

# Progressive Font Enrichment: Building a better `@font-face`

# Presenters



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# Web Font Woes

# Web Fonts Just Work, Right?



चंद्रमा परछाई में गुम था ।



चंदरमा परछाई में गुम था ।

b" b'

b" b'

# Whole Font

Download this

```
/* slow & simple ftw? */
@font-face
  src: url(whole-font.woff2);
  font-family: 'Merriweather';
```



# Whole Font

Download this

```
/* slow & simple ftw? */  
@font-face  
  src: url(whole-font.woff2);  
  font-family: 'Merriweather';
```

If page uses this

# Fragmented Font

Download this

```
/* cyrillic */
@font-face
    font-family: 'Merriweather';
    src: url(cyrillic.woff2);
    unicode-range: U+0400-045F;
```

```
/* latin */
@font-face
    font-family: 'Merriweather';
    src: url(latin.woff2);
    unicode-range: U+0000-00FF;
```

# Fragmented Font

Download this  
If page uses this

```
/* cyrillic */
@font-face
    font-family: 'Merriweather';
    src: url(cyrillic.woff2);
    unicode-range: U+0400-045F;
```

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/* latin */
@font-face
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# Fragmented Font

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    font-family: 'Merriweather';
    src: url(cyrillic.woff2);
    unicode-range: U+0400-045F;
```

Download this  
If page uses this

```
/* latin */
@font-face
    font-family: 'Merriweather';
    src: url(latin.woff2);
    unicode-range: U+0000-00FF;
```

# Very Fragmented Font

```
/* Google Fonts CJK: 100+ @font-face rules */

/* part 1 of N */
@font-face
  src: url(part1.woff2);
  unicode-range: <chars in part 1>;

/* part 2 of N */
@font-face
  src: url(part2.woff2);
  unicode-range: <chars in part 2>;
...

/* part N of N */
@font-face
  src: url(partN.woff3);
  unicode-range: <chars in part N>;
```

# DIY Font Loading

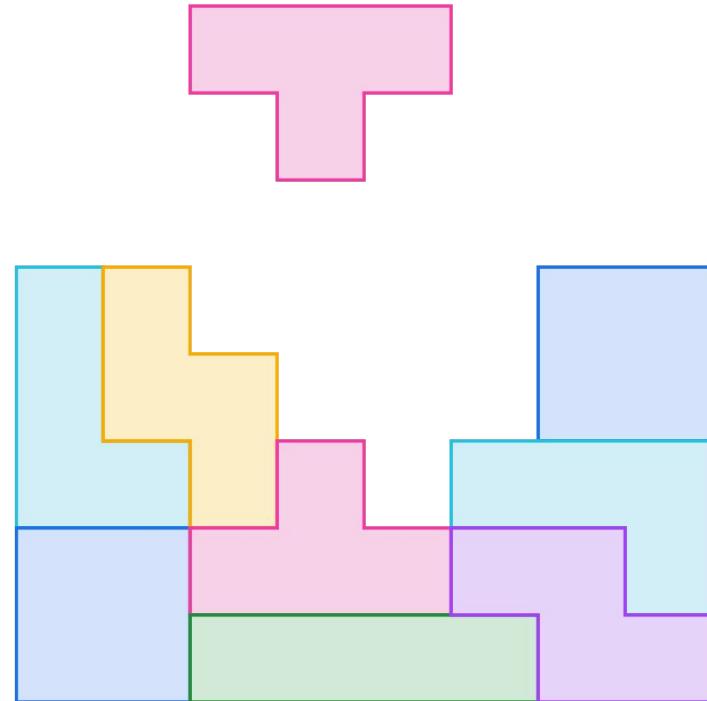




# Making It Better

# Progressive Font Enrichment

- Subset per page
- Merge into one font
- Built in to the browser



# Progressive Font Enrichment

## Page 1: "Meows"

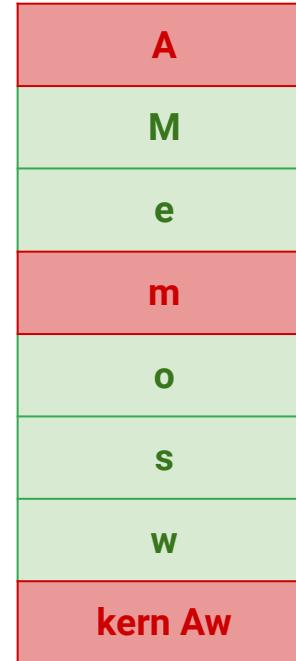


# Progressive Font Enrichment

Page 1: "Meows"



Page 2: "Awesome"



# Progressive Font Enrichment

Page 1: "Meows"

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Page 2: "Awesome"

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# Benefits

- Pay as you go
- Rendering fidelity
- Faster



# What Scripts Benefit

# What Scripts Benefit

The spectacle before us was indeed sublime.

המראה שלפנינו אכן היה נשבג.

كان المشهد أمامنا سامٍ.

हमारे सामने का नज़ारा वाकई उत्कृष्ट था।

彼らの機器や装置はすべて生命体だ。

그들의 장비와 기구는 모두 살아 있다.

# Simple Scripts

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그들의 장비와 기구는 모두 살아 있다.

# Complex Scripts

The spectacle before us was indeed sublime.

המראה שלפנינו אכן היה נשבג.

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हमारे सामने का नज़ारा वाकई उत्कृष्ट था ।

彼らの機器や装置はすべて生命体だ。

그들의 장비와 기구는 모두 살아 있다.

# Large Scripts

The spectacle before us was indeed sublime.

המראה שלפנינו אכן היה נשבג.

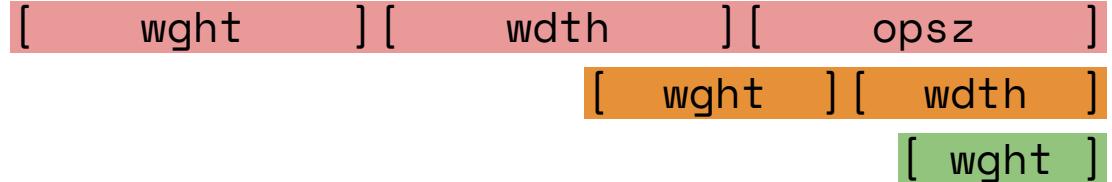
كان المشهد أمامنا سامٍ.

हमारे सामने का नज़ारा वाकई उल्कृष्ट था।

彼らの機器や装置はすべて生命体だ。

그들의 장비와 기구는 모두 살아 있다.

# Variable Fonts



- Web usage is picking up!
- "Variable fonts are smaller" oversimplifies
- Progressive enrichment to the rescue?
  - Only transfer what we use

YouTube youtube.com Incognito ログイン

検索

ホーム 急上昇 登録チャンネル ライブ履歴 動画の評価、コメント、チャンネル登録を行うにはログインしてください。 ログイン

BEST OF YOUTUBE 音楽 スポーツ ゲーム 映画 テレビ番組 ニュース ライブ スポットライト 360° 動画 チャンネル一覧

YOUTUBE の他のサービス YouTube Premium ライブ 設定 報告履歴 ヘルプ

急上昇

Assembling the new Trans and on the Corvette! 21:51 It's just a 23万回視聴・21時間前

Editor Edition 2 | Dude Perfect 8:06 Dude Perfect 780万回視聴・2日前

UFC 241 Embedded: Vlog Series - Episode 2 9:57 UFC - Ultimate Fighting Champ... 94万回視聴・1日前

QUARTER FINALS AGT 3:12 America's Got Talent 76万回視聴・19日前

LITTLE WOMEN - Official Trailer (HD) 2:44 Sony Pictures Entertainment 170万回視聴・1日前

格闘技 - トピック おすすめのチャンネル チャンネル登録 11万

マイクタイソン - ボクシングの歴史の中で最も殘酷なへ... 11:24 The World of Boxing! 1300万回視聴・2週間前

The Best of Conor McGregor 2008-2017 highlights HD 15:33 MAKSYM 1800万回視聴・2年前

Greatest Sports Moments - M83 Outro (HD) 13:10 LeBreton 1000万回視聴・1年前

UFC 241 Free Fight: Daniel Cormier vs Stipe Miocic 1 11:31 UFC - Ultimate Fighting Champ... 299万回視聴・1週間前

UFC Uruguay: Weigh-in Highlight 1:11 UFC - Ultimate Fighting Champ... 13万回視聴・4日前

ロック - トピック おすすめのチャンネル チャンネル登録 232万

Evanescence - My Immortal (Official Music Video) 4:33 Evanescence 6億回視聴・9年前

Gorillaz - Clint Eastwood (Official Video) 4:29 Gorillaz 2.3億回視聴・3年前

The Weeknd - False Alarm 5:46 The Weeknd 1.3億回視聴・2年前

Classic Rock Greatest Hits 60s & 70s and 80s - Classic... 1:36:29 Music For Memory 1400万回視聴・12か月前

R.E.M. - Losing My Religion (Official Music Video) 4:54 remiq 5.8億回視聴・8年前

自動車 - トピック おすすめのチャンネル チャンネル登録 103万

CHASE ON EAST FREEWAY 5:09 They say you can't outrun the...

Here's Why the Bugatti Chiron... 35:07 Here's Why the Bugatti Chiron...

Welcome to our Home: A 12:20 Welcome to our Home: A...

750cc Kart has FULL POWER! 18:15 Rad Daddy Raddy's "Stock"

TOTALLY "STOCK" 3:43 Rad Daddy Raddy's "Stock"

Noto Sans JP

Roboto Regular

Roboto Medium

YouTube Sans

Google

# Current Status

# W3C Web Fonts Working Group

- Created the WOFF and WOFF2
- Cross industry collaboration
- Participants from many companies



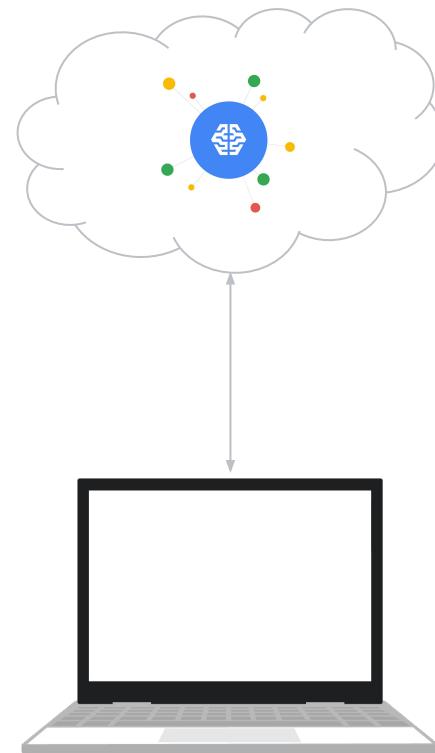
# W3C Web Fonts Working Group

- Rechartered for PFE
- Two approaches being considered



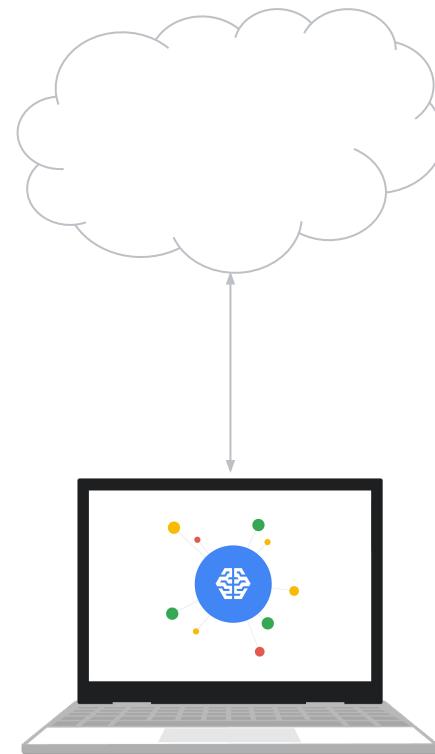
# Smart Server, Simple Client

- Server handles complexity
- Client just applies patches



# Simple Server, Smart Client

- Complex client
- Standard HTTP server
- HTTP range requests



# Trade Offs

## Smart Server

- Easy client implementation
- Ongoing optimization

## Smart Client

- Standard HTTP server
- Easy adoption
- Easy self hosting

# Competition Is Good

- Both are promising
- Test to find the best
- Share ideas



# Evaluating Proposals

# Comparing Proposals

We want

- Rendering fidelity
- Fast page loads

For

- Any page
- Any script
- Any network

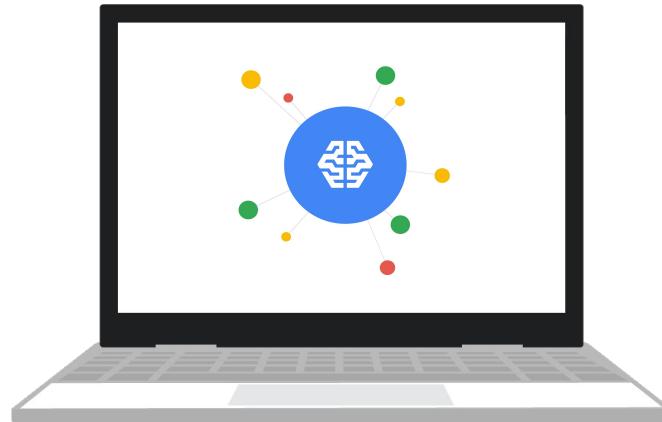


# Simulation

## Simulate realistic

- Network conditions
- User browsing

Compare, pick a winner!



# Wanted: Browsing Dataset

We don't HAVE a dataset of  
browsing sessions

Working on creating a realistic  
dataset and simulation rig

THEN we can pick a winner!

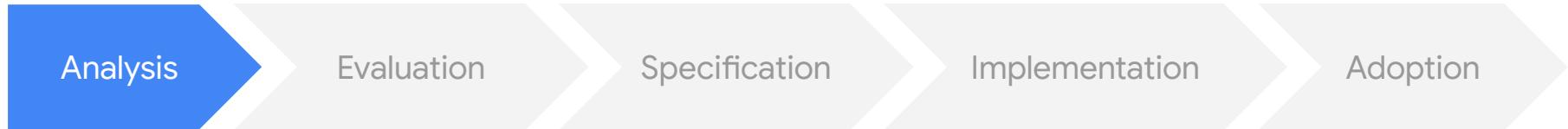


# Roadmap

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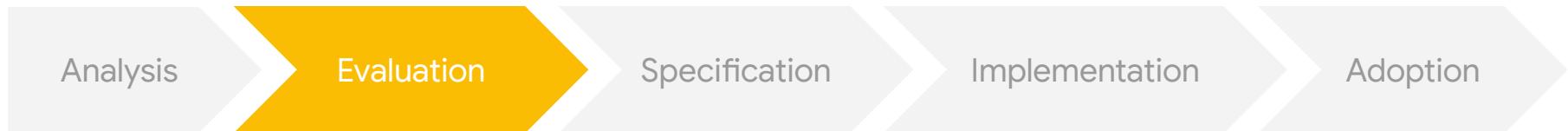


# Analysis



- Proposals
- Evaluation Framework
- Gather data and test

# Evaluation



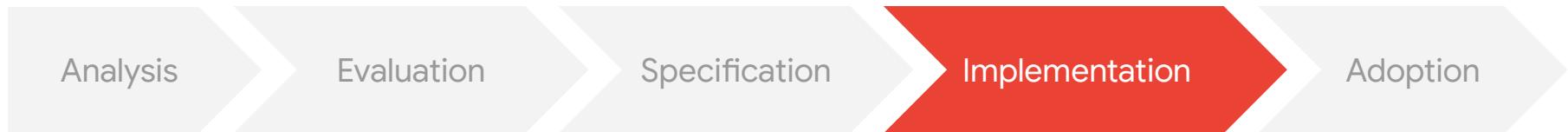
- Evaluation report
- Recommend path forward

# Specification



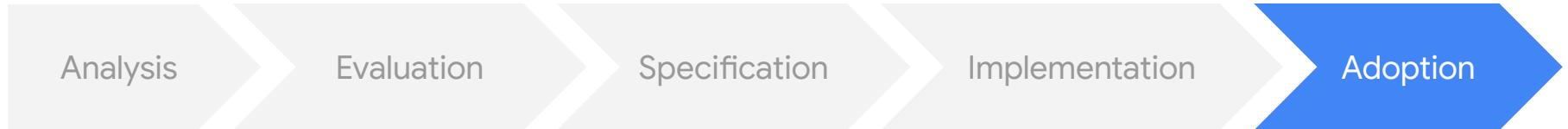
- Formal specification
- Enables interoperability

# Implementation



- Two implementations
- Built from the spec

# Adoption



- Shipped in browsers
- Deployed by font hosts

[tinyurl.com/font-enrichment](http://tinyurl.com/font-enrichment)

# Thank you

[tinyurl.com/font-enrichment](https://tinyurl.com/font-enrichment)