": 300.39999997615814,
    "duration": 1573.4000000357628,
    "blockingDuration": 605.986,
    "renderStart": 1540,
    "styleAndLayoutStart": 1540.1000000238419,
    "paintTime": 1873.800
    "firstUIEventTimesta
    "scripts": []
},
```

Details of scripts that executed for longer than 5ms during the frame

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In aggregate LoAFs give us useful data

- How many frames were delayed and how long for?
- What was the approximate frame rate (with caveats)
- How long was the main thread unable to respond to user input?
- What was the longest time a visitor might wait for a response?

But I’m most interested in what they tell us about script execution

Example ScriptTiming Entry

```
{
    "name": "script",
    "entryType": "script",
    "navigationId": "24906018-979c-465f-972d-a1039f81037f",
    "startTime": 8546.5,
    "duration": 94,
    "forcedStyleAndLayoutDuration": 2,
    "executionStart": 8546.5,
    "pauseDuration": 0,
    "invoker": "MessagePort.onmessage",
    "invokerType": "event-listener",
    "windowAttribution": "self",
    "sourceURL": “https://www.selfridges.com/static-mfe/_next/static/chunks/a.js",
    "sourceFunctionName": "M",
    "sourceCharPosition": 98556
}
```

Example ScriptTiming Entry

```
{
    "name": "script",
    "entryType": "script",
    "navigationId": "24906018-979c-465f-972d
    "startTime": 8546.5,
    "duration": 94,
    "forcedStyleAndLayoutDuration": 2,
    "executionStart": 8546.5,
    "pauseDuration": 0,
    "invoker": "MessagePort.onmessage",
    "invokerType": "event-listener",
    "windowAttribution": "self",
    "sourceURL": “https://www.selfridges.com/static-mfe/_next/static/chunks/a.js",
    "sourceFunctionName": "M",
    "sourceCharPosition": 98556
}
```

When the script executed, how long it executed for and whether it forced Layout and Style calculations

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Example ScriptTiming Entry

```
{
    "name": "script",
    "entryType": "script",
    "navigationId": "24906018-979c-465f-972d-a1039f81037f",
    "startTime": 8546.5,
    "duration": 94,
    "forcedStyleAndLayoutDuration": 2
    "executionStart": 8546.5,
    "pauseDuration": 0,
    "invoker": "MessagePort.onmessage
    "invokerType": "event-listener",
    "windowAttribution": "self",
    "sourceURL": “https://www.selfridges.com/static-mfe/_next/static/chunks/a.js",
    "sourceFunctionName": "M",
    "sourceCharPosition": 98556
}
```

When the script started executing and how long it paused for synchronous operations

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Example ScriptTiming Entry

```
{
    "name": "script",
    "entryType": "script",
    "navigationId": "24906018-979c-465f-972d-a1039f81037f",
    "startTime": 8546.5,
    "duration": 94,
    "forcedStyleAndLayoutDuration": 2,
    "executionStart": 8546.5,
    "pauseDuration": 0,
    "invoker": "MessagePort.onmessage",
    "invokerType": "event-listener",
    "windowAttribution": "self",
    "sourceURL": “https://www.selfridges.com/static-mfe/_next/static/chunks/a.js",
    "sourceFunctionName": "M",
    "sourceCharPosition": 98556
}
```

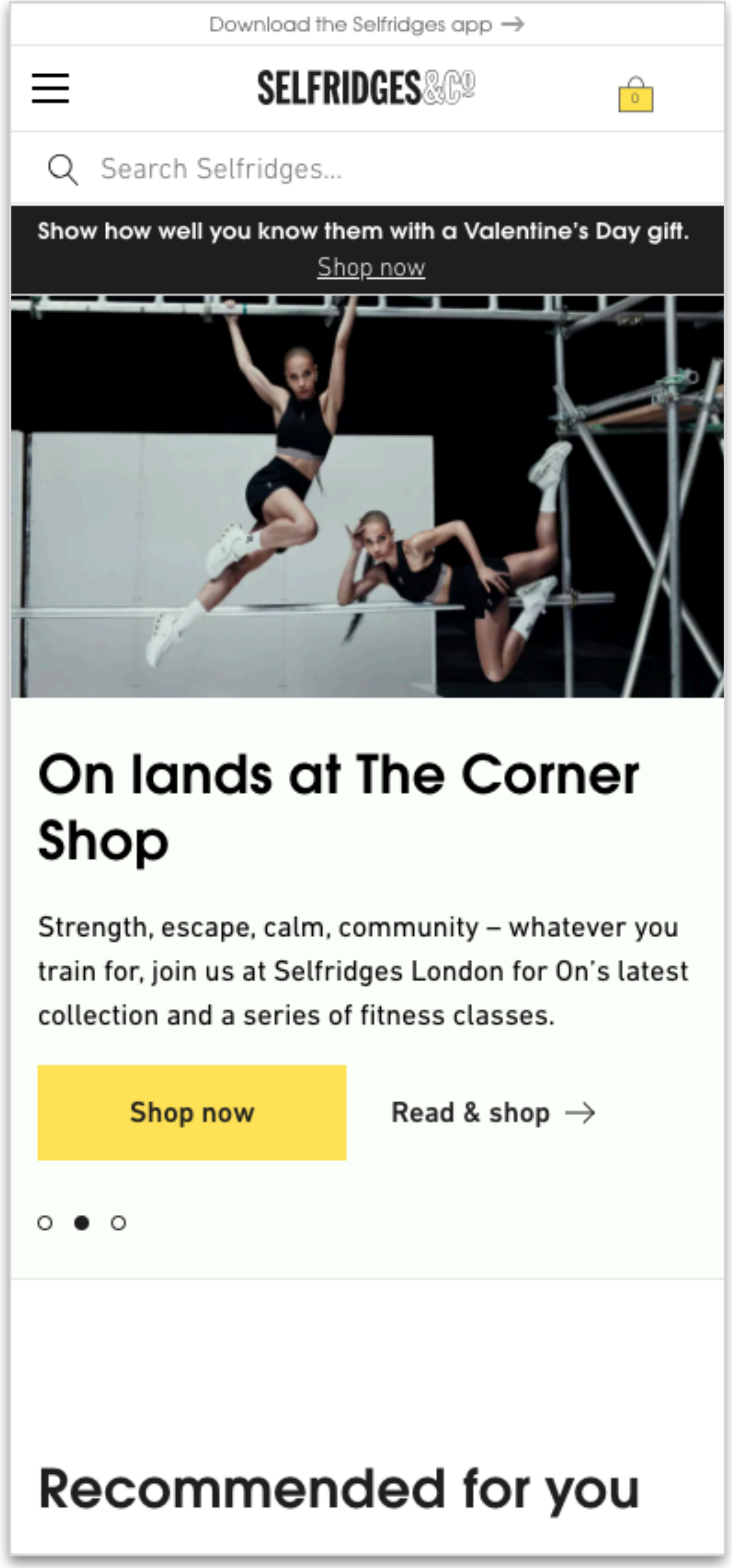
Why the script was executed

Example ScriptTiming Entry

```
{
    "name": "script",
    "entryType": "script",
    "navigationId": "24906018-979c-465f-972d-a1039f81037f",
    "startTime": 8546.5,
    "duration": 94,
    "forcedStyleAndLayou
    "executionStart": 85
    "pauseDuration": 0,
    "invoker": "MessagePort.onmessa
    "invokerType": "event-listener",
    "windowAttribution": "self",
    "sourceURL": “https://www.selfridges.com/static-mfe/_next/static/chunks/a.js",
    "sourceFunctionName": "M",
    "sourceCharPosition": 98556
}
```

What script was executed and what was it’s entry point

May generate many entries per page



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Recommended for you

CPU Slowdown	0x	4x	6x
LOAF Entries	21	32	37
ScriptTiming Entries	31	39	47

For example only:

Real world values will depend on device CPU, network connectivity and duration of observation

Fortunately it’s easy to aggregate

Script	Total Duration (ms)	Total ForcedStyleAndLayout Duration (ms)	Occurences
https://www.selfridges.com/static-mfe-clp/_next/static/chunks/webpack-9d	1,729	0	1
https://js-cdn.dynatrace.com/jstag/164ae1b51de/bf67380nlf/fb4fc3f4b31ef	1,377	35	12
https://www.selfridges.com/static-mfe-clp/_next/static/chunks/997-992c5b	1,134	0	9
https://www.selfridges.com/NL/en/	346	0	12
https://www.googletagmanager.com/gtag/js?id=G-R05V82D63H&l=gDataLa	284	0	1
https://www.googletagmanager.com/gtag/js?id=AW-989335448&l=gDataLa	280	0	3
https://t.contentsquare.net/uxa/20f13f9109b5d.js	147	0	4
https://www.selfridges.com/NL/en/features/etc/designs/zg/selfridges-new/e	128	1	2
https://analytics.tiktok.com/i18n/pixel/static/main.MTAxMGIxNjZiMA.js	67	0	1
https://tags.tiqcdn.com/utag/selfridges/main/prod/utag.328.js?utv=ut4.51.2	53	0	1
https://www.googletagmanager.com/gtag/js?id=DC-5921516&l=gDataLaye	46	0	1
https://www.selfridges.com/static-mfe-clp/_next/static/chunks/1dd3208c-e	24	0	4
https://f.monetate.net/trk/4/s/a-26b02505/p/selfridges.com/1308266154-0?	18	0	1
https://sb.monetate.net/img/1/p/1581/5518499.js/monetate.c.cr.js	10	0	1
https://www.selfridges.com/static-mfe-clp/_next/static/chunks/662-deb68a	8	1	1
https://www.selfridges.com/static-mfe-clp/_next/static/chunks/455-e8317e	7	0	1
https://www.selfridges.com/static-mfe-clp/_next/static/chunks/61721e05-ea	7	0	1
https://www.selfridges.com/static-mfe-clp/_next/static/chunks/d8ec93b9-b	6	0	1

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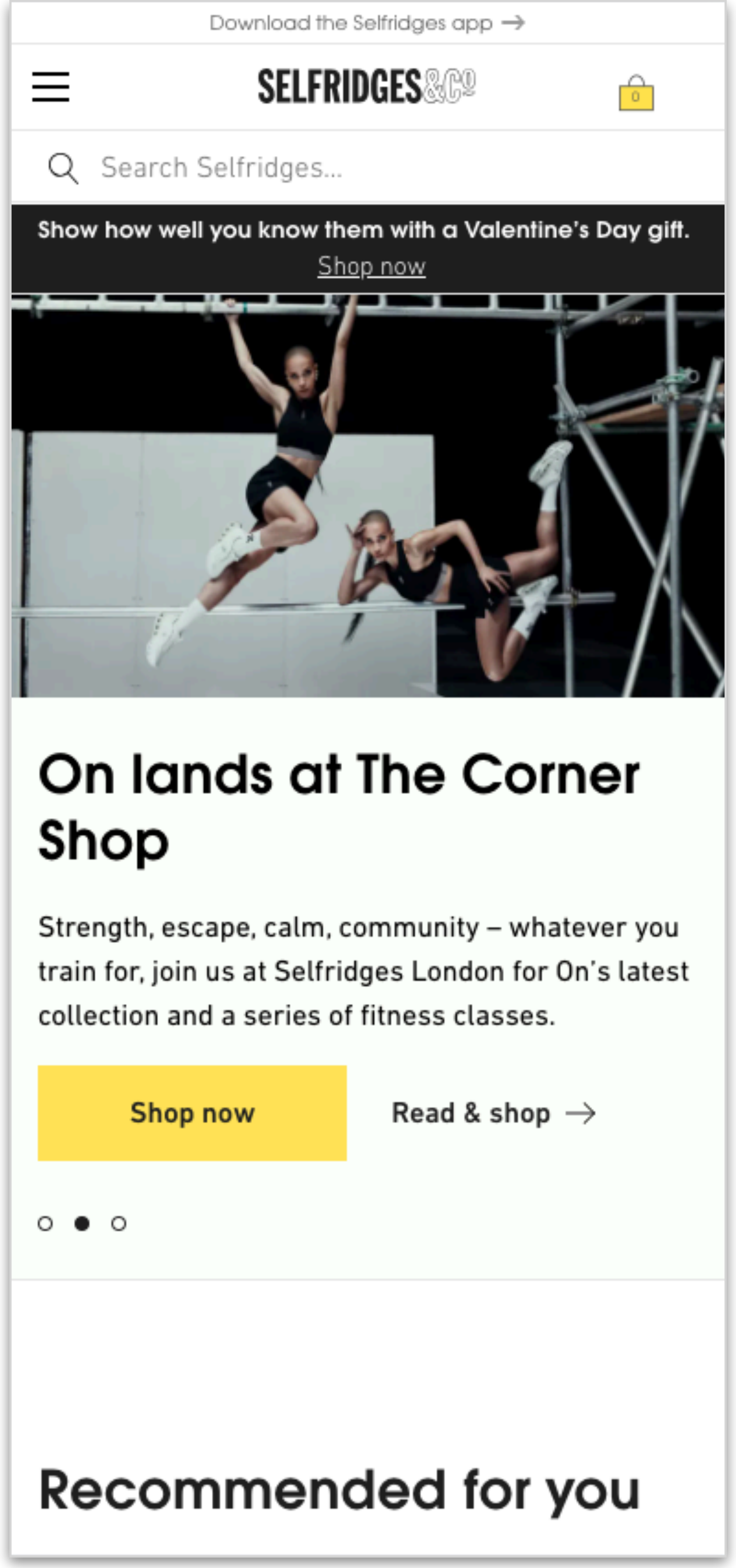
Captured at 6x slowdown in Chrome DevTools

Can help us answer questions such as

- Which scripts have the most impact on visitors experience?
- Which scripts are forcing style and layout operations?
- Which scripts delay FCP or LCP?
- Are my 1st Party or 3rd-party scripts a problem?

Are 3rd-party tags really the problem?



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Read & shop →

Recommended for you

	1st Party	3rd Party
Total Script Duration (ms)	**7,430**	**2,282**

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Captured at 6x slowdown in Chrome DevTools

LoAF can help with slow interactions too

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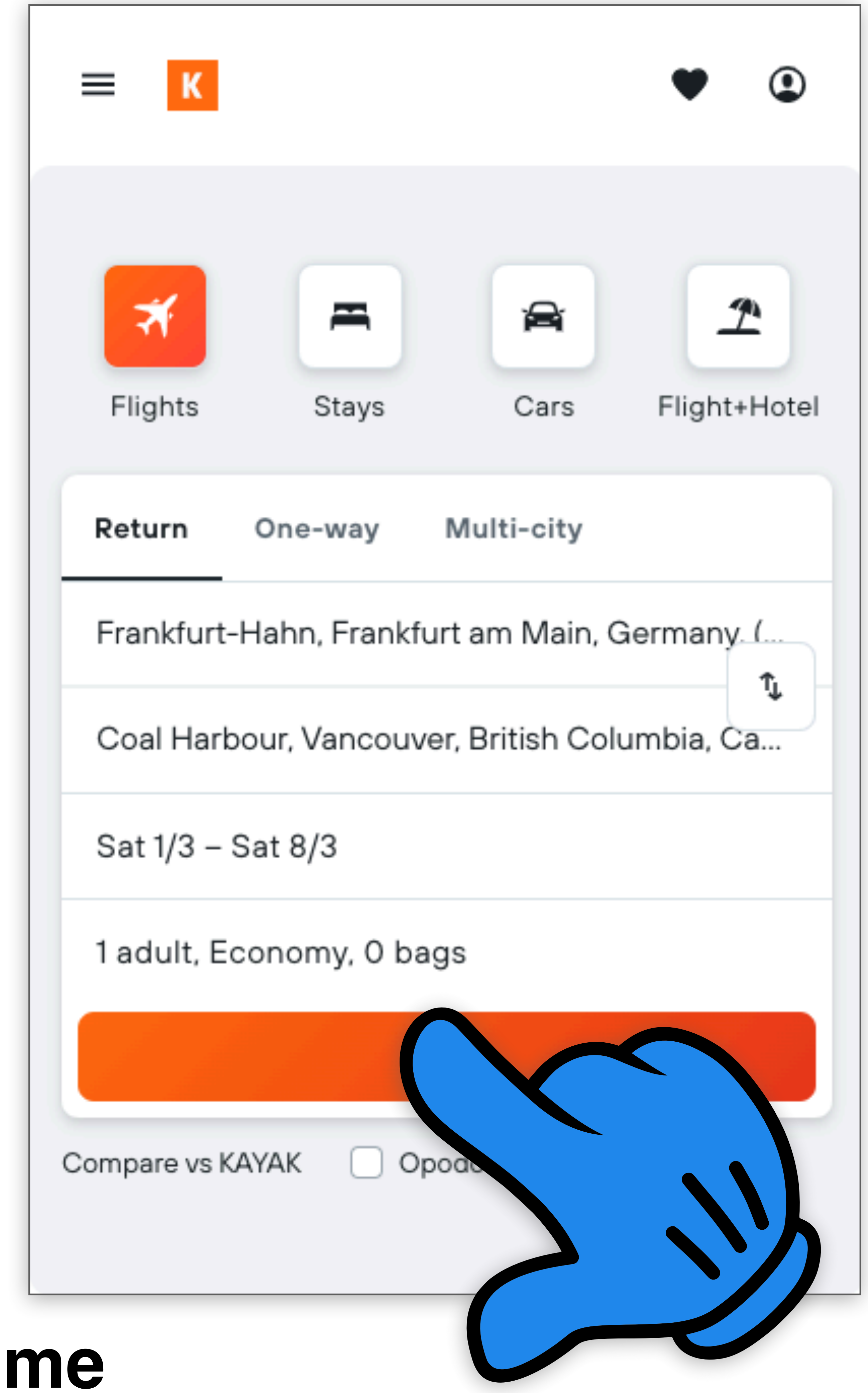
Photo by Nik on Unsplash

Interaction to Next Paint (INP)

Time between a visitor interacting and the next frame being presented



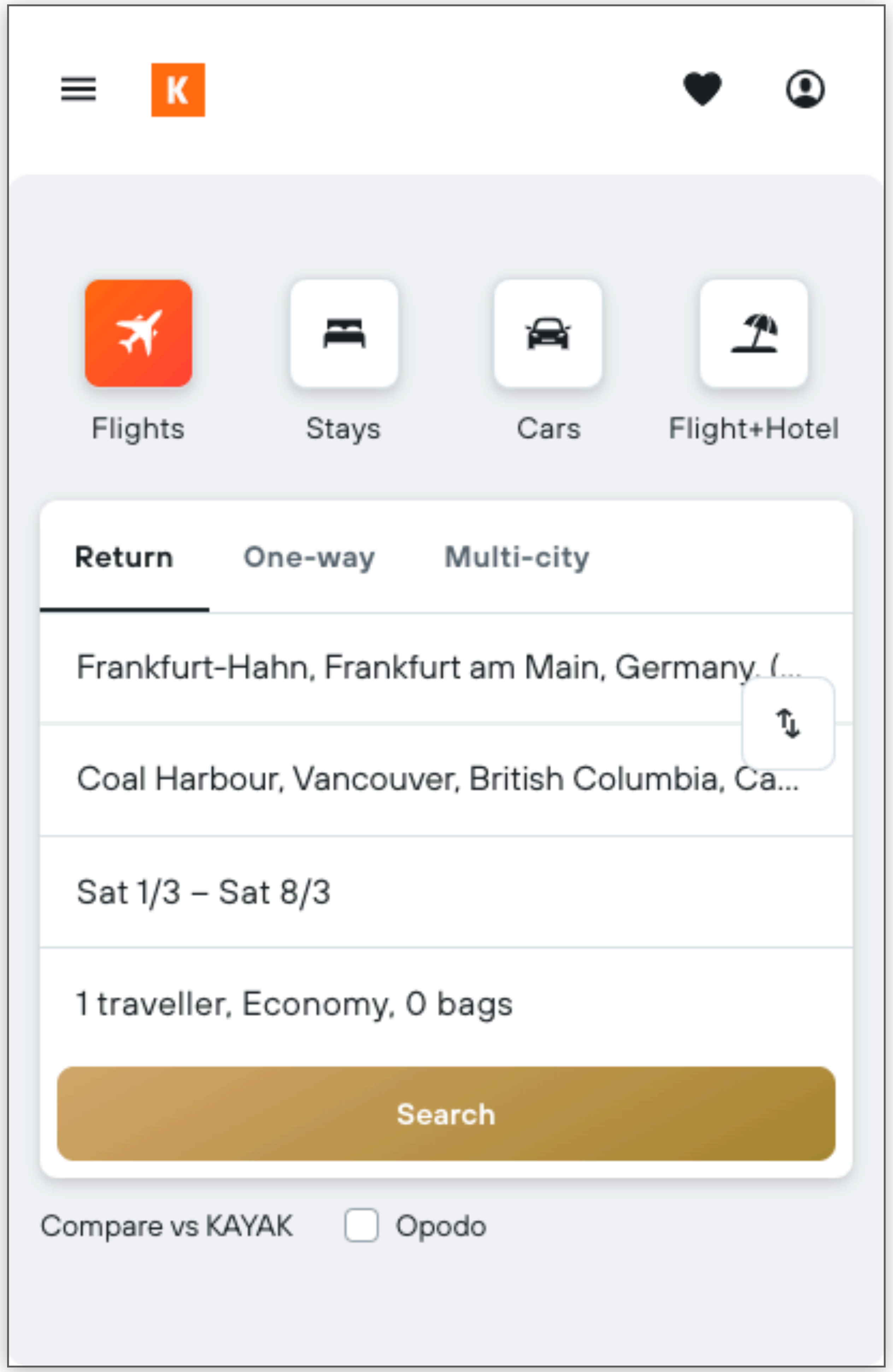
Frankfurt-Hahn, Frankfurt am Main, Germany (...

Coal Harbour, Vancouver, British Columbia, Ca...

Sat 1/3 – Sat 8/3

1 adult, Economy, 0 bags

Compare vs KAYAK ☐ Opod



Frankfurt-Hahn, Frankfurt am Main, Germany (...

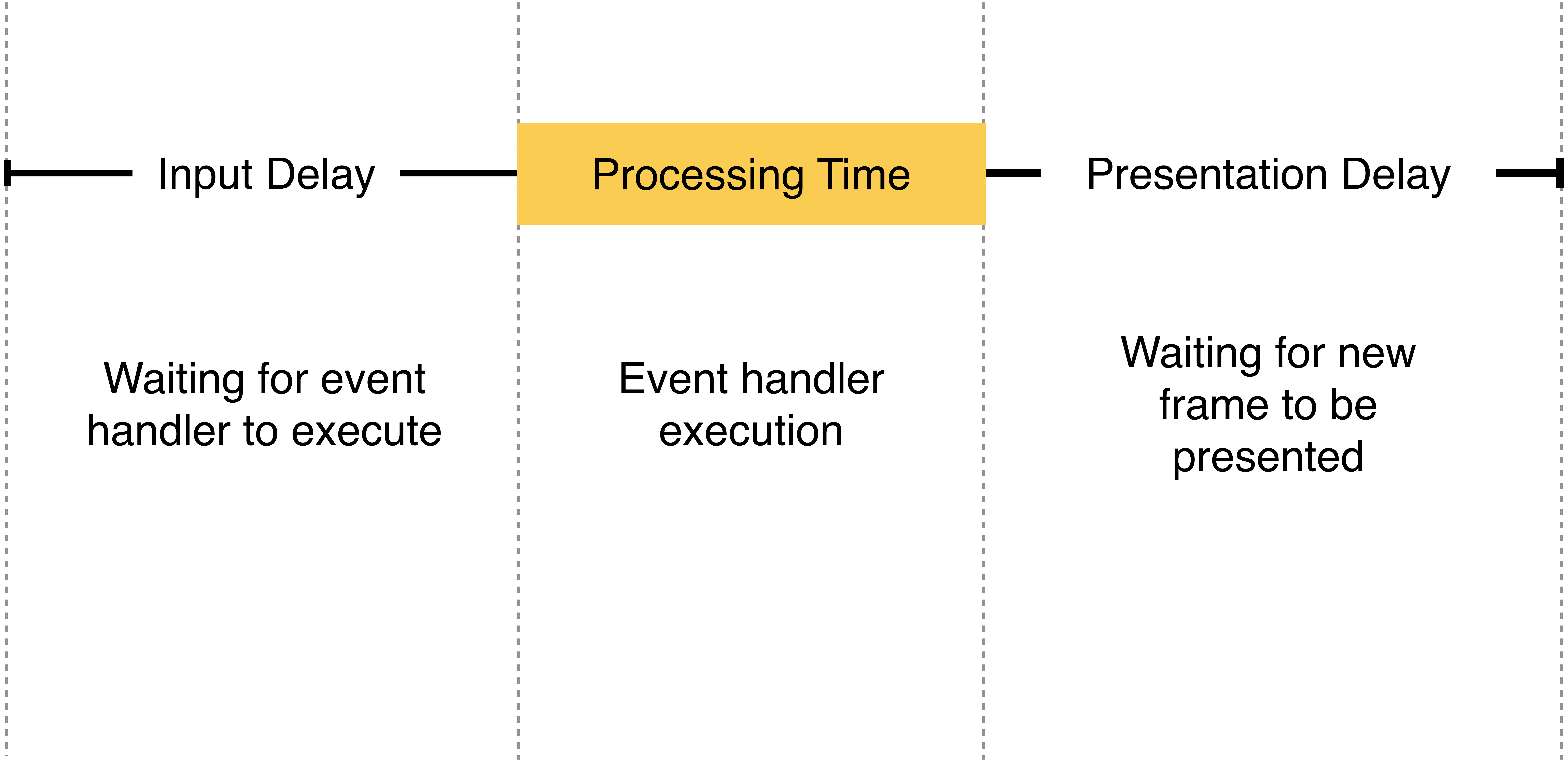
Coal Harbour, Vancouver, British Columbia, Ca...

Sat 1/3 – Sat 8/3

1 traveller, Economy, 0 bags

Compare vs KAYAK ☐ Opodo

INP has Three Phases



Input Delay

Processing Time

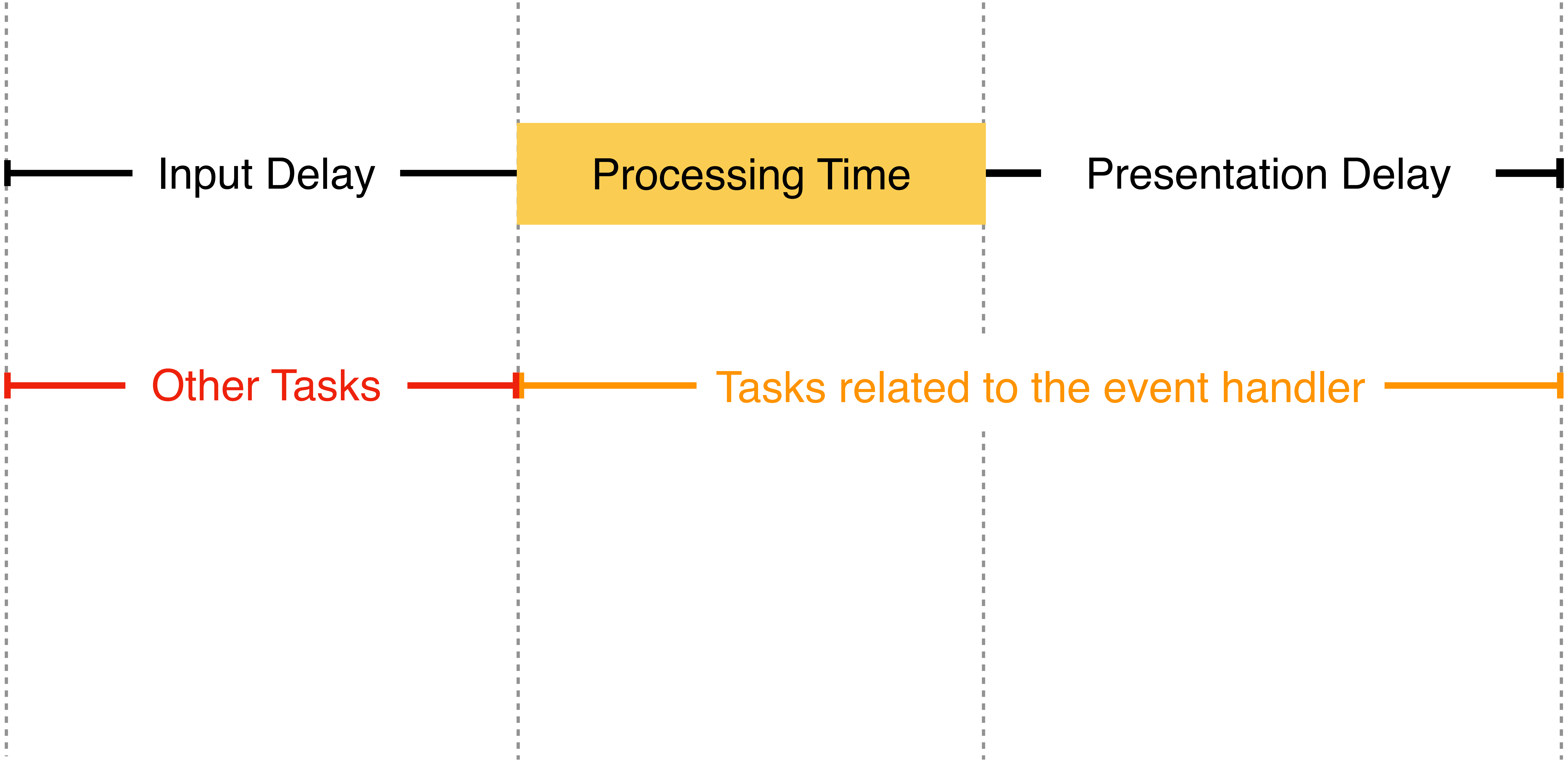
Presentation Delay

Waiting for event handler to execute

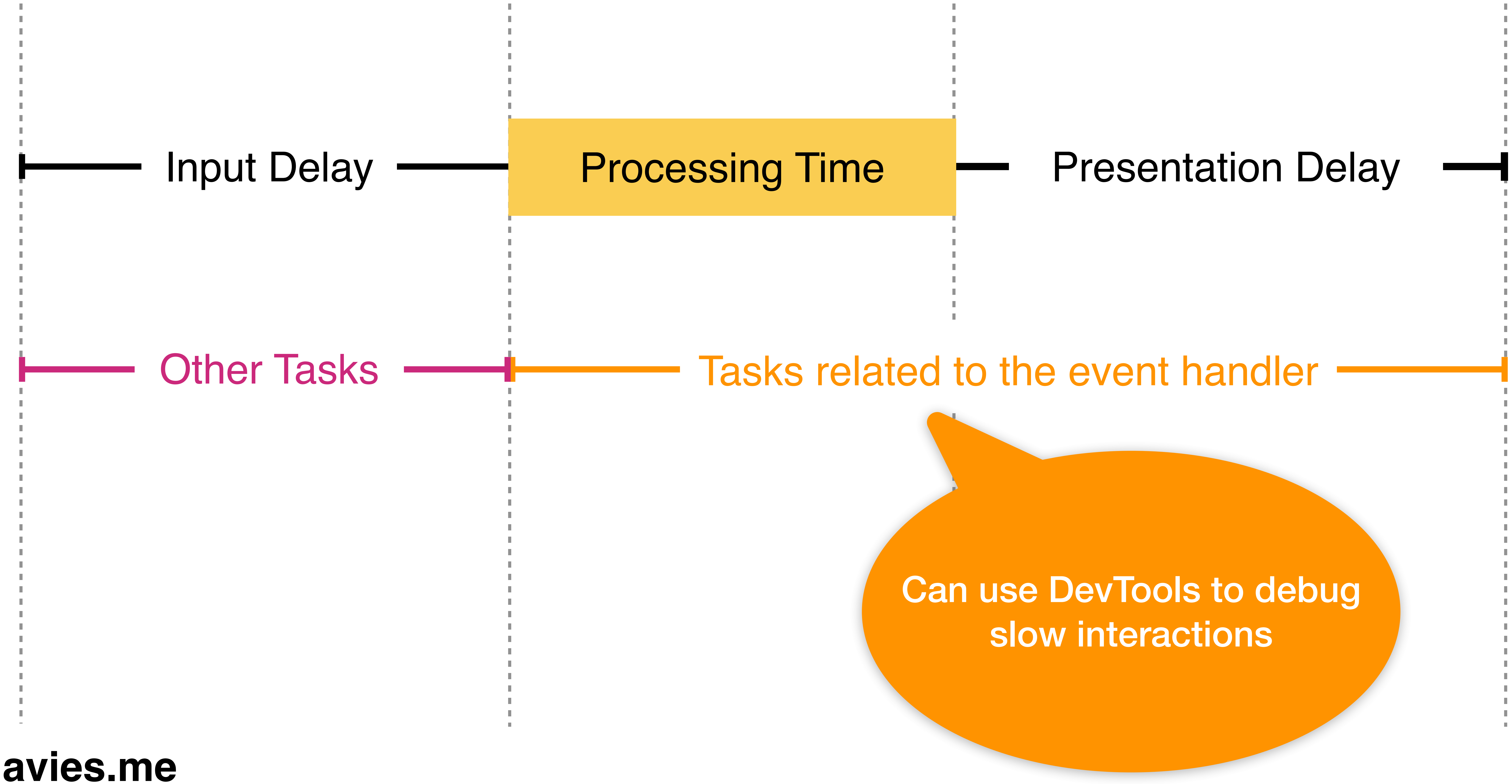
Event handler execution

Waiting for new frame to be presented

INP has Three Phases



INP has Three Phases



Input Delay

Processing Time

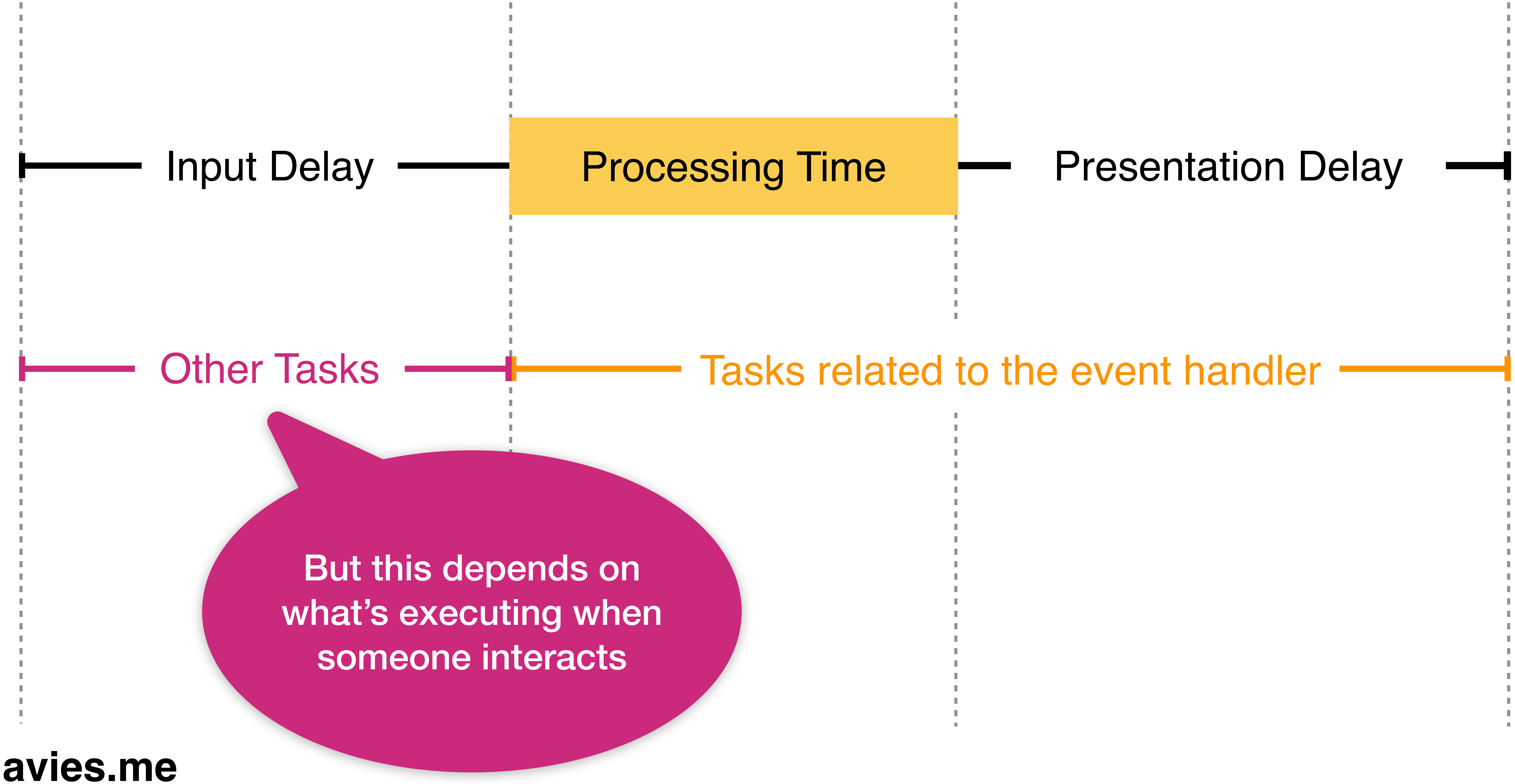
Presentation Delay

Other Tasks

Tasks related to the event handler

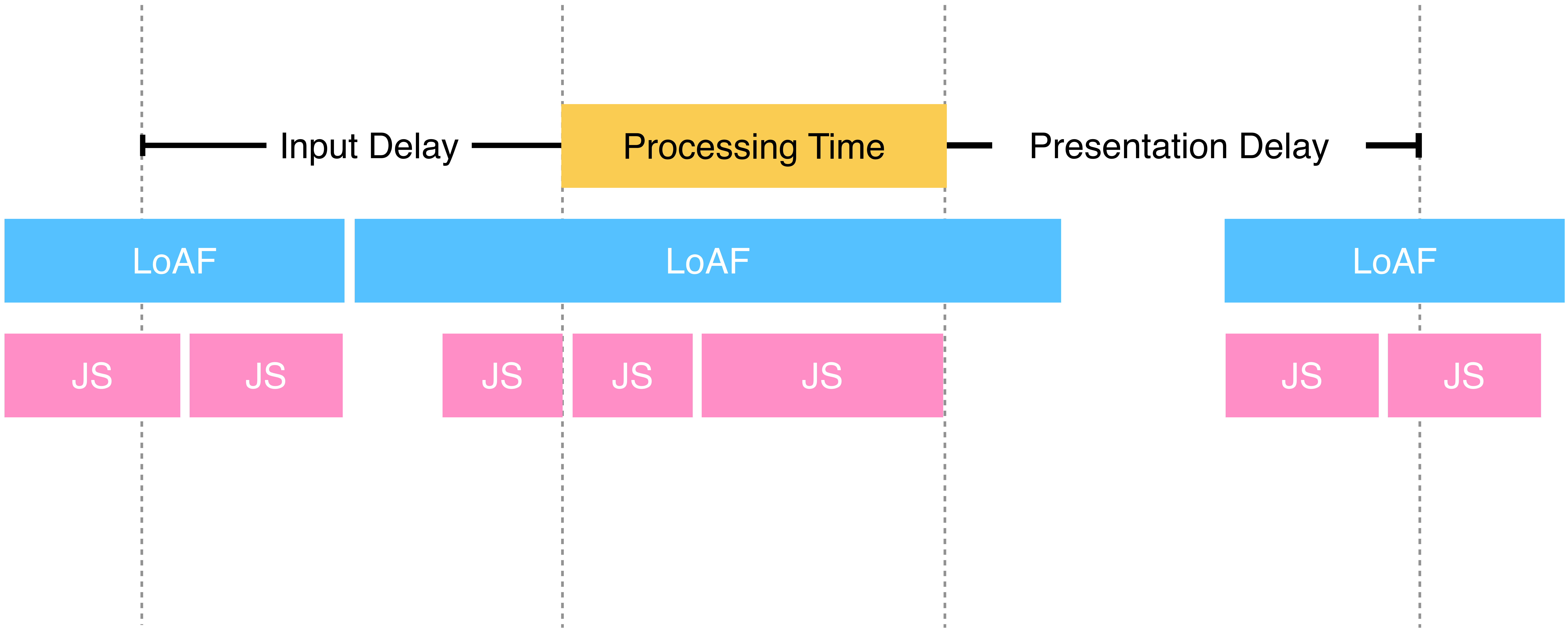
Can use DevTools to debug slow interactions

INP has Three Phases



But this depends on what's executing when someone interacts

Identifying relevant scripts



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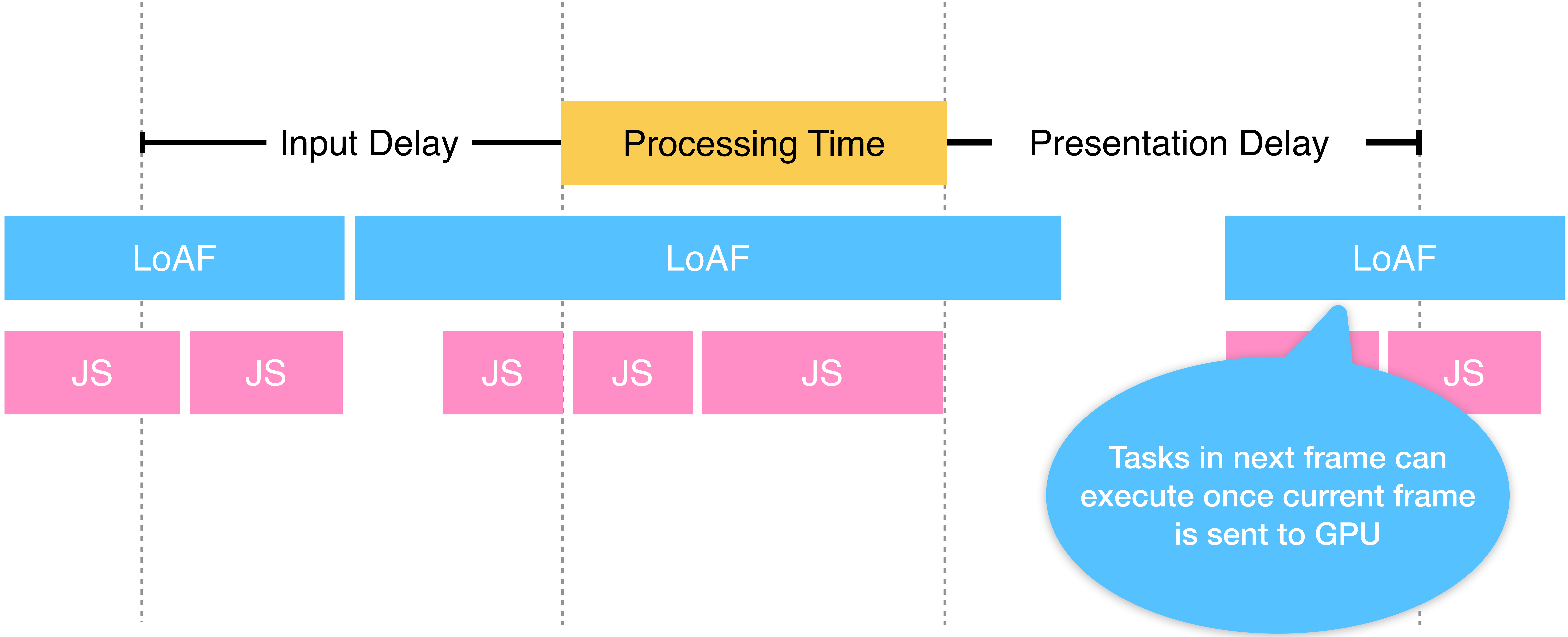
Identifying relevant scripts

1. Discard LoAFs that end after the INP window



Tasks in next frame can execute once current frame is sent to GPU

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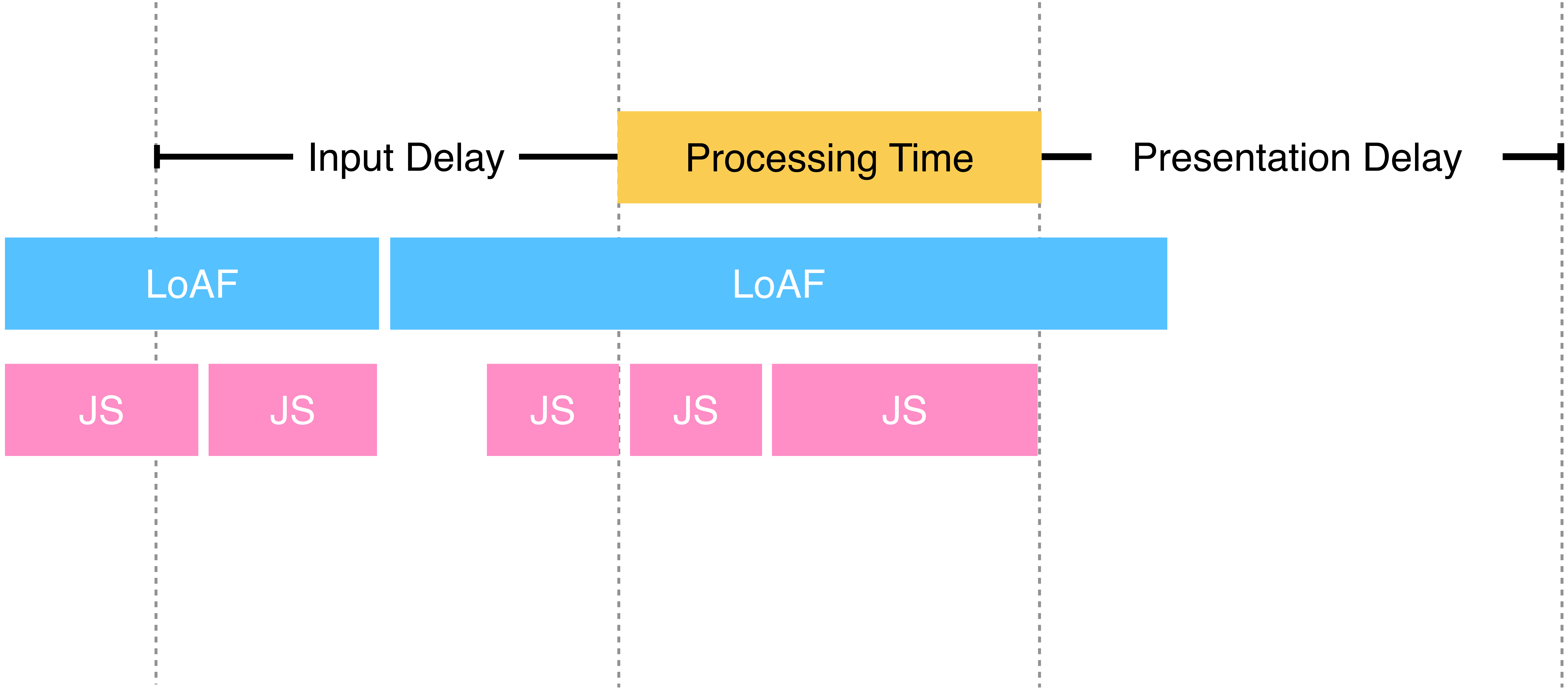
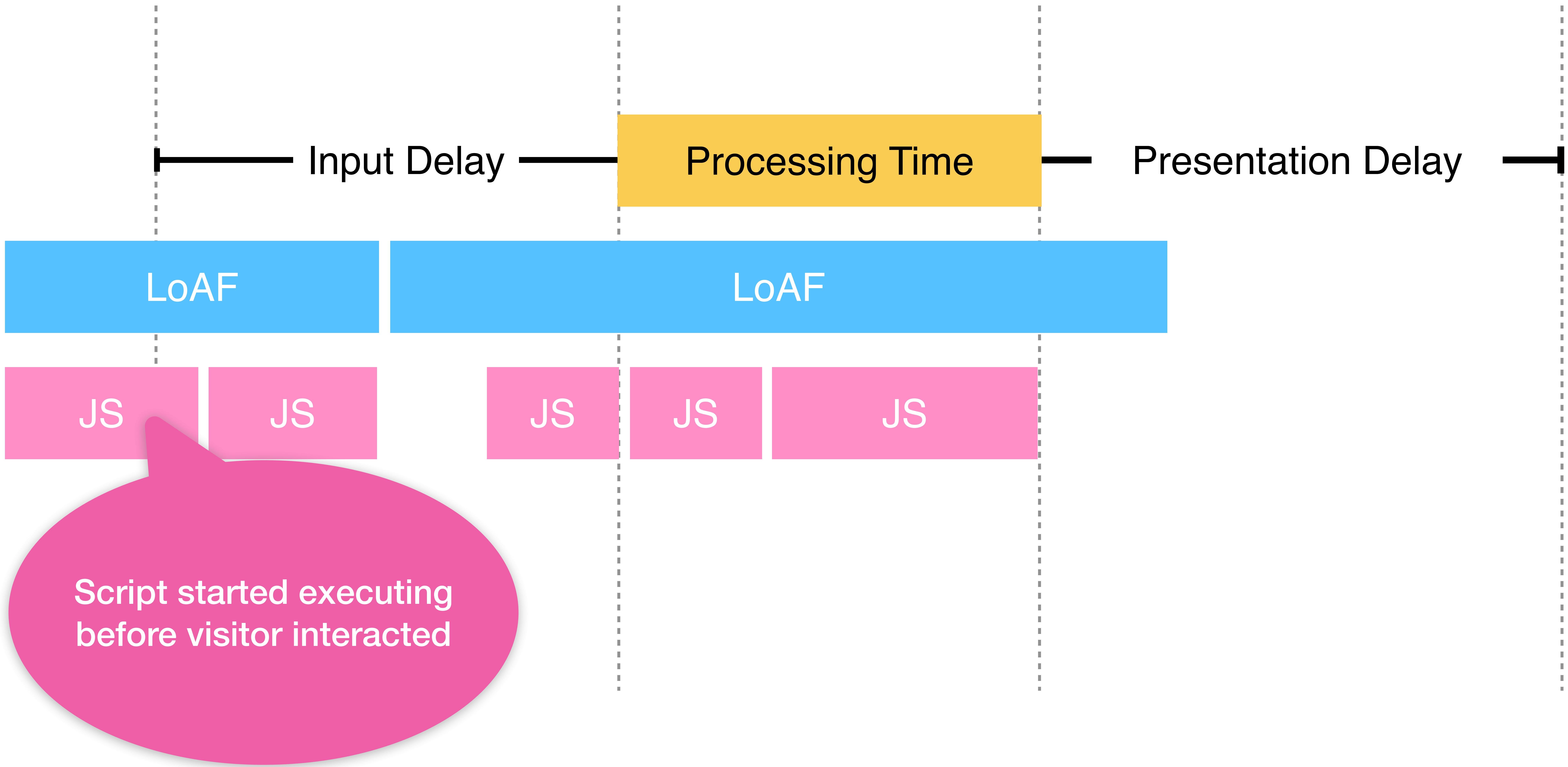
Identifying relevant scripts

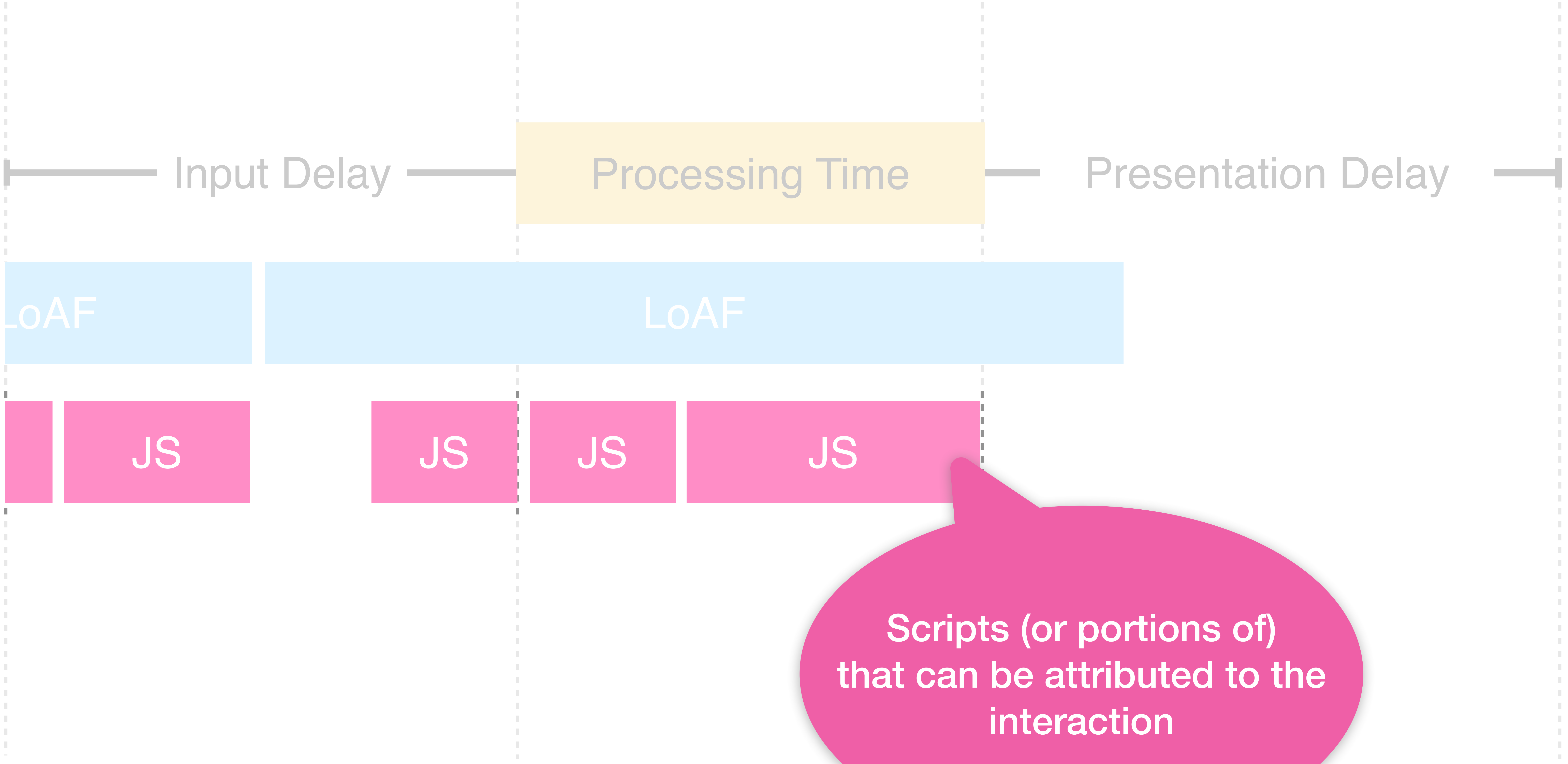


Identifying relevant scripts

2. Only portion of script that executed within the INP window is relevant



Identifying relevant scripts



Scripts (or portions of) that can be attributed to the interaction

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Map to INP phases using timestamps

(No direct way to link EventTiming and LoAF entries)

phase	invoker	invokerType	entryPoint	duration (ms)	sourceURL
ID	https://tags.tiqcdn.com/utag	classic-script		119	https://tags.tiqcdn.com/utag/selfridges/main/p
ID	SCRIPT[src=//tags.tiqcdn.co	event-listener		10	
ID	#document.ontouchstart	event-listener		5	https://js-cdn.dynatrace.com/jstag/164ae1b51
ID	#document.ontouchstart	event-listener		12	https://www.selfridges.com/NL/en/features/et
PT	BODY#selfridges-app.onclic	event-listener		12	https://www.selfridges.com/NL/en/features/et

Can help us answer questions such as

- How are scripts affecting our visitors interactions?
- Which scripts have have the most impact across all interactions?
- Which are our slowest interaction handlers?
- Which scripts commonly delay our interaction handlers

There may be gaps in the data

phase	invoker	invokerType	entryPoint	duration (ms)	sourceURL
ID	https://tags.tiqcdn.com/utag	classic-script		119	https://tags.tiqcdn.com/utag/selfridges/main/p
ID	SCRIPT[src=//tags.tiqcdn.co	event-listener		10	
ID	#document.ontouchstart	event-listener		5	https://js-cdn.dynatrace.com/jstag/164ae1b51
ID	#document.ontouchstart	event-listener		12	https://www.selfridges.com/NL/en/features/ete
PT	BODY#selfridges-app.onclic	event-listener		12	https://www.selfridges.com/NL/en/features/ete

There may be gaps in the data

phase	invoker	invokerType	entryPoint	duration (ms)	sourceURL
ID	https://tags.tiqcdn.com/utag	classic-script		119	https://tags.tiqcdn.com/utag/selfridges/main/p
ID	SCRIPT[src=//tags.tiqcdn.cc	event-listener		10	
ID	#document.ontouchstart	event-listener		5	https://js-cdn.dynatrace.com/jstag/164ae1b51
ID	#document.ontouchstart	event-listener			s://www.selfridges.com/NL/en/features/et
PT	BODY#selfridges-app.onclic	event-listener			www.selfridges.com/NL/en/features/et

Entry points may be empty or minified function names

There may be gaps in the data

phase	invoker	invokerType	entryPoint	duration (ms)	sourceURL
ID	https://tags.tiqcdn.com/utag	classic-script		119	https://tags.tiqcdn.com/utag/selfridges/main/p
ID	SCRIPT[src=//tags.tiqcdn.co	event-listener		10	
ID	#document.ontouchstart	event-listener		5	https://j m/istag/164ae1b51
ID	#document.ontouchstart	event-listener		12	https: /features/etc
PT	BODY#selfridges-app.onclic	event-listener		12	htt atures/etc

Sometimes sourceURLs are empty

There may be gaps in the data

Currently there’s no Script Timing entries for:

- extensions (for privacy reasons)
- garbage collection

We may get opaque attribution for these at some point in the future

Times are also ‘coarsened’ for privacy / security reasons

DevTools combines interactions in the same frame

And so does web-vitals.js for script attribution… I have reservations…

750 ms
800 ms
850 ms
900 ms
950 ms
1,000 ms
1,050 ms
1,100 ms
1,150 ms
1,200 ms
1,250 ms
1,300 ms
1,350 ms
1,400 ms
1,450 ms
1,500 ms
1,550 ms
1,600 ms
1,650 ms
1,700 ms
1,750 ms
Network
act (analytics.tiktok.com)
Frames
967.5 ms
334.5 ms
34.2 ms
50.0 ms
Interactions
Pointer
Layout shifts
INP — Custom track
INP.2
Input Delay
Presentation Delay
INP.4
Input Delay
Processing Time
Presentation Delay
INP.3
Input Delay
Presentation Delay
Performance Timeline — Custom track
LoAF
LoAF
s...
script
sc...t
script
script
s...
LoAF
Ren...ing
Main — https://www.selfridges.com/NL/en/
Task
T...d
F...l
T...
Task
Ev...r
Event...tart
Fu...ll
Task
E...r
Eve...ove
Func...all
Com...de
Event: click
Fun...all
Ru...ks
F...
F...l
Paint
L...t
Layerize
Task
Layout
T...k
Task

https://trace.cafe/t/GNFeZJrGVU

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Same interaction but slightly longer pointer down

Speed of interaction may affect the phase a script is attributed to

2,000 ms
2,100 ms
2,200 ms
2,300 ms
2,400 ms
2,500 ms
2,600 ms
2,700 ms
2,800 ms
2,900 ms
3,000 ms
3,100 ms
3,200 ms
Network
Cross.svg (www.selfridges.com)
act (analytics.tiktok.com)
Frames
1,999.9 ms
100.1 ms
634.1 ms
Interactions
Pointer
INP — Custom track
INP.1
Input Delay
Pre...lay
INP.3
Input Delay
Processing Time
Presentation Delay
INP.2
In...y
Pr...y
Performance Timeline — Custom track
LoAF
LoAF
sc...t
script
script
s...
sc...t
Main — https://www.selfridges.com/NL/en/
Task
T...
Ti...d
Fu...l
Fu...ll
Ru...s
C...
E...d
Eve...wn
Event: click
La...e
F...
Func...all
La...ut

https://trace.cafe/t/JZcyiLfFQO

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Took me a while to figure this stuff out

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Photo by Thomas T on Unsplash

Tried visualising the data

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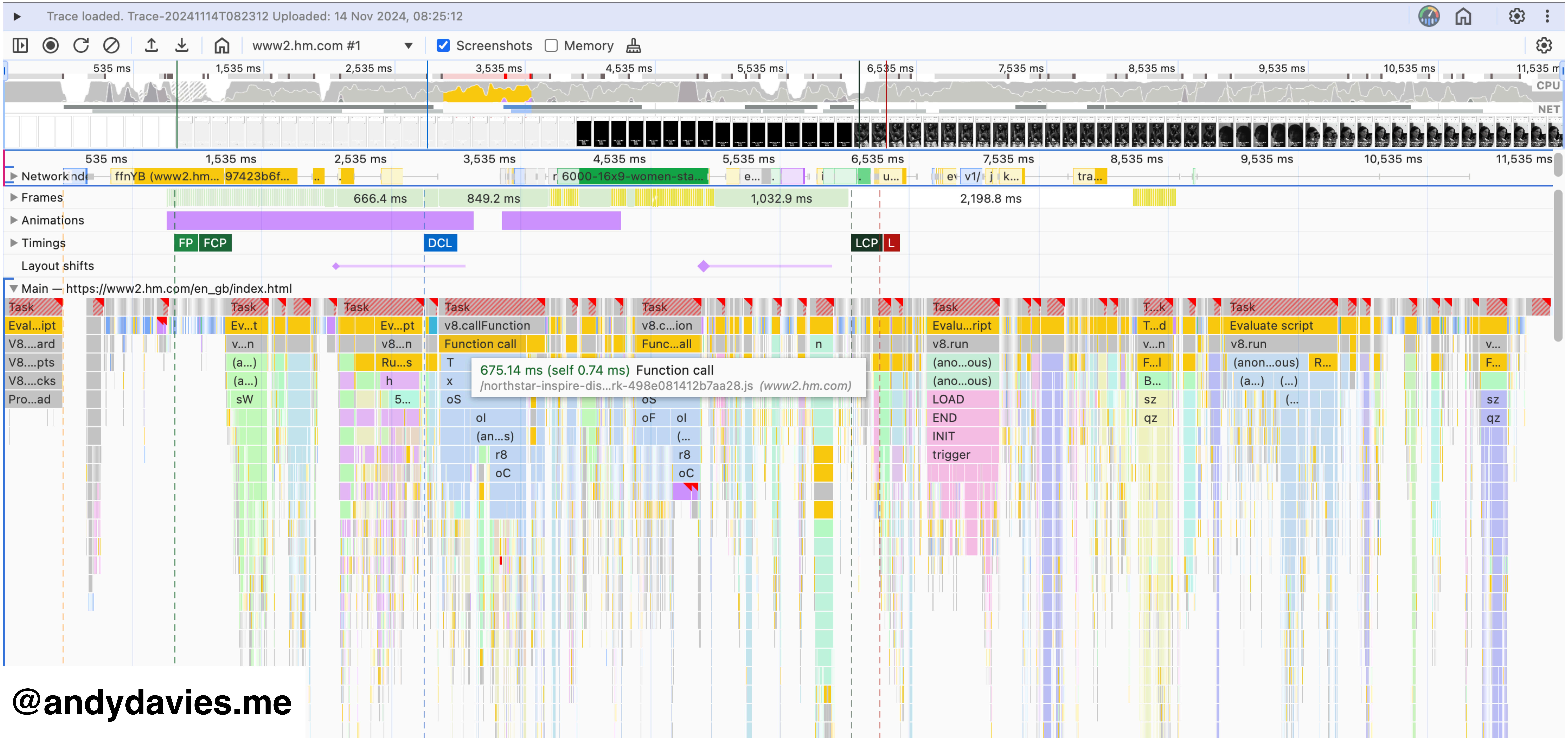
Hard to match with Main Thread activity



Trace loaded. Trace-20241114T082312 Uploaded: 14 Nov 2024, 08:25:12

www2.hm.com #1 ☑ Screenshots □ Memory

Main — https://www2.hm.com/en_gb/index.html

675.14 ms (self 0.74 ms) Function call
/northstar-inspire-dis...rk-498e081412b7aa28.js (www2.hm.com)

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Home > Docs > Chrome DevTools > More panels

Was this helpful?

Customize your performance data with extensibility API

Andrés Olivares

Sofia Emelianova

Overview

The **Performance** panel supports the performance extensibility API that lets you add your own custom data to the performance timeline.

This API leverages the exi

ie as a custom track or in the **Timings** track. This may be useful for developers of frameworks,

https://developer.chrome.com/docs/devtools/performance/extension

```
const observer = new PerformanceObserver((list) => {
    for (const entry of list.getEntries()) {
        performance.measure('LoAF', {
          start: entry.startTime,
          end: entry.startTime + entry.duration,
          detail: {
            devtools: {
              dataType: 'track-entry',
              track: 'LoAF',
              trackGroup: 'Performance Timeline',
              color: 'secondary',
              tooltipText: 'LoAF'
            }
          }
        });
      }
    });

observer.observe({ type: 'long-animation-frame', buffered: true });
```

Build an extension… profile pages…

301 ms
1,301 ms
2,301 ms
3,301 ms
4,301 ms
5,301 ms
6,301 ms
7,301 ms
8,301 ms
9,301 ms
10,301 ms
11,301 ms
12,301 ms
13,301 ms
14,301 ms
15,301 ms
CPU
NET
Frames
3,767.0 ms
667.1 ms
583.3 ms
933.8 ms
965.8 ms
866.7 ms
1,133.4 ms
883.3 ms
950.4 ms
Timings
FP
FCP
LCP
DCL
L
Performance Timeline — Custom track
LoAF
Re…ng
Ren…ing
L…F
https:/…fe3.js
ht…js
https…t.js
https…ct.js
Long Task
Lon…sk
Lon…ask
Lo…sk
L…
Main — https://www.selfridges.com/NL/en/
Task
T…
Eval…ript
La…t
R…
L…
Evalua…cript
Ev…e
Evalu…ript
Timer fired
Prof…ead
Run …asks
Fu…ll
(ano…us)
F…l
R…s
(…
d
Nh
(an…s)
r…y
4…2
kh
n
fi…h
Wd
u
5…5
H
d
i…t
_…
e…
S…

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Build an extension… profile pages…

301 ms
1,301 ms
2,301 ms
3,301 ms
4,301 ms
5,301 ms
6,301 ms
7,301 ms
8,301 ms
9,301 ms
10,301 ms
11,301 ms
12,301 ms
13,301 ms
14,301 ms
15,301 ms
CPU
NET
Frames
3,767.0 ms
667.1 ms
583.3 ms
933.8 ms
965.8 ms
866.7 ms
1,133.4 ms
883.3 ms
950.4 ms
Timings
FP
FCP
LCP
DCL
L
Performance Timeline — Custom track
LoAF
LoAF
Re…ng
Ren…ing
L…F
https:/…fe3.js
ht…js
https…t.js
https…ct.js
Long Task
Lon…sk
Lon…ask
Long Task
Lo…sk
L…
Main — https://www.selfridges.com/NL/en/
Task
Eval…ript
Prof…ead
La…t
Evalua…cript
Run …asks
Ev…e
Fu…ll
Evalu…ript
Timer fired
(ano…us)
(an…s)

@andydavies.me

andydavies / perf-timeline-to-devtools-profile
Type / to search
Code
Issues
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
Public
Pin
Unwatch 1
Fork 0
Star 7
main
1 Branch
0 Tags
Go to file
t
Add file
Code

perf-timeline-to-devtools-profile

andydavies Update readme 275d6c6 · 2 months ago 5 Commits

images	Update readme	2 months ago
LICENSE	Initial commit	2 months ago
README.md	Update readme	2 months ago
content-script.js	Add more detail to LoAF and script timing events. Normali...	2 months ago
manifest.json	Initial commit	2 months ago

About

Creates custom DevTools Performance Panel populated with entries from the Performance Timeline

- Readme
- MIT license
- Activity
- 7 stars
- 1 watching
- 0 forks

Releases

No releases published
Create a new release

Packages

No packages published

perf-timeline-to-devtools-profile

Chrome Extension that creates a custom track in the DevTools Performance Panel populated with entries from the Performance Timeline

visualise the LoAF

ɔservers for the following Events and adds performance marks / measures anotated with

https://github.com/andydavies/perf-timeline-to-devtools-profile

🦋 @andydavies.me

Helped identify some missing attributions

LoAF
LoAF
https://g...1940C.js
Long Task
LoAF
L...t
Long Task
Task
Run microtasks
n
(anonymous)
(anonymous)
(ano...ous)
sr...t
R
t...
(ano...ous)
(ano...ous)
(ano...ous)
o.in...bles
t.init
Task
Evaluate script
Run microtasks
(anonymous)
e.init
e...t
e....f
e...d
l...s
e...r
(...)
b
Task
Run microtasks
n
(anonymous)
(anonymous)
Xt....ces
sr.LoadBanner
l...
ro.loadBanner
l.trigger
dispatchEvent
Event: otloadbanner
Function call
BOOMR_plugins_errors_wrap
r
ii.windowLoadBanner
R
(anonymous)
(anonymous)
(anonymous)
r.insertPcHtml
r.i...ups
l.append
r....p
app...ild
app...ld
Task

🦋 @andydavies.me

I Like Long Animation Frames

They give us an insight into the runtime costs of the code we ship

And allow us to indentify our problem scripts

Within the context of our visitors environment

Feel like I’ve just scratched the surface…

… and there’s more for LoAF to reveal

🦋 @andydavies.me

Photo by Mat Ranson on Unsplash

Areas to explore

- What can LoAF tells us about the work that’s needed before FCP or LCP?
- How much Style and Layout work is happening?
- What’s the overhead of script compilation?
- How much synchronous work are our scripts doing?

Further Reading

W3C Spec

https://w3c.github.io/long-animation-frames/

MDN

https://developer.mozilla.org/en-US/docs/Web/API/Performance_API/Long_animation_frame_timing

Chrome Developers

https://developer.chrome.com/docs/web-platform/long-animation-frames

Thanks!

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