



# I/O Extended

## (GDG Berkeley Edition)

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# Welcome!



WELCOME, WELCOME, WELCOME,



OMG THIS IS SO EXCITING!

#WILLANDGRACE

NBC

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# GDG Berkeley team

Patti



Michael



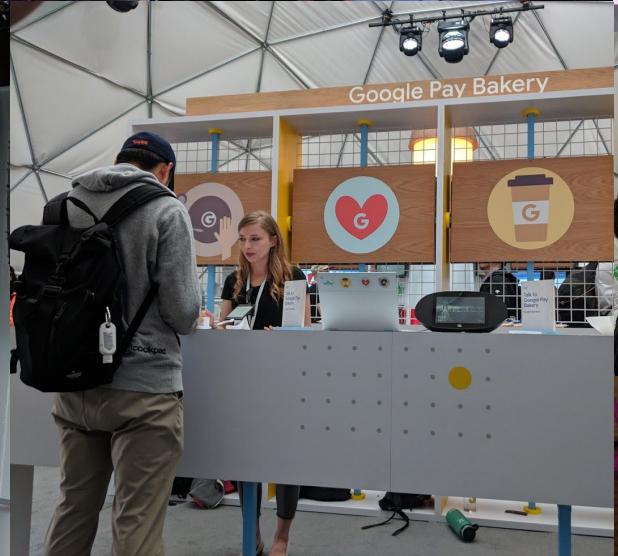
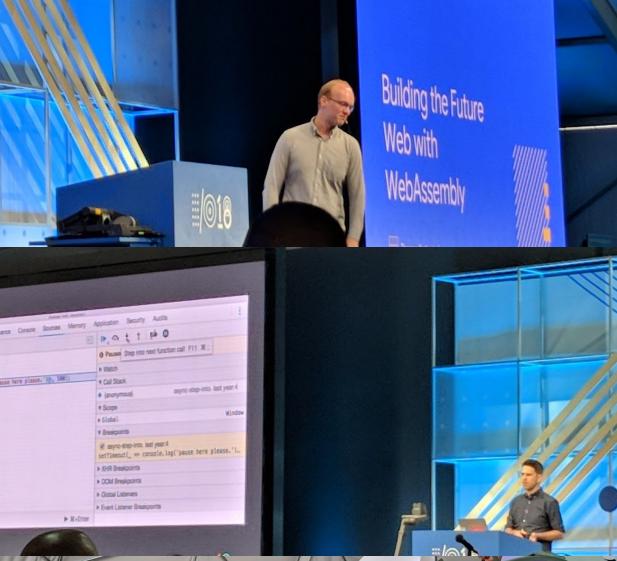
Nina



Nathan



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DREAM BIG





Google  
Keynote

in 10 min

# Web Highlights

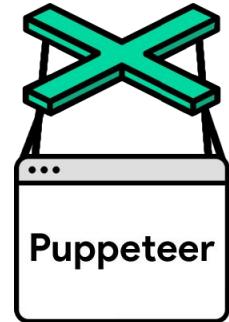
Patti Shin

# Web Topics presented at I/O ...



AMP

WEBASSEMBLY



PWA

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# Tale of two talks ...



**Web performance  
made easy**

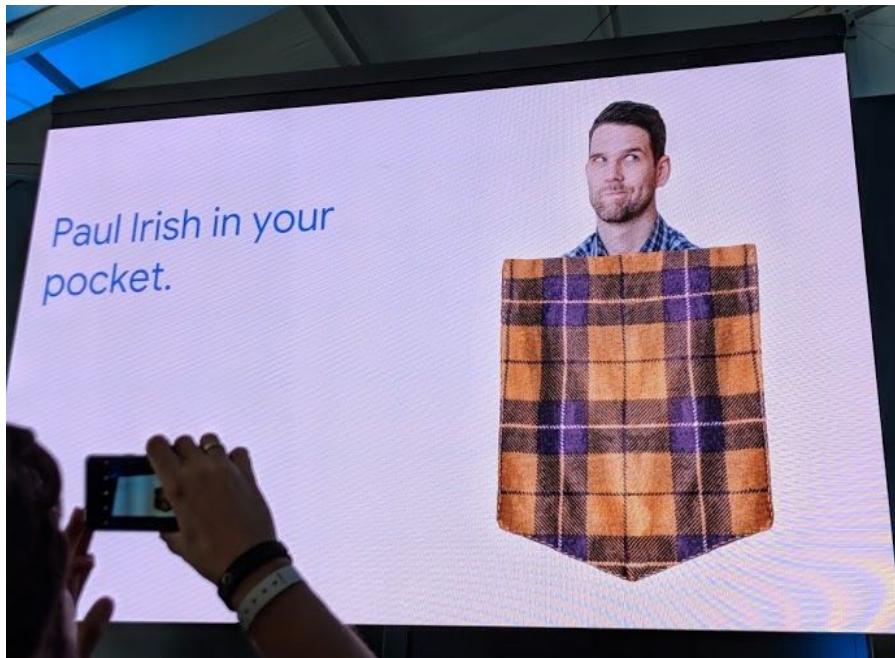


**Chrome DevTools**

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# Web Performance Made Easy

Addy Osmani & Ewa Gasperowicz



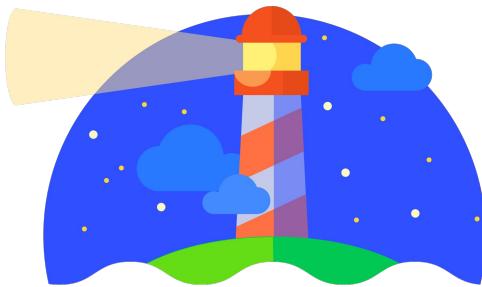
*"We know that  
performance matters ...  
but where do I start?"*

← You can your  
very own Paul  
Irish

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# Web Performance Made Easy

Addy Osmani & Ewa Gasperowicz



[bit.ly/lighthouse-perf](https://bit.ly/lighthouse-perf)

- JavaScript boot-up time
- Unminified Javascript & CSS
- Unused CSS rules
- Pre-load key fetch requests
- Use efficient cache policy on static assets
- And much more ...

Create your own reports and check it out!

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# Lighthouse.

The screenshot shows the Lighthouse audit interface for a Progressive Web App (PWA). The top navigation bar includes tabs for Elements, Performance, Audits, Network, Console, Application, and Memory. The audit results are displayed in three main sections: Performance (23), Progressive Web App (27), and Best Practices (88). The Performance section provides an overview of current performance and opportunities for improvement. It includes a timeline visualization showing the duration from 2s to 19.9s for various events like meaningful paint and first interactive. Key metrics listed include:

- First meaningful paint: 15,900 ms
- First Interactive (beta): 15,900 ms
- Consistently Interactive (beta): 15,900 ms
- Perceptual Speed Index: 14,968
- Estimated Input Latency: 16 ms

The audit was run at 12:56:35 PM on 127.0.0.1:8080, with Emulation set to Mobile and 3G w/ CPU slowdown.

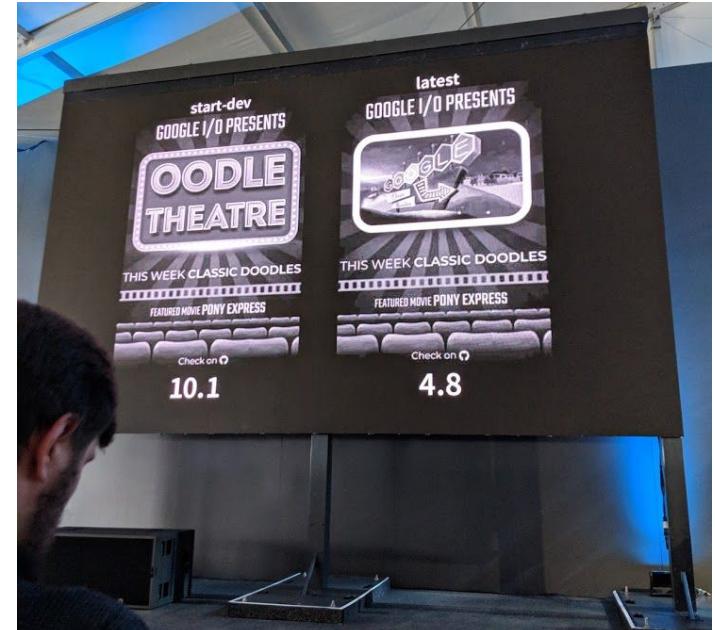
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# Web Performance Made Easy

Addy Osmani & Ewa Gasperowicz

*Oodle Theatre ... what could we improve?!*

- **Unnecessary loads**
  - Send over only the necessary bytes and don't load twice
  - Minify and compress JS & CSS
- **Inefficient cache policies**
  - Short cache lifetimes can impact repeat visits
- **Unused code**
  - Utilize lighthouse to check how much JS/CSS isn't getting utilized



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# Web Performance Made Easy

Addy Osmani & Ewa Gasperowicz

- **Bloated pages**
  - Eliminate downloads
  - Remove unoptimized Images
  - Fix high boot time
    - JS is our most expensive asset

*“The fastest request is  
the one that isn’t  
made!”*

*“You need to design performance from  
the start or else you’ll not make it  
happen!”*

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# Web Performance Made Easy

Addy Osmani & Ewa Gasperowicz

- **Machine learning & Web Performance**
  - Data-driven UX and loading pages
  - Predict page navigations
  - Data-driven bundling for web applications
  - Guess.js (alpha)



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# Chrome DevTools

Paul Irish & Jason Miller

- **Authoring**
  - Editing html/css sticks around post refresh
  - So good for prototyping!
- **Network Search Introduced**
  - Accessibility improvements w/ color picker
- **Lighthouse**
  - “Dig beneath the lighthouse” (view trace)
  - Bridging the gap between lighthouse and devtools
- **Async/Await**
  - Can await anything right in the console
  - Async, aware, step into (i.e setTimeout)

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```
> const res = await fetch('https://api.github.com/search/repositories?q=workbox');
< undefined
> await res.json()
< ► {total_count: 217, incomplete_results: false, items: Array(30)}
> $_.items.map(item => item.name)
< (30) ["workbox", "workbox-microsite", "pwatter", "workbox-lab", "next-offline",
  "workbox-indexeddb", "react-pwa-webpack-starter", "polymer-skeleton", "workbox", "amp-pwa-workbox", "workbox-webpack-react", "hyperapp-todo-parcel", "webdash-workbox", "workbox", "workbox-for-joomla", "workbox", "workbox", "WorkBox", "workbox", "workbox", "workbox", "next-workbox-webpack-plugin", "workbox", "Workbox", "workbox", "workbox", "workbox"]
>
```

await anything, right in the console



# Chrome DevTools

Paul Irish & Jason Miller

- Down in Console (command line API)
  - **Monitor & debugging native functions**
    - Set breakpoints in built-in functions
  - **queryObjects()**
    - Lists all instances of constructor
  - **Eager evaluation**
    - As you are typing on the console, before you hit enter, a preview of the ‘result’ is displayed
    - For fetch calls, regex evaluation, etc.

Talking eager evaluation:

Jake Archibald

“That sounds obnoxious.”

Jason Miller

“I call it: *belligerent console*.”

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# What's new in Android

Google I/O 2018 Edition

# Key Areas

- Development
  - Distribution
  - Engagement
  - Devices
- 

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# Development

Making mobile development fast and easy

# Development: Android Jetpack

- New Components
- Backwards Compatible
- Immediate Updates
- Eliminates Boilerplate

# Development: Kotlin

- 35% Of Apps Use Kotlin
- Improved experience with docs and libraries
- ART (Android Run Time) optimized for Kotlin
- Kotlin content available on Udacity
- Kotlin GDEs

# Development: Android Studio 3.2 Canary

- Support for Jetpack
- Improved Android Emulator (Snapshots)
- New profiler, etc...

# Distribution

Making apps radically smaller

# Distribution: App Bundle & Dynamic Delivery

- Dramatically reduce app sizes
  - Build everything
  - Deliver only what you need

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Legacy APK



Dynamic Delivery

# Distribution: Dynamic features

- Enables modularization
  - Deliver features on-demand

# Distribution: Google Play Console

- New features and reports
  - Dashboard
  - Statistics
  - Android vitals
  - Acquisitions
- Try the new “Android App Bundle”

# Distribution: Google Play Instant

- Available to one billion devices
- Easy to make
- Unity Support
- Being tweaked and integrated into AdWords

# Engagement

Bringing users back more and more

# Engagement: Slices

- Rich and dynamic UI templates
- Include live data and more

Upcoming trip: Seattle  
Jun 12-19 • 2 guests



Check In  
12:00 PM, Jun 12

Check Out  
11:00 AM, Jun 19

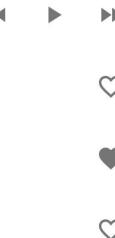
Weekly Mix  
20 songs, 1hr 52 min



Autumn Fever  
Bascilica

Urban  
We Summit

Flicker  
Print Works



Get a ride  
Car in **4 min**

Home  
12 miles | 15 min | **\$14.00**

Work  
22 miles | 35 min | **\$25.00**



# Engagement: Actions

- Makes your app content accessible
- Will appear based on usage and relevance
- Provides a better experience with the Assistant

# Devices

A powerful platform for IoT devices

# Devices: Android Things 1.0



androidthings

# What's new in AI?



# Key Areas

- Smart Compose for Gmail
- Google Duplex
- Suggested Actions for Photos
- Google Lens
- Updates to Google Maps

# Smart Compose for Gmail

Smart reply will make answering emails extremely convenient

# Reinvent Email

- Google's G Suite team has added an extension to this amazing feature
- The team introduced Smart compose, a new feature powered by AI, which can auto-complete your sentences!
- As you are typing, the tool can make suggestions for the rest of the sentence.
- All you need to do is press the tab button and it will complete the sentences (even the entire email) for you!
- <https://youtu.be/nZ-C8I-8BZw>

# Google Duplex

AI conducting natural conversations

# Having a Personal Assistant by Your Side

- Google Duplex can conduct natural conversations and perform practical and realistic tasks over the phone
- At I/O 2018, the team presented a demo of the AI making a call to a real hair salon and having a remarkably human-like conversation to book an appointment
- This was one of the most fascinating announcements
- <https://youtu.be/D5VN56jQMWM>

# Suggested Actions for Photos

Making photos even more exciting

# New Feature Recommends Changes to Your Photos and More

- The team launched a new feature for Google Photos, called Suggested Actions
- This includes AI-driven smart suggestions in Google Photos
- Offers features such as brighten, colorize, fix, or share your photos based on what Google Photos recognizes
- For instance, it can spot friends in your photos
- Also, lets you share these photos with them through a one-click option
- <https://youtu.be/ahRWYZ09Szo>

# Google Lens

Contextual suggestions for objects and so much more

# Google Lens in the Camera App on More Supported Devices

- Google Lens has integrated AI to give users a big picture about surrounding environments
- It will also provide contextual suggestions for objects in their surrounding environments
- Ex: scanning a restaurant can show you the menu, pricing, reservations, and timings. It can also show a copy and save text from a book to our phones.
- Another very interesting feature introduced in Google Lens is Style Match
- Let's take a look: <https://youtu.be/X042Z4r-Rb8>

# Updates to Google Maps

Making Google Maps even better with intuitive experience for the users

# MAPS! Do More with What You See

- The new feature can alert you with interesting updates near your area, such as a festival, restaurant shutting down, even generate a list of popular brunch spots.
- Visual Positioning System (VPS) - with the help of your phone camera, Google Maps can help you navigate around town using Street View!
- The updated Google Maps will be out later this year and will be available for both iOS and Android.
- Let's check the new features in the following video:  
[https://www.youtube.com/watch?v=7U\\_gqtYPA5c](https://www.youtube.com/watch?v=7U_gqtYPA5c)



# Thank You :)

Nina Bachvarova

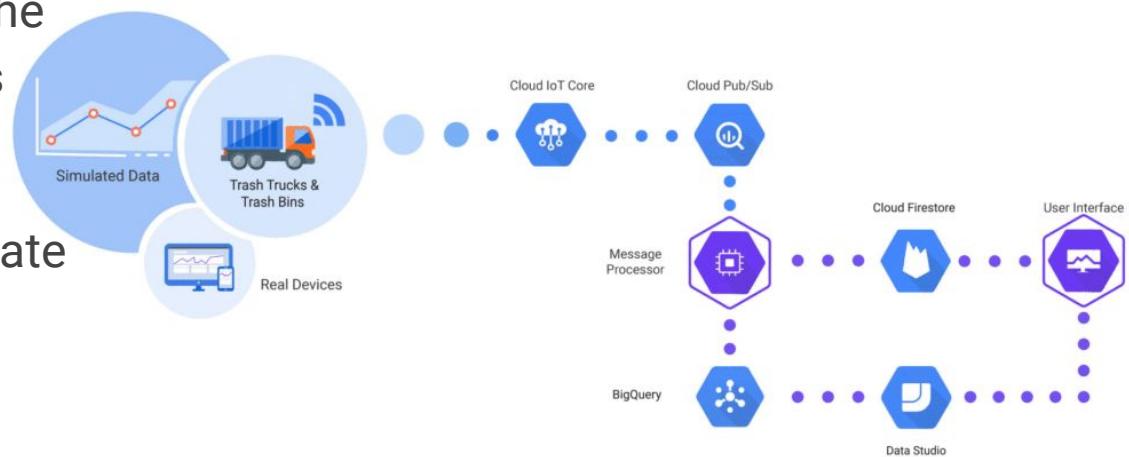
# What's New?

w/ Cloud and ARCore

# Cloud IoT Core

Expand the capability of your devices by connecting them to the cloud and accessing all it's tools and services.

Offload data from and send/update requests to your smart devices.



# Other Cloud Topics

Sadly not too much in terms of news...but plenty of talks

- >Intro to GCP
- >Serverless and Cloud microservices
- >AI/Machine Learning w/ Cloud

Additional news: Node.js on the Cloud App Engine Standard Environment

# ARCore - Augmented Images

Take 2D images and bring it into AR.

- a)Learn an image
- b)detect image
- c)???

Plenty of real world applications

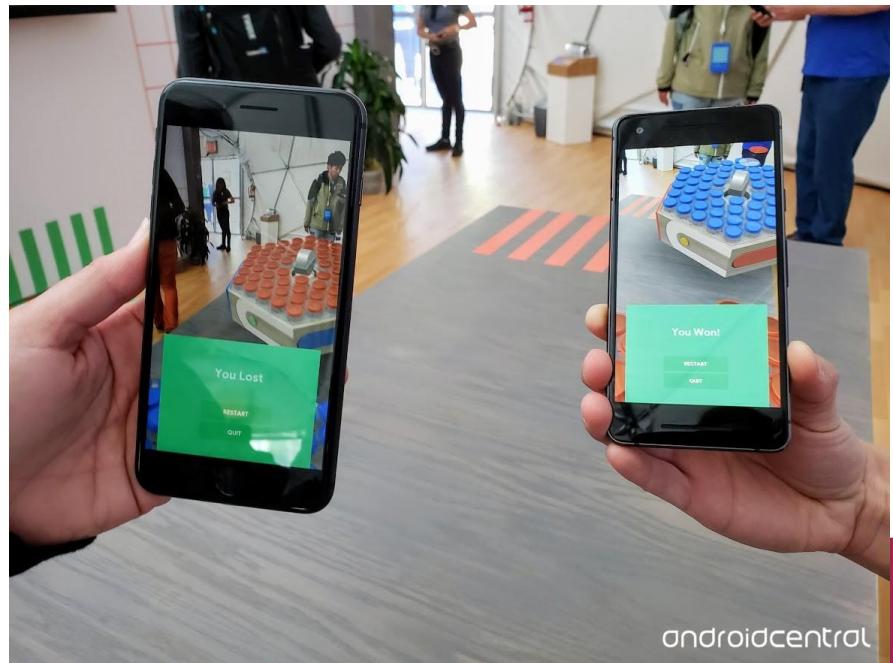
- >education >museums
- >advertisements >posters
- >etc



# Cloud Anchors (Shared AR)

Allow two (or more) devices the ability to talk to each other.

Compatible with Android and iOS.





Friends ...  
let's get ready to Flutter!

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