

Progressive Font Enrichment:

Building a better *@font-face*

Presenters



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Production & Standards

Google Fonts



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Tech Lead/Manager

Google Fonts

Web Font Woes

Web Fonts Just Work, Right?



चंद्रमा परछाई में गुम था ।



चंद्रमा 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

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

Download this



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

Fragmented Font

```
/* cyrillic */  
@font-face  
    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);  
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Fragmented Font

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/* cyrillic */  
@font-face  
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```

Download this



If page uses this



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

Download this



If page uses this



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

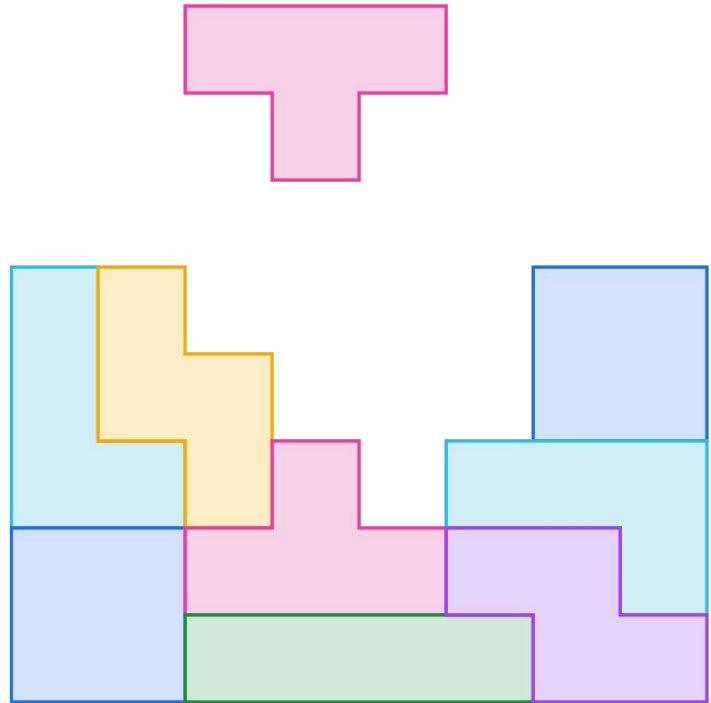




Making It Better

Progressive Font Enrichment

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



Progressive Font Enrichment

Page 1: "Meows"

M
e
o
s
w

Progressive Font Enrichment

Page 1: "Meows"

M
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o
s
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Page 2: "Awesome"

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kern Aw

Progressive Font Enrichment

Page 1: "Meows"

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A
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kern Aw

=

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 נשגב.

كان المشهد أمامنا سامير.

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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Complex Scripts

The spectacle before us was indeed sublime.
המראה שלפנינו אכן היה נשגב.

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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 נשגב.

كان المشهد أمامنا سامير.

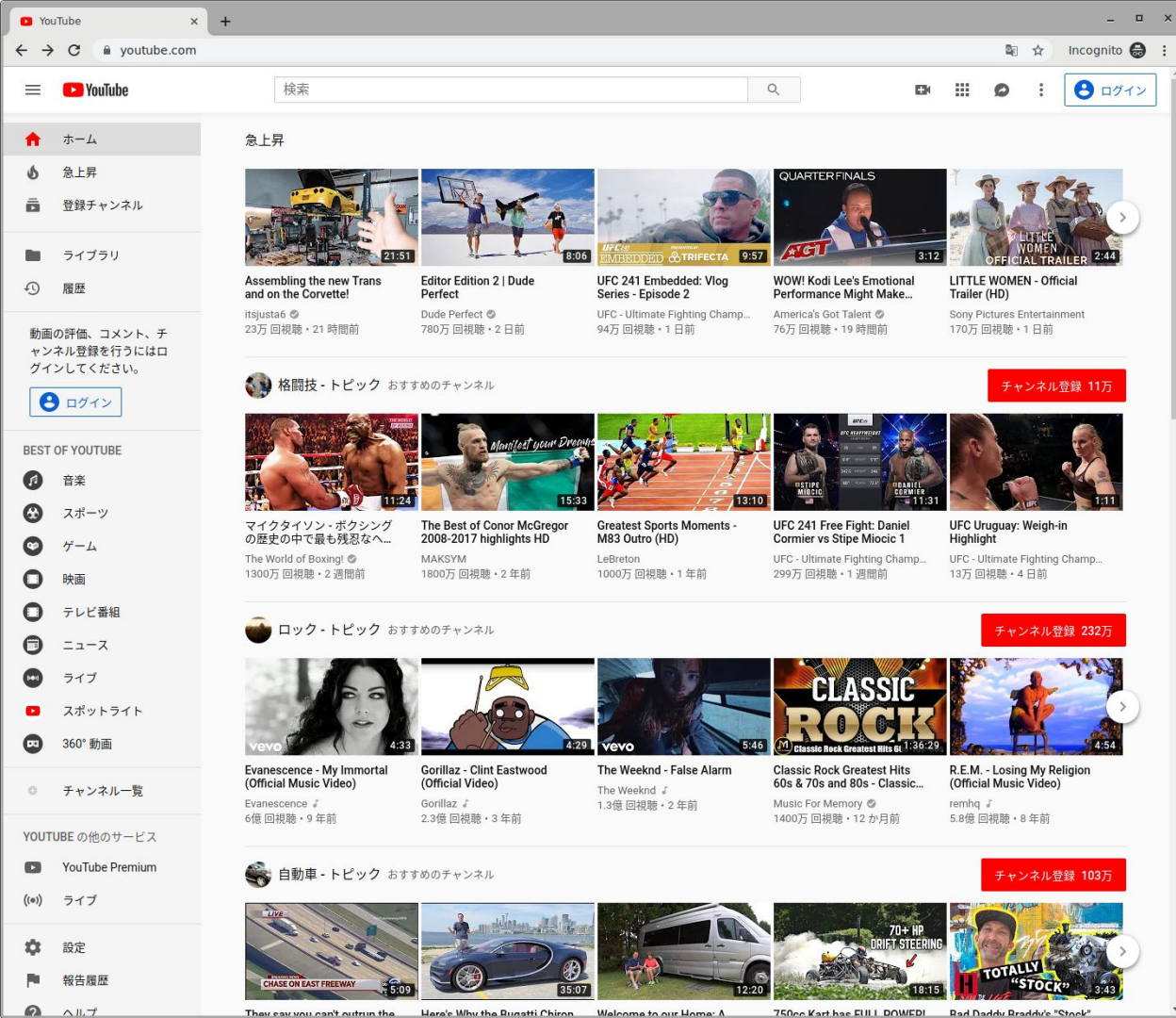
हमारे सामने का नज़ारा वाकई उत्कृष्ट था ।

彼らの機器や装置はすべて生命体だ。
그들의 장비와 기구는 모두 살아 있다.

Variable Fonts

```
[ wght ] [ width ] [ opsz ]  
[ wght ] [ width ]  
[ wght ]
```

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



Noto Sans JP

Roboto Regular

Roboto Medium

YouTube Sans

Current Status

W3C Web Fonts Working Group

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



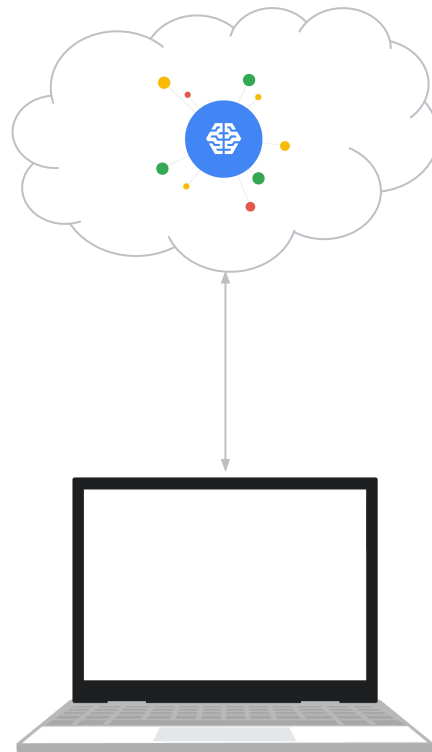
W3C Web Fonts Working Group

- Rechartered for PFE
- Two approaches being considered



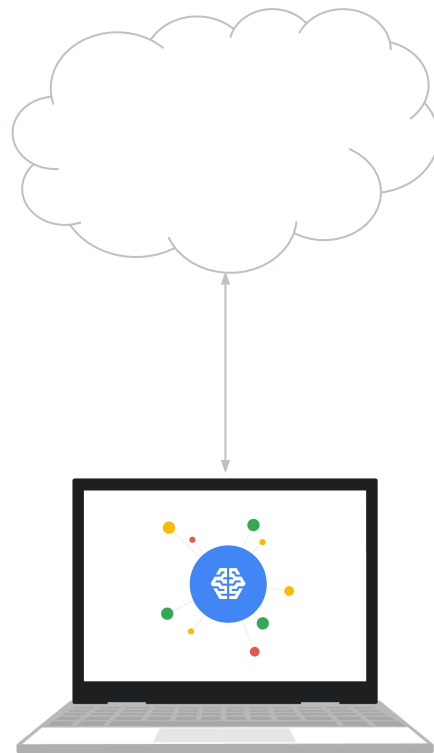
Smart Server, Simple Client

- 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!



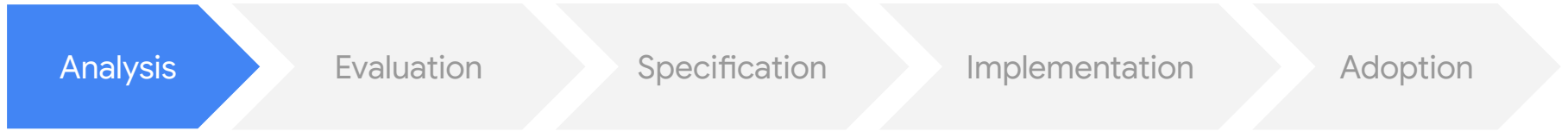


Roadmap

Roadmap

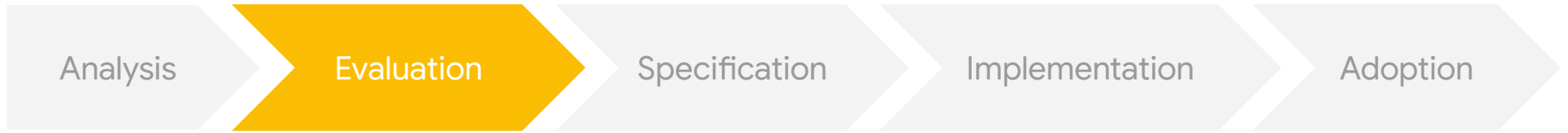


Analysis



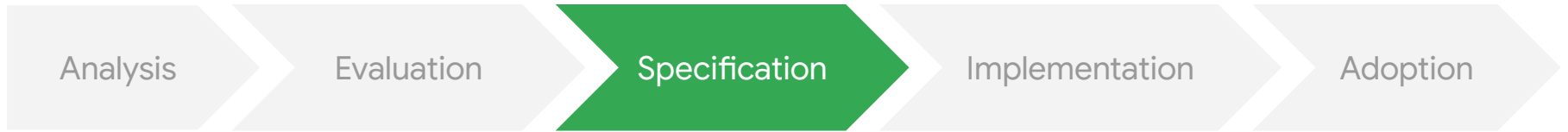
- Proposals
- Evaluation Framework
- Gather data and test

Evaluation



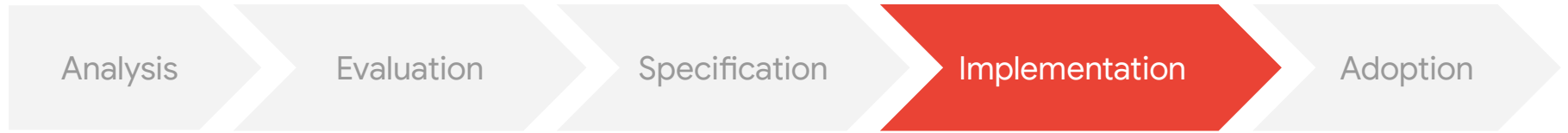
- Evaluation report
- Recommend path forward

Specification



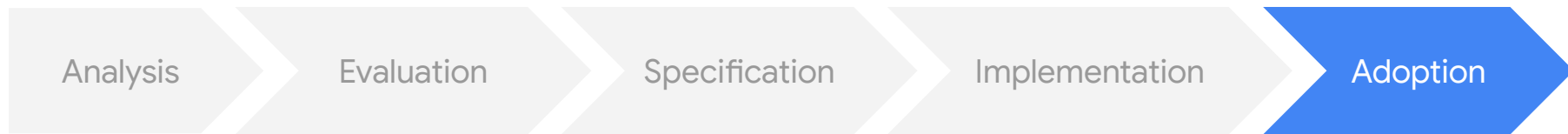
- Formal specification
- Enables interoperability

Implementation



- Two implementations
- Built from the spec

Adoption



- Shipped in browsers
- Deployed by font hosts

tinyurl.com/font-enrichment

Thank you

tinyurl.com/font-enrichment