

Fugu Cross Company Monthly sync -
bit.ly/fugu-sync

Fugu Community Sync notes

(googlers doc-link: [go/fugu-cross-company-notes](#))

World public notes for Fugu contributors, including Google, Intel and Microsoft.

Meeting participants, use “Request edit access” to help contribute notes.

bit.ly/fugu-sync

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- Peter Beverloo (beverloo@google.com): TLM for Mobile PWAs & embedded platforms
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- Dan Murphy (dmurph@google.com): SWE on dPWA Infra
- Hongchan Choi (hongchan@google.com): TLM for audio/MIDI/device APIs

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2025 Notes In a Tab

2025

Copy paste the text below as a template for a new meeting notes.

Template (Replace this line by typing @date to get current date))

Sync on projects of shared interest

- TODO: Add project titles and links to issues such as <https://issues.chromium.org/u/1/issues/380491647?pli=1>
- Microsoft Lead:
 - Web Install [Umbrella bug](#), [UX bug](#), [Discussion doc](#)
 - System Accent Color, [windows](#), [Linux](#)
 - 3P Acquisition Info, [Explainer](#)
 - Sys Tray support, [Explainer](#)
 - Web App Launching from Automation Tests, [Umbrella bug](#)
 - Windows Identity for Chromium ([bug](#))
 - For PWAs ([bug](#))
- Google Lead:
 - Approximate Location API
 - [Improve Gaming on the Web Interop](#) by increasing WPT passing rates on Gamepad, Pointerlock and Screen Orientation APIs
 - PWA Identity [updating](#) and [migration](#).
 - [Enable PWA Install Testing](#)

Agenda items from participants

Use this space to report on what you or your company is doing, and to solicit feedback.

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Update from Developer Relations

- Chrome
- Edge
- Samsung

Questions from participants

Learn from other participants and other companies!

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Topic for general discussion

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Nov 3, 2025 | 📅 Fugu Community Monthly sync EMEA friendly

Attendees: Lia Hiscock Rob Paveza Lu Huang akyereboah@microsoft.com Dan Murphy
Vincent Scheib

Sync on projects of shared interest

- Microsoft Lead:
 - Web Install [Umbrella bug](#), [UX bug](#), [Discussion doc](#)
 - Very close to OT! (hoping for 143, otherwise 144)
 - Thanks to Dan and Dibya for help with the `installed_by` field, and our UKMs!
 - Landed CL to enable runtime flag, [merge request to 143](#) is pending review
 - Awaiting review – [Intent to Experiment: Web Install API](#)
 - Use of the API will **not** require the site to be installed as a web app
 - FYI – mkwst landed a semi-functional prototype for PEPC
 - [\[<install> Element\] Build a prototype. \(7079238\) · Gerrit Code Review](#)
 - Uses hostname as a unique identifier – likely not viable
 - Want to parse manifest to gather name
 - Few topics:
 - What expectations about continued work on PEPC Install element prototype?
 - How to treat ownership of code areas between PEPC, Edge PWA team, Chrome PWA team.
 - Reviews by [liahiscock@microsoft.com](#) & [Kristinlee@microsoft.com](#) for interaction with permission.
 - Open questions:
 - What if there's a page with high number of install elements, does that spawn ~50 background manifest requests (Possibly requires creating a web contents, then loading start URL)? Caching may not be effective in an app store context where there is significant new content.
 - AI: [Dan Murphy](#) take a task to ask partners to try the install API during origin trial.
 - Can we include PEPC in current OT?
 - That would delay quite a bit.
 - What questions do we want to ask from OT app partners? (see explainer)
 - Blogpost to explain manifest ID
 -
 - System Accent Color, [windows](#), [Linux](#)
 - Status: CSS WG agreement to work towards, browsers are interested in fulfilling. Accent Color Pending a privacy mitigation.
 - 3P Acquisition Info, [Explainer](#)
 - Will be more relevant with Install API
 - Gauging interest

- Discussion included possibility of apps having multiple install sources, and acquisition needing to support multiple sources? By the way, Android has multi-source edge cases as well <https://developer.android.com/google/play/app-updates#multiple-stores>
- Windows Identity for Chromium ([bug](#))
 - For PWAs ([bug](#))
 - MS Windows team planning to work on this.
- Google Lead:
 - Approximate Location API - Code well underway, preparing for experiments
 - [Improve Gaming on the Web Interop](#) by increasing WPT passing rates on Gamepad, Pointerlock and Screen Orientation APIs
 - PWA Identity [updating](#) and [migration](#).
 - Updating icons etc M143 by December Migration will carry over to 2026.

Agenda items from participants

Use this space to report on what you or your company is doing, and to solicit feedback.

- Widgets - [Sam Richard](#) interested in discussing, knows to chat with Diego

Update from Developer Relations

- Chrome
- Edge
- Samsung

Topic for general discussion

- Reschedule Chrome:Edge PWA sync? (currently 11/13, mid-TPAC)

Oct 6, 2025 | 📅 Fugu Community Monthly sync EMEA friendly

Attendees: [Lia Hiscock](#) [Vincent Scheib](#) [Diego Gonzalez](#) [Rob Paveza](#) [Limin Zhu \(Edge\)](#) [Lu Huang](#)
kristinlee@microsoft.com [Alex Russell](#) [Thomas Steiner](#) (30min in)

Sync on projects of shared interest

- Microsoft Lead:
 - Web Install [Umbrella bug](#), [UX bug](#), [Discussion doc](#)
 - Thank you so much for your help with the security conversations and other internal discussions!
 - Good news - Privacy approval (in addition to Security) for Origin Trial.
 - Gating install behind installation (requiring the site that wants to install other web apps, to be installed by the user first) - based on conversation with [mkwst@](#) (Email Re: WebInstallApi Security Review followup - Thursday, August 28)
 - Partners expressed requiring install would be a deal breaker.
 - TODO Vince have PWA team check with partners we're in contact with.
 - Vince - in the past, gating behind installation was for capabilities that were clearly tied to the concept of being installed (ex - taskbar icon), but the line isn't super solid. Web install is related to installation, but arguments could be made either way
 - Spectrum
 - Existing on OS Taskbar or Dock
 - File Handling

- ... current “install required” line drawn here ...
 - Notifications
 - Geolocation
- Install (in Vince’s opinion) is near the boundary, and could certainly work from non-install.
- .NET ClickOnce - Users can install applications by simply clicking a link on a webpage, a network share, or from local media. This eliminates the need for complex setup procedures often associated with traditional installers.
- Google Lead:
 - Approximate Location API
 - in progress, no updates.
 - [Improve Gaming on the Web Interop](#) by increasing WPT passing rates on Gamepad, Pointerlock and Screen Orientation APIs
 - in progress, no updates.
 - NVIDIA proposed a follow on
 - PWA Identity [updating](#) and [migration](#).
 - in progress, updating nearly ready, migration taking on scope extension navigation capturing complexity as a prerequisite for a key partner.
 - What about cross-site migrations?
 - Examples: [twitter.com](#) → [x.com](#), [outlook.microsoft.com](#) → [outlook.com](#)
 - [Current non-goal in explainer](#), would need stronger security measures to support and design for.

Agenda items from participants

- TPAC - any prep thoughts?
 - Chrome fugu type folks: dmurph, scheib, mek, mattrynolds, mjlwilson, tomac
 - MS: Diego
 - WebInstall - plan to discuss in webapps, not currently on schedule draft:
 - <https://github.com/w3c/webappswg/issues/135>
 - <https://github.com/w3c/webappswg/wiki/TPAC-2025>
 - MS may prepare a share of “partner requests related to PWA”
- Dark mode for web apps status? [Past intents](#). Live [example](#) using the syntax from the OT.
 - <https://github.com/w3c/manifest/issues/1045>
 - Somewhat related to localization work on Manifest.
 - related : vscode using a dark theme (not dark mode at OS), there is a flicker of color at app start.
 - One consideration, service worker ability to adjust parameters at window creation.

Sep 8, 2025 | 📅 Fugu Community Monthly sync EMEA friendly

Attendees: Lia Hiscock Vincent Scheib Diego Gonzalez Alex Russell Dan Murphy Rob Paveza
 Limin Zhu (Edge) Lu Huang alexis.menard@intel.com

Sync on projects of shared interest

- Microsoft Lead:
 - Web Install [Umbrella bug](#), [UX bug](#), [Discussion doc](#)
 - All planned code for OT has landed in 141

- Web platform security review and PEPC – check in
 - tsteiner thinks that PEPC should not block from shipping. Thomas wants to give a talk at TPAC. Want to catch Mike before TPAC
 - Thomas is not aware of telemetry to reduce prompt abuse.
 - Main usage seemed to be recovery
 - Mike seemed to think this prevented prompt abuse
 - Dan - I think he said it would help with not needing a permission, which prevents annoying permission requests.
 - [Notes are here](#)
- scheib: I'm supportive of moving forward with origin trial w/o PEPC. We can get signals for install here, signals for functionality, etc
 - As long as that is making progress, that is just a convo between your two groups
 - Lia - Yes - Mike is out through mid-September, waiting there.
 - Dan - are we engaging Serena?
 - Not really - mostly thought this was on the UX side
 - Alex - let's make sure that we don't go around the assigned reviewer.
- Are there known incidents of abuse of install?
 - Vince: not aware of any.
 - Dan: spoofing, have addressed with mitigations.
- What should we expect?
 - Alex: I don't have a good enough understanding of PEPC use in practice to believe it solves these problems
 - The API version may or may not add a quantum to mitigate
 - We have other mitigations potentially in place as well.
 - or maybe PEPC is the ideal? I don't have a reason to believe either way yet
 - Having a place to understand that evidence is helpful for us.
- Dan: A concern if another permission is user permission fatigue similar to notifications and geolocation.
- Primary goal: Work with Mike.
- Request: Want to prepare the ground towards moving forward
 - Want: Evidence to date on tests with PEPC, give us a belief we won't have to solve related abuse problems with other mechanisms. We want to know this
 - If not, we want to know this too.
 - Path to Origin Trial, presuming we move forward without PEPC what other constraints are needed?
 - Notifications example, could have adjusted the API shape.
 - FYI chrome launched machine learning & user prompt mitigation which has been effective.
 - Dan - it would be nice to not need that at all if possible - needs PEPC data.
 - Recommendation: propose OT with API as is, document the data needed to revisit for shipping.
-
- Main visible feedback: on mobile, random sites always randomly pop up 'share location' or 'share notifications' permission. Don't want that for install.
 - Alex: proposal here is
 - install only available from installed app
 - Making sure this problem is listed is important
- Dan suggests: always have an up to date concise doc with current recommendation and known concerns.
- Diego:

- New explainer versions are out
 - There is an FAQ document now to help reviewers.
- LImin: Notification spam ML thing
 - Do you have things you can share with us about this? We are also fighting this.
 - <https://blog.chromium.org/2025/05/fighting-unwanted-notifications-with.html>
- Google Lead:
 - PWA install icon on Android large screen form factors launching in M141.
 - Approximate Location API
 - continues
 - [Improve Gaming on the Web Interop](#) by increasing WPT passing rates on Gamepad, Pointerlock and Screen Orientation APIs
 - Navigation capturing launched on ChromeOS as well (already WinMacLinux)
 - Alex: Available to other Android browsers?
 - Chrome on Android is work in progress, well under way. expected in approximately Q1 2026
 - Dan: Believe this is already supported by an installed app in app scope.
 - Most work now is bugs, e.g. related to auxiliary context (e.g. login flows)
 - PWA Identity [updating](#) and [migration](#)
 - Alex: on Android, other browser too?
 - Dan: Desktop targeting around M143. 2026 for mobile. Getting good engagement from partners which helps support the effort.
 - Dan: enables moving web apps to a scope of whole origin, in the event we need to gate capabilities to PWAs that are 1-1 with origins.
 - [Enable PWA Install Testing](#)
 - working on interop proposal for install testing.
 - FYI: Apple Marcos seemed supportive of improving testing in this area for e.g. manifest parsing.

Aug 11, 2025 | 📅 Fugu Community Monthly sync EMEA friendly

Attendees: Vincent Scheib rob.paveza@microsoft.com liahiscock@microsoft.com
 luhua@microsoft.com alexrussell@microsoft.com limzh@microsoft.com fugu-dev@chromium.org

Sync on projects of shared interest

- TPAC coordination
 - Google sending a small number of participants
 - MS attending virtually
 - Breakout ideas?
 - MS Considered install, but likely to wait until Origin Trial data is in hand.
 - MS Present findings from partner feedback?
 - Themes: look and feel.
 - Titlebar
 - Auth
 - Syndication?
 - Storage
- Interop for Fugu related APIs
 - Gaming focus last year was scoped down to just Gamepad API testing improvement to prepare for gamepad interop.

- Serial API, wasn't accepted
 - This year: likely to propose PWA Testing
- Microsoft Lead:
 - Web Install [Umbrella bug](#), [UX bug](#), [Discussion doc](#)
 - Web Install status update – still targeting 141 to be code complete for OT, but our web platform security reviewer Mike West has raised concerns about shipping. We're working through the concerns, but it's possible this will delay starting OT.
 - Windows Identity for Chromium ([bug](#))
 - For PWAs ([bug](#))
- Google Lead:
 - Navigation Capturing ([umbrella bug](#), [Windows/Mac MVP](#), [ChromeOS](#), [Capture from OS](#))
 - FYI: [Navigation Capturing](#) shipped 100% Chrome Win/Mac/Linux.
 - Android large screens have had implementation as well.

Agenda items from participants

- Windows is progressing towards requiring app-identity for any permission considered sensitive. Camera mic, secondary tile, notification, pinning website to task bar. - rob.paveza@microsoft.com
 - Context: regulatory requirements from China
 - Edge making step wise progress towards this. Difficulties moving entire browser under identity
 - Components
 - Pwa helper
 - Identity helper
 - Expect Chrome installer changes will be required. Some 'thunking' proxying behaviors are required.
 - Vincent Scheib will email intro Chrome Desktop Windows team with stahon@microsoft.com rob.paveza@microsoft.com

Jun 30, 2025 | 📅 Fugu Community sync APAC friendly

Attendees: [Vincent Scheib](#) [Alex Russell](#)

Notes

- Future quarterly APAC meetings only with agenda items identified beforehand.

Jun 16, 2025 | 📅 Fugu Community Monthly sync EMEA friendly

Attendees: Lia Hiscock Vincent Scheib Diego Gonzalez Dan Murphy Rob Paveza
Limin Zhu (Edge) richard.winterton@intel.com

Notes: bit.ly/fugu-sync

- **July 14 iteration of this meeting will be skipped** for summer schedules. If you have topics of interest please raise them on fugu-dev@chromium.org and or add to agenda for August.
- Light on agenda topics, we wrapped up early.
- Richard Winterton wants to know about thermals with Alex Russell.
 - Alex on OOF atm but pinged him internally.
- TPAC planning
 - working groups are going to publish schedules soon (deadline 20th of June).
 - Most companies don't have travel budgets planed yet. Google's 'fugu' group is expecting 4 to cover web apps, pwa, storage, device, audio.

May 19, 2025 | 🗓️ Fugu Community Monthly sync EMEA friendly

Attendees: Vincent Scheib Diego Gonzalez Alex Russell Dan Murphy Thomas Steiner
kristinlee@microsoft.com Lu Huang rob.paveza@microsoft.com liahiscock@microsoft.com

Summary: Microsoft staffing changes, PWA project check-ins, Google IO focus on AI, and how PWAs can access browser features like AI. Key points included transitioning between standalone PWA windows and browser tabs, debate over gating features by install, and discussed idea of integrating with Model Context Protocol.

Sync on projects of shared interest

- Microsoft Lead:
 - Web Install [Umbrella bug](#), [UX bug](#), [Discussion doc](#)
 - 138 was initially estimated, now looks like 139
 - Anything needed for compliance?
 - No high bar for dev trials
 - Let's have a monthly checkin

Topic for general discussion

- Discussing Microsoft staffing changes and coordination
 - Dan Murphy and howard.wolosky@microsoft.com Lu Huang had been having about a monthly project check in focused on PWA. Keep using the scope extensions meeting time to avoid schedule changes, change scope to broaden to PWA wide topics.
- Communication methods with PWA team
 - **pwa-dev@chromium.org preferred** - linkable later for others to catch up.
 - Code reviews: adding to a person's ['attention set'](#)
 - slack <https://app.slack.com/client/T039UTRBS/CGK77JY3W> somewhat responsive.
- Discussing Google IO - Tom Steiner
 - AI focused of course, hard to get attention on much else.
 - PWAs talking to [Model Context Protocol](#)?
 - alexrussell@microsoft.com we've look in the past at PWAs being able to advertise "actions", so another way to think about this is "how could an MCP be informed that a PWA can do a thing?"
- How do we keep PWAs able to access browser features such as AI? Vincent Scheib
 - e.g. fluid and easy transition between stand alone PWA window and browser windows?
 - lu.huang@microsoft.com If we have language models engaging with web sites, that increases the power and capabilities, for good and bad.
 - Vincent Scheib Few things should be gated by install (e.g. OS integration specific, app switcher, notification identity) but many things don't really need to (storage, compute, background).
 - alexrussell@microsoft.com - we've spent much time debating API/Capability being granted on install. So, prefer not to gate on install, but being pragmatic and allowing that as a first approach is reasonable.
 - Install gated:
 - Share Target, obvious app concept related.
 - UI related, window controls overlay
 - Dan Murphy installed / not OS integrated state
 - e.g. pre-installed chrome apps (google sheets)

- opportunity to identify web apps frequently used by users, e.g. a frequently revisited site in a tab that a user may want install related features for - such as navigation capture refocusing existing tabs.
- Vincent Scheib - Standalone window to browser tab transition: be able to use browser features with the web content but be able to switch back to a clean app UX. Vs. reimplement the browser feature for app windows.
 - Spotify example: Listening to Bjork in Spotify app window. I want to use a browser feature to learn more about Bjork. I know this feature exists. I transition the app to a browser window to use this feature to learn about Bjork. I hit the toggle button to transition the web content back to an app window.
- alexrussell@microsoft.com Developers want a site-specific browser window. They want to pick and choose between browser features.

Apr 21, 2025 | 📅 Fugu Community Monthly sync EMEA friendly

Attendees: Vincent Scheib Menard, Alexis Dan Murphy Richard Winterton Howard Wolosky
Alex Russell Lu Huang @John Kleinschmidt

Notes

Sync on projects of shared interest

- Microsoft Lead:
 - Web Install [Umbrella bug](#), [UX bug](#), [Discussion doc](#)
 - Desktop focus now, likely in origin trial into late 2025. Android support to be post-OT - will be open to help here
 - Some UI stuff, permissions and maybe a dialog
 - The way that the apps are installed differs on Android - we would have to connect the blink piece to the different installation method on Android.
 - First milestone is desktop stuff working, before any Android work.
 - Launch process shows us we need full platform support before getting anything shipped.
 - You can sometimes get away with one platform lagging, with a good story. Or if you have an inherent limitation or blocker. but -examples are years old now.
 - Helping
 - Vince's team building Android expertise right now. We don't have the expertise that MSFT needs yet. But hoping to develop that on the team. Wouldn't have resourcing to apply to this project until at least later this year.
 - getInstalledRelatedApps [Umbrella bug](#), [UX Doc](#)
 - Going through launch process
 - Completed API change implementation behind flag
--enable-features=FilterInstalledAppsWebAppMatching
 - Completed Page site data dialog updates from Step 1 here behind flag
--PageSpecificDataDialogRelatedInstalledAppsSection .
 - Changes to CBD are discouraged as per privacy reviewer here.
 - Starting ship process for both of the above changes. Targeting m137
 - Scope Extensions, [Umbrella bug](#), [V1-shipping bug](#)
 - Explainer sent to [w3c security review](#), implementation complete.
 - Update to [Manifest Incubation](#) spec underway ([pull request](#))
 - Targeting m137, depending on the speed of those processes
 - System Accent Color, [windows](#), [Linux](#)
 - Starting windows in next week or two.

- 3P Acquisition Info, [Explainer](#)
 - Expecting refresh of explainer in next month or two.
- Sys Tray support, [Explainer](#)
 - Explainer published, collecting feedback.
- Tabbed PWA [Umbrella bug](#)
 - No recent work.
- Web App Launching from Automation Tests, [Umbrella bug](#)
 - Partner is determining their interesting in being the public customer for the cdp protocol for automation testing, but still need this fix in the meantime. The 'long term' solution is using the cdp protocol, but that might not be applicable for all partners (and has risks).
 - Risk: Not highest priority.
- Windows Identity for Chromium ([bug](#))
 - For PWAs ([bug](#))
 - Edge implementation for ~6years ago may be appropriate to iterate on before moving forward again.
- General
 - Internal code review guidelines update; reducing cross-company review time on general style etc, but still getting high level architecture guidance early on.
- Google Lead:
 - Approximate Location API
 - [proposal](#) Discussed at [W3C Breakout](#) 26 March. Martin @ Mozilla had previously investigated this area and had many concerns. [minutes](#)
 - Discussion: Scale abuse / grant. Mitigate by tracking how many parties are receiving data, and how often the user is being exposed.
 - [Improve Gaming on the Web Interop](#) by increasing WPT passing rates on Gamepad, Pointerlock and Screen Orientation APIs
 - Nvidia interested. Some work to improve test suite.
 - Navigation Capturing ([umbrella bug](#)) ([Windows/Mac](#), [ChromeOS](#), [Navigation Capturing to PWA works from OS surface through Chrome browser launch](#) follow-up feature)
 - In the process of launching.
 - Shipped on Win/Mac/Linux to 100%, in 'early adopter' mode. Partner preliminary experiment with 'focus-existing' show significant impact on product usage. They will be sharing an A/B report shortly.
 - Shipping on Win/Mac/Linux to 100%, in 'on-by-default' mode mid-April, pending impact report from partner.
 - Developer material [published](#) in stopgap google doc while we wait for DevRel resources. [Video](#) created by drenzulli@.
 - ChromeOS: implementation is complete & validated. [PRD](#) (internal) created and CrOS review starting. Remaining work is mostly launch process & ChromeOS approvals.
 - Follow-ups: Closure goog.window.open fixes are done and need to be launched internally.
 - Metrics "looking flat", some negative metrics perhaps on linux, but still monitoring, may be due to some biases.
 - ChromeOS still being worked on.
 - Discussion:
 - Edge has disabled due to some Edge feature related bugs.
 - [Enable PWA Install Testing](#)
 - Partner has tested using Puppeteer internally and it is working. Pending on further feedback from partner team about what they need, and if we need to custom-implement for a framework

- WebAudio

- Major latency issue addressed in <https://b.corp.google.com/issues/367276023>

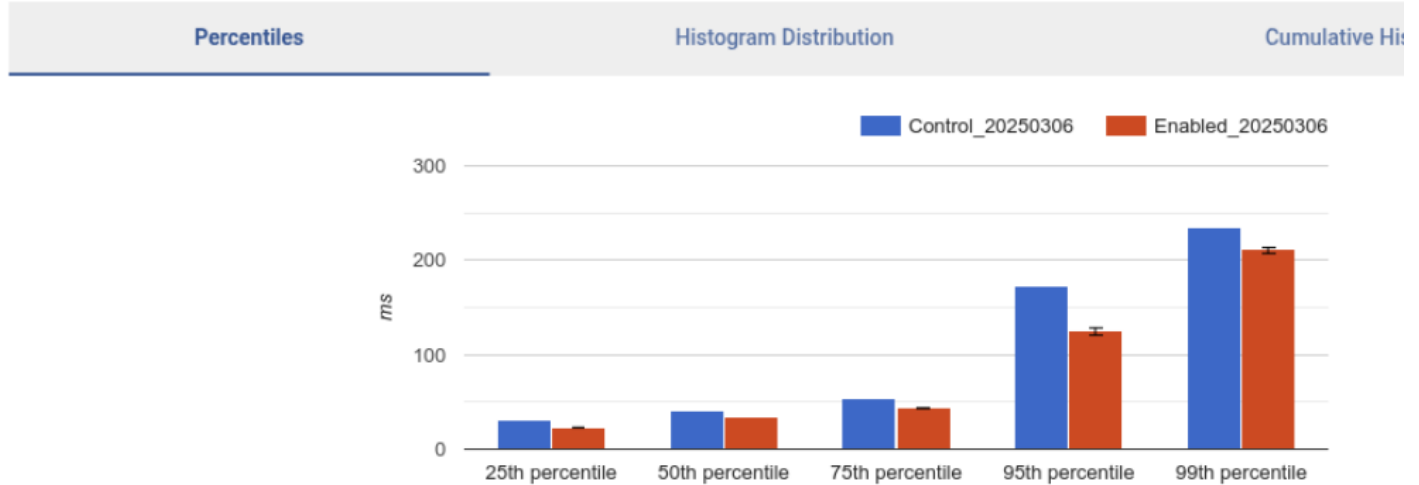
Desktop: WebAudio.AudioDestination.TotalPlayoutDelay

Cohort Analysis Enabled if recommended



Platform Desktop

Note: Finch histograms do not implement multi-test correction. See go/finch-multitest for more information.

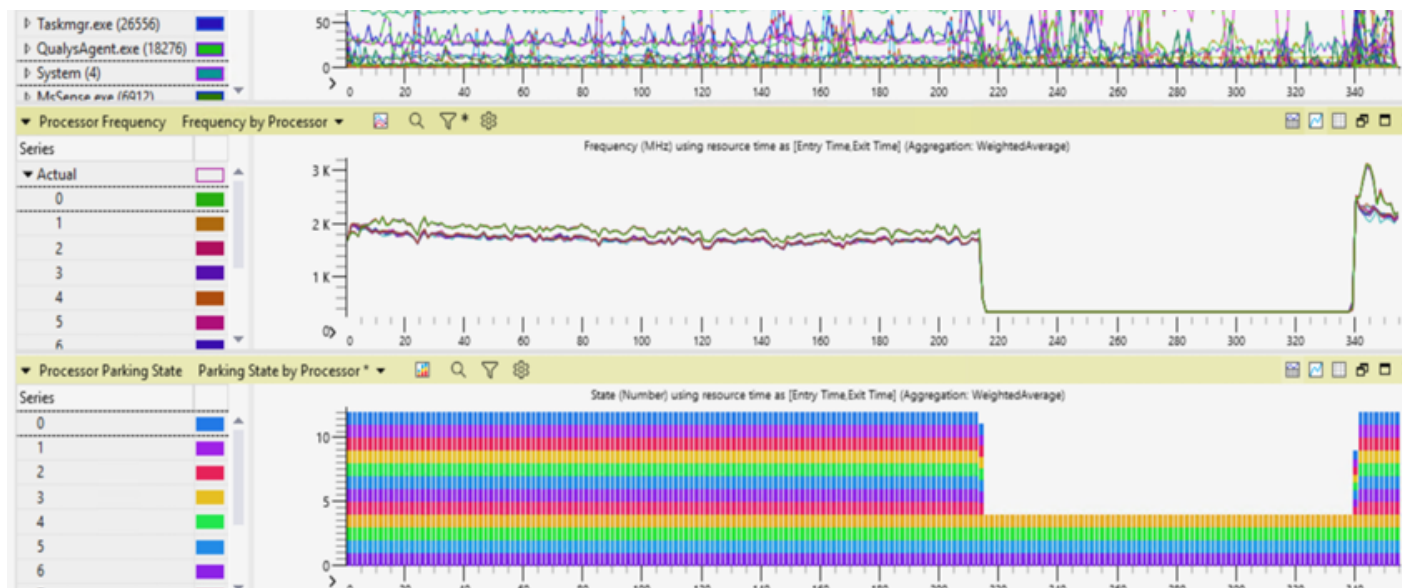


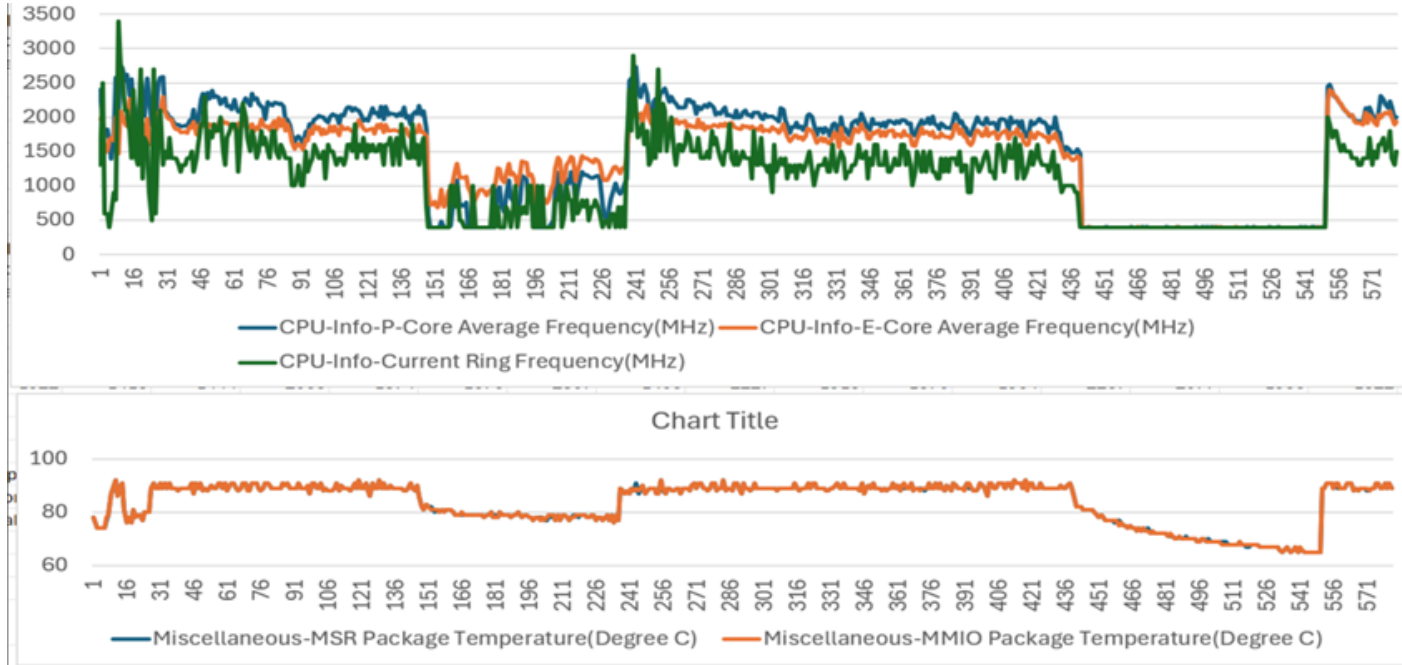
- Intel

- Example of why CPU utilization isn't the only indicator of performance when browsing during real life workloads. Web apps contribute to a disproportionate amount of "idle utilization" Currently determining what the best use cases are to determine what real "deadline scheduling" will improve. Designing hardware and OS interface to improve interface between deadlines and QoS.

Web applications contribute more to "idle utilization" than native applications do. For example, MSEdgewebview and browser (15 tabs) contribute to 8-15 percent of "real world" workload utilization. This can cause thermal issues in some OEM designs. We need to guide OEMs and OS implementers.

Extreme example from real customer below:





Topic for general discussion

- Dan is interested in working on PRD / project plan / coordinating background work stuff. We need to make PRD, execution plans, etc. Idea - task force? Any interest? Folks from PWA group at Google, Storage folks at Google, MSFT, probably others have voiced interest.
 - will require user UX
 - file system observer
 - progress notification event
 - background processing
 - video rendering
 - ML models running
 - system tray
 - hardware peripherals
 - Who:
 - MSFT Victor Huang (victorhuang@microsoft.com), Diego
 - GOOG Dan, Fergal

Mar 24, 2025 | 📅 Fugu Community sync APAC friendly

Attendees: alexis.menard@intel.com Howard Wolosky tsteiner@google.com @John Kleinschmidt
alexrussell@microsoft.com dmurph@google.com

bit.ly/fugu-sync Notes

- Web Engines Hackfest
 - Diego and Tom going
- Call Notifications I2E sent
- PWA, what to work on next?
 - maybe - Blog post on getting survey feedback on what to prio next
 - like <https://developer.chrome.com/blog/rfc-customizable-select> maybe?
 - from last year
 - <https://github.com/web-platform-dx/developer-research/blob/d914a6f9be62b3a82a88f18ee02ea9cc301690bb/mdn-short-surveys/2024-08-05-web-apps/README.md>

- [https://www.w3.org/blog/2025/first-catalog-of-web-features-completed-by-the-webdx-c
ommunity-group/](https://www.w3.org/blog/2025/first-catalog-of-web-features-completed-by-the-webdx-community-group/)
- <https://2024.stateofhtml.com/en-US>
- background services
- Badges
- Caveat: Electron users might have already been lost
- Patrick Brosset ran a developer survey and got some feedback.
- [Web App Short Survey](#)
- The Fugu bug backlog (<https://bit.ly/fugu-bugs>) is a wishlist of sorts
 - What can we keep vs what do we "promise" by sending out a survey
- Periodic background sync hasn't been too satisfying to work with
- FYI: <https://bit.ly/pwa-navigation-management>

Feb 24, 2025 | 📅 Fugu Community sync APAC friendly

Attendees: Richard Winterton Howard Wolosky tsteiner@google.com Dan Murphy
nagaiton@microsoft.com

bit.ly/fugu-sync Notes

- Rich Winterton - CPU Pressure / Utilization (e-core (efficiency core)/p-core (power core)), fingerprinting concerns
 - Considering exposing a percentage (over time) of frequency instead of absolute
 - Will write an explainer on this.
- [Natasha(MSFT), 2/24/2025] Anyone working on declarative web push?
 - <https://github.com/w3c/push-api/issues/360>, <https://github.com/w3c/push-api/pull/393>
 - Is it time to start reviewing here?
 - Peter Beverloo is reviewing from Google side. There's an email thread.
- Thomas Steiner found a potential developer interested in Calling Notifications. Put them in contact with luigonza@microsoft.com .
- MSFT
 - getInstalledRelatedApps - **Status: ongoing confirmation of what needs to get done**
 - Umbrella bug: [Support web apps \('webapp' platform\) in getInstalledRelatedApps\(\) on Desktop, allowing installation detection from a browser tab \[40144143\] - Chromium](#)
 - UX Changes discussion doc: [PWA: Uninstall related apps from site data - Google Docs](#)
 - Web Install - **Need to make sure UX is right, getting reviews from Google.**
 - Umbrella bug: [\[Web Install API\] Enable Installation of Web Apps from Web Content \[333795265\] - Chromium](#)
 - UX Changes tracking bug: [Web Install API - UX Changes \[383843830\] - Chromium](#)
 - Discussion doc: [Web Install UX review - Google Docs](#)
 - Scope Extensions - **Status: Security review - TAG asked for this. Filed request this morning. Working on editing spec for the first time**
 - Umbrella bug: [Ability for PWAs to extend their navigation scope to associated origins \[40197834\] - Chromium](#)
 - V1-shipping bug: [Ship Scope Extensions v1 \(site extensions only\) \[392657735\] - Chromium](#)
 - System Accent Color - **Status: Going through launch process for accent color changes on Windows. Linux work is scheduled but not started.**
 - [Implement system accent color for accent-color on windows \[40764875\] - Chromium](#)
 - [Implement system accent color for accent-color on Linux \[391917949\] - Chromium](#)

- 3P Acquisition Info
 - Explainer: [MSEdgeExplainers/AcquisitionInfo/explainer.md at main · MicrosoftEdge/MSEdgeExplainers](#)
 - In process of re-write
- Sys Tray support - **Diego has an explainer to merge today. Ongoing discussions internally on options to support background execution, will result in public explainer as well.**
 - Explainer: [adds the system status icon explainer by diekus · Pull Request #959 · MicrosoftEdge/MSEdgeExplainers](#)
- Tabbed PWA - **No changes**
 - Umbrella bug: <https://issues.chromium.org/40840881> Ship 'tabbed' display mode on Windows / Mac / Linux
- Web App Launching from Automation Tests - **No changes, planned for march.**
 - Umbrella bug: [Web app launch from system does not work in automation tests \(--enable-automation\) \[382108359\] - Issue Tracker](#)
- Google
 - <https://issues.chromium.org/320703327> Enable Installed PWA Testing (CDP protocol, TBD for framework integration) - **Partner has tested and confirmed this is working, but we need better error messages.**
 - Approximate Location API - **Discussion on promisifying. No active work**
 - [Improve Gaming on the Web Interop](#) by increasing WPT passing rates on Gamepad, Pointerlock and Screen Orientation APIs
 - Navigation Capturing
 - [Navigation Capturing Windows/Mac](#) - **Currently at 3% launch for experiment. Working with first-party partner on dogfooding & testing. Planning on 99% launch in the next couple weeks.**
 - Will have a doc / md file out for reference for devs
 - Mostly positive feedback. negative feedback seems to be handled by the in-product-help, and are often apps the user doesn't want installed.
 - [Navigation Capturing ChromeOS](#) - **Implementing now**
 - [Navigation Capturing to PWA works from OS surface through Chrome browser launch](#)

Jan 27, 2025 | 📅 Fugu Community Monthly sync EMEA friendly

Attendees: Vincent Scheib Diego Gonzalez Dan Murphy Richard Winterton Howard Wolosky

Alex Russell Joshua Bell

bit.ly/fugu-sync

Agenda items from participants

- Scope Extensions
 - Agreed after BlinkOn how to reshape based on TAG feedback; that work is now completed, ready to start shipping process.
- Incoming call Notification type - higher priority
 - Microsoft seeking partner for high priority call notifications.
 - AI: Alex start with an email to scheib@google.com and will loop in dev rel and partnerships to see if we can source some contacts.
- Dan request
 - What are the bugs that Microsoft is using for work tracking.
- richard.winterton@intel.com : Is there any effort to look at memory?

- E.g. use of WebNN, other AI, how to handle growth in memory usage. Signals to developers how much memory they are using.
- For normal web pages, memory was often measured in browser process, but render process had more usage. Renderer sends memory pressure signal to browser process.
- e.g. trying to detect Video conferencing applications, however Google Meet and Microsoft Teams are acting quite differently.
- Action item: Richard to send an email with call for collaborators, reference problem description.
- Dan request
 - Update from MSFT on [Web app launch from system does not work in automation tests \(--enable-automation\)](#)
 - Howard will nudge on this. Lu is Out of office just now.

Jan 13, 2025 | 📅 Fugu Community sync APAC friendly

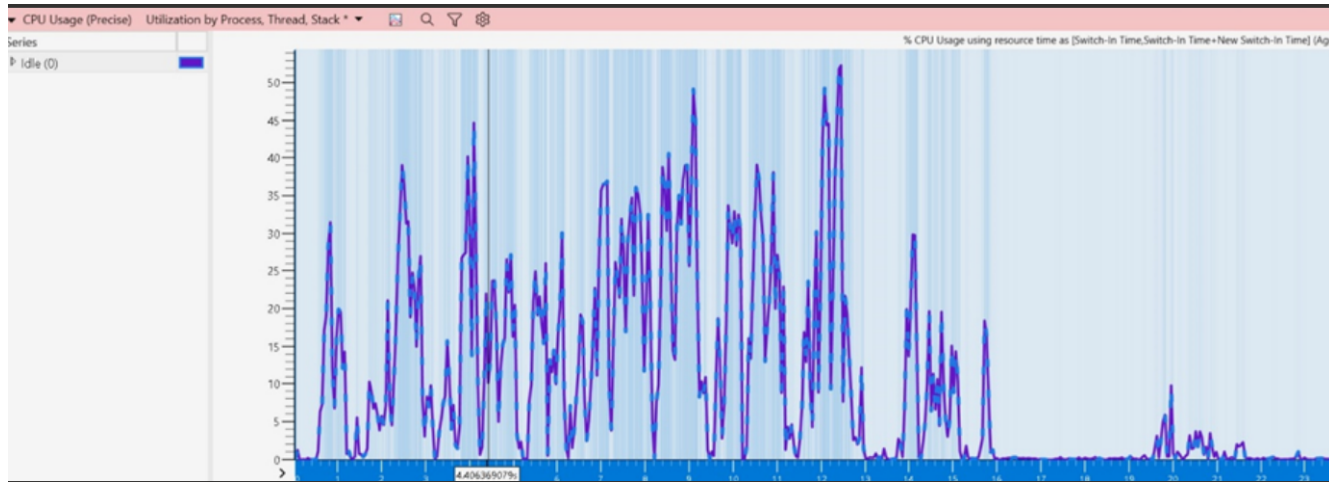
Attendees: Vincent Scheib Ajay Rahatekar Dan Murphy Richard Winterton Alex Russell
Howard Wolosky

We discussed high level goals for this forum in 2025, and specific status updates below.

bit.ly/fugu-sync Notes

- Vincent Scheib : Goals of this forum in 2025?
 - Retrospective: Start, Stop, Continue?
 - Rich W. Continue. Notes before would definitely help. Maybe github repo information for PoC pre-official work.
 - E.g. explainers, simple source code (e.g. matrix multiply examples)
 - Seeking a way to create public artifacts that are presentable to fugu forums.
 - Vince:
 - Continue
 - Continued focus on API development that enables leading edge web applications.
 - Focus on status exchange for projects of shared interest
 - Start:
 - Let's list projects in the template for check in?
 - Dan:
 - Seeking to have project bugs tracking status with clear status updates at top of bug.
 - Examples:
 - <https://crbug.com/380491647>
 - not great example: <https://crbug.com/380071069>
 - Howard:
 - Continue
 - High-level review of ongoing projects and any open issues
 - Similar cadence
 - Group discussion: 4 week cadence (for EMEA) is good. Keep that up.
 - Al: Ajay: Proposal: "would like to know if there's ongoing interest in an APAC version of this meeting (at 12 week cadence), or drop it for 2025"
- Vincent Scheib : Share notes to <https://groups.google.com/u/1/a/chromium.org/g/fugu-dev> ?
 - Group agrees to share notes to fugu-dev.

- ajayrahatekar@google.com notes that there is a Fugu Community & User Safety
- ajayrahatekar@google.com : Web Install API.
 - Was a request for UX directional review; Ajay opened a bug, Yuchang did review and had questions.
 - String review needed.
 - Permissions Icon alignment: What are the next steps?
 - Two icons:
 - [allowed]
 - Reusing existing omnibox icon.
 - What is the correct icon to use for Chrome?
 - [disallowed].
 - Dev-art used now.
 - Edge uses different icons from Chrome.
 - AI: Ajay will follow up with Chrome UX and Chrome Permissions team as stakeholder.
- Howard Wolosky - Microsoft status updates...
 - Overall:
 - Some personal changes, will cause some project delays.
 - Web Install
 - 1 new team member; project schedule update pending. Still a priority project.
 - `getInstalledRelatedApps`
 - 1 new contributor expected, remaining work fairly small, schedule update pending.
 - Scope Extensions
 - Last core CL merged, one follow up request pending ~1 week.
 - Then v1 should be complete 🍌
 - System Accent Color - Windows, Linux, Mac
 - JS and CSS access, code complete for Windows, following up on other platforms, and in launch process.
 - 3P Acquisition Info
 - Allows a PWA to know how/when it was installed. Due to team member changes this project schedule is uncertain. Still planning on refreshing Explainer and starting TAG review this first half of 2025.
 - Sys Tray support
 - 2025 first half expecting more exploration and explainer.
 - Tabbed PWA
 - Exploring now, just below active project work capacity.
 - Discussion:
 - Note that ChromeOS has tabbed mode implemented.
 - [Alex Russell](#) would like to see this made consistently available.
 - <https://paint-rightful-patch.glitch.me/>
 - <https://aluminum-cooked-kidney.glitch.me/>
- Rich Winterton - Performance / User experience per Watt optimizations: Is there much interest from this group on this?
 - Power - Frequency reduction and core isolation (This is a Web VC app but easily could be AI app)



- Memory - Revisit the memory pressure information on how to determine when to release - perhaps look at “user engagement” Is a Web App treated differently? Significant power is being used and utilization with paging and memory management.
- UX Measurements: how to measure performance UX when changing core selection, freq, deadlines.
- Discussion
 - E.g. Compute Pressure needs to know frequency to understand load. (e.g. high load at high frequency is actually a high load)
 - Should consider if other APIs need more awareness or extensions to coordinate well with system resources.

2024

Dec 2, 2024

Howard, Lu, Natasha, Dan, Joshua, Alex

Agenda items from participants

Use this space to report on what you or your company is doing, and to solicit feedback.

- Msft: Howard:
 - WebInstall - Hassan ramping up, OT targeting February/March 2025
 - Remainder of Scope extensions work targeting this month (December)
- Google: Dan:
 - gIRA - Rolling into 2025?
 - Msft: Howard: gIRA - Yes, rolling into early 2025
- Google: Josh: Are you getting support from the Google side?
 - Msft: Howard: Yes
- Msft: Howard: SystemAccent color keyword support across platforms - CSSAccentColorKeyword
 - Happy to help out on Mac & Linux implementations
 - We are lacking Android & iOS expertise to complete implementation
- Msft: Natasha: Edge would like to ship both accent color features (CSSSystemAccentColor & CSSAccentColorKeyword) on Windows
 - Natasha to forward thread with Mason to Josh - thanks!
- Msft: Natasha: Chromium changes for tracking web app minutes (from Erik) - does it all look good to Edge?
 - Msft: Howard: Will have someone follow up to review by January 2025
 - Google: Dan: If you are using UKM data, with this change we will split metrics by display mode. Reporting changed when display mode matches, e.g. tab usage doesn't count towards standalone usage.
- Dan: Manifest incubations GH - should have access for Lu
- Josh: WebNN OT blocked on MSFT for DML distribution on Windows.
 - Natasha: Progress ongoing, Rafael is working on this.
 - Josh: Planning on 133, if all goes well.

Nov 4, 2024

(Sorry, Thomas Steiner has a conflict today, I'm following in the doc, though.)

Agenda items from participants

- PWA team on Chrome
 - Focusing on the navigation capturing project a lot
 - <https://bit.ly/pwa-navigation-capturing>
 - Still targeting m134, branching in a few weeks
 - Expecting to ship with support for open-in-browser-tab apps.
 - 2025
 - **Definite: "landing"** <https://bit.ly/pwa-navigation-capturing>
 - CrOS? Tabbed Mode?
 - **Highly likely:** ServiceWorker launch event
 - https://github.com/WICG/web-app-launch/blob/main/sw_launch_event.md

- App Migration (we think)
 - A way for apps to 'move' - currently brainstorm mode, likely a handshake thing, manifest field, etc. Likely want to finish update v2 for this.
- Manifest localization
- PWA install UX stuff maybe.
- love to support MSFT doing, we likely need to get done next year
 - scope extensions
 - fine grained scope control
 - patterns, exclude, include, et
 - <https://github.com/w3c/manifest/issues/996>
 - Lu
 - Requires frontloading the explainer.
- Updating v2 public doc: [Proposal: App identity updating v2 \(public\)](#)
- Device-dev work:
 - Wrapping up geolocation improvements from 2024 (platform provider, misc optimizations)
 - Bluetooth persistent permissions (reconnects are easier)
 - stable device identifiers (reconnects are easier for e.g. arduino devices, devices after firmware updates)
- Isolated web apps: continuing on same overall plan of fleshing out the container and security support, enabling IWA only APIs to ship.
- Richard / Intel:
 - Data around performance / power impact
 - It would be good to allow sites to....
 - We are significantly taking more memory for background pages with AI models, this changes the lifecycle a bit, and the page swapping / memory compression happens a lot for these background page are running these AI models.

Update from Developer Relations

- Chrome
- Edge
 - Remainder of 2024
 - Web Install (same and cross origin install API)
 - Scope Extensions v1 (complete and ship)
 - getInstalledRelatedApps
 - Acquisition Info (standards conversation)
 - 2025 plans (tentative)
 - Web Install (same and cross origin install API)
 - System Accent Color (Linux)
 - Acquisition Info (implementation)
 - System Tray (explainer conversations)
 - Running PWA in Background (explainer conversations)
 - Devices and Sensors API testability (Web Driver tests)
 - Discussion
 - Background and Progress Notification. Complimentary use cases. Lu has connected with Ayu.
 -
- Samsung

Questions from participants

Learn from other participants and other companies!

-

Topic for general discussion

Oct 21, 2024

Oct 9, 2024 BlinkOn Fugu Social

Gathering to discuss 'Fugu' work across companies (<https://www.chromium.org/teams/web-capabilities-fugu/>). Essentially an in person bit.ly/fugu-sync. We will focus on social connections between companies, putting faces to names, and can chat through top-of-mind topics as well.

Lightning intros fun demos:

- Vincent Scheib
 - Pixelbuds
- Reilly Grant
 - MiniDisc webUSB & filesystem access
- Dan Murphy
 - Google Calendar
- Andrey Kosyakov
- Matt Reynolds
 - Cloud Gaming
- Alex Jose - devtools / chromedriver - recent bluetooth emulation in bidi
- Marijn
- Dibya - PWAs
 - Recently launched 'all sites installable'
- Calvin - Slack
- David Sanders - Electron / Microsoft
 - Electron expanding support for WebUSB etc
- Alex Russell - Microsoft PM
 - Outlook at a PWA!

- Sam Goto - Google
- Allison Maher - Edge -
- Sam Davis - Edge styles/layout
 - Twitch, Youtube
- Y - Startup founder
- Kurt - layout CSS
 - CSS modules!
- Robbie McElrath - Chrome Isolated Web apps
- Sanket Joshi - Edge - clipboard
- Johnny Stenback - standards & interop
 - WebUSB - power switch firmware update!
- Kadir Topal - Chrome - identifying developer needs
- Ethan J - Edge - Layout
 - Streaming
- Penny McLachlan - Chrome Web UI
- Andy - Edge webview(2)
 - VSCode as PWA!
- Steve Becker - Edge, storage, gamepad, audio
 - File System Observer
- DongYoung Kim - LG
 - WebNN
- Thomas - TV space
- Megan - Edge
 - VSCode!
- Rick Byers - Chrome, transactions
 - Capital One use of WebNFC for secure payment on web
- _ - Origin trials, web status
- Daniel Smith - Chrome interop tooling
- Howard Wolosky - Edge, apps devices sensors
 - Web apps + Extensions!
- Deepti G - Chrome

- WASM ML model Wisper model to Speech -> text -> Spoken text again
- Lu Huang - Edge
- Alvin - Chrome Device
- Austin S - Chrome, WebNN
- John K - Microsoft / Electron, fugu APIs
- Joone Hur -
- Josh Bell - Chrome, many fugu apis
- Laszlo Gombos - Samsung, WebNN
 - Foldable APIs! (Device Posture
- Limin Zhu - Edge
 - Windows95!?!?!?!?!?!?!?
- Zelin - Chrome, Isolated web apps

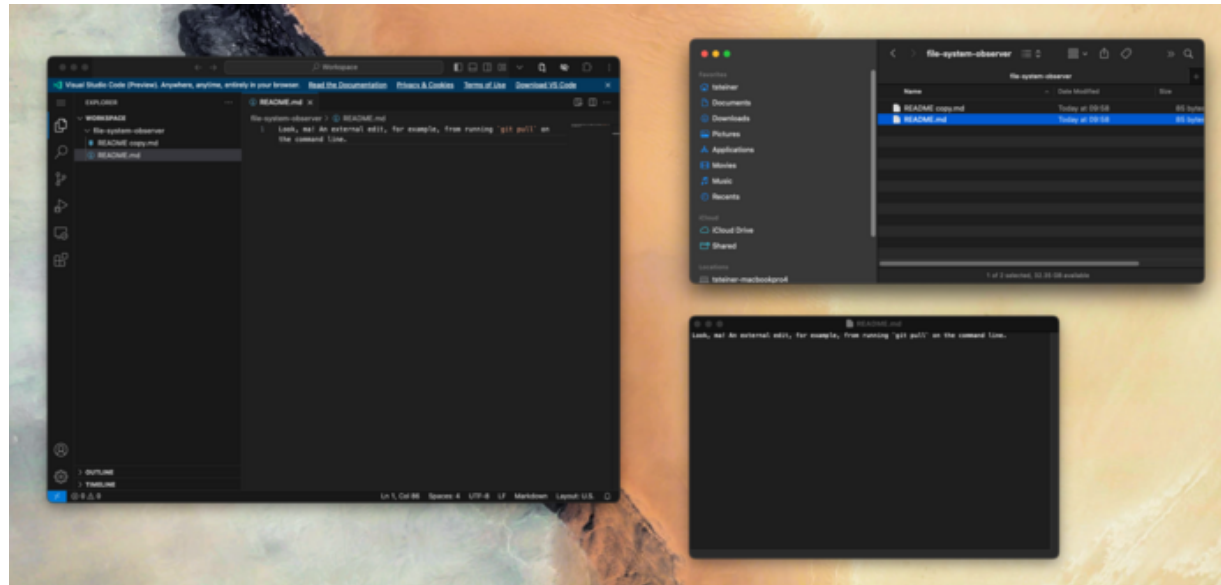
Electron is great to see here!

MDN Short Survey - “In your experience, are web applications sufficiently capable to replace native apps on these platforms?”

Oct 7, 2024

Attendees: alexis.menard@intel.com , Natasha Gaitonde , @joklein@microsoft.com, tsteiner@google.com , luigonza@microsoft.com dmurph@google.com alexrussell@microsoft.com .

- Google
 - Thomas Steiner - thank you to Ben(jamin) Pasero (VSCode team at Microsoft) for File System observer API OT completion.
 - <https://insiders.vscode.dev/>
 - <https://toot.cafe/@tomayac/113265095159677713>



- Dan - automated testing support in Chrome WebDriver -> WebDriver, leading to better interop testing for PWA install, etc.
 - Is Microsoft interested in taking the lead?
 - CDP commands exist to install, launch, change settings, etc.
 - Alex: Check if Edge supports these commands, Natasha to follow up with the Microsoft Edge team.
 - Doc:
 - <https://source.chromium.org/chromium/chromium/src/+main:docs/webapps/cdp-integration.md?q=docs%2Fwebapps%2Fcdp-integration.md&ss=chromium>
 - API:
 - [https://source.chromium.org/chromium/chromium/src/+main:third_party/blink/public/devtools_protocol/browser_protocol.pdf;l=12628?q=domain%5CsPWA\\$%20f:browser_protocol.pdf%20-f:devtools-frontend&ssfr=1](https://source.chromium.org/chromium/chromium/src/+main:third_party/blink/public/devtools_protocol/browser_protocol.pdf;l=12628?q=domain%5CsPWA$%20f:browser_protocol.pdf%20-f:devtools-frontend&ssfr=1)
 - Microsoft:
 - Natasha to reach out and convey thanks from Thomas (for FS observer API OT)
 - Diego/Natasha: Working on TPAC feedback, no updates for this group
 - Web Install API will go out in Q4 for same origin in origin trial, cross origin some time later.
 - No major concerns, Marcos still looking into some “better way of solving it” without the ID.
 - Q4 Web Install - Goal for Q4 is OT for the same origin. Cross origin still needs to work through TAG feedback (explainer update for use cases, etc.)
 - Identity:
 - Dan reached out to Hoch and connect with Windows folks from Google side
 - Leverage pwa-dev alias for communication
 - Could doc be done in Q4 - for setting context for risks and problems of NOT doing identity work. Solution doesn’t need to be fully outlined to drive alignment.
 - Alex: new devices: tales of woe!
 - Bought new hardware: Windows laptop, new Chromebook, Pixel 9 Pro. Has Edge and Chrome installed (on Chromebook through Linux Crostini). Getting PWAs back is “broken as hell” on Android. Restore doesn’t even restore the icons for PWAs, just shortcuts (which covers Edge PWAs, but not Chrome’s WebAPKs). According to [chrome://flags](#), there’s a restore dialog apparently in the works. Sync works OK between Windows and CrOS, but on Android everything falls apart. Prompting is now ML-based (on Android), which does not trigger on first visit after device restore. Took > a week to get a simple PWA to trigger prompt. No ambient indicator in Chrome’s 3-dot menu, and menu item is “add to homescreen” not “install”. Low-confidence experience, even when I’m explicitly trying to get prompts to trigger for specific sites.

- Dan: thought restore flow was launched in 130...seems it's blocked
 - Thomas: ML prompting turned off for Desktop now, still on for mobile
 - <discussion of follow-ups; seems like device restore not fully accounted for>
-
- Intel:
 - Alexis: Device Posture on its way to CR and requested Intent to Ship on blink-dev. Needs 3 LGTMs, [one pending issue](#).
 - Thomas: Battleship demo in an iFrame would be a good demo use case
 - Alexis:
 - Would like to reach out to YouTube to consume the API, but so far no success in getting traction with YouTube.
 - After I2S for viewport part of changes
 - Working on WebDriver part of changes for Testing
 - Diego:
 - Put Microsoft Teams folks in touch with Alexis for video conferencing use cases

Sep 9, 2024

Attendees: alexis.menard@intel.com howard.wolosky@microsoft.com nagaiton@microsoft.com Diego Gonzalez, Jenna, Shelley, Thomas Steiner, Daniel Murphy, Vincent Scheib, ...

- Google
 - Dan Murphy: re: install API: Suggesting a 'status of the world' to help give context to reviewers etc such as Marcos.
 - Dan Murphy: Scope extensions: Gathering several use cases which are expanding the project size. E.g. exclusions, inclusions, more control over scope.
 - Howard: Can we slim down to a narrower scope and ship in iterations?
 - Dan: Supportive - though prepare that e.g. tag review may be needed again.
 - Discuss @ TPAC / BlinkOn (Dan remote)
 -
 - Shipping news:
 - M128 Isolated Web Apps
 - ChromeOS only for now, focusing on bringing online a few APIs to expose in that context and enable early enterprise client applications.
 - Alex Russell : Will need work at some point for signing interoperability.
 - For now
 - <https://github.com/WICG/webpackage/blob/main/explainers/integrity-signature.md>
 - M129 Unrestricted WebUSB in Isolated Web Apps
 - M129 IndexedDB blob store compression
 - [More efficient IndexedDB storage in Chrome](#)
 - Origin Trial
 - FileSystemObserver interface
 - [The File System Observer API origin trial](#)
 - VS Code is interested in this: [File System Observer API #226131](#)
- Microsoft
 - Howard:
 - System Media Transport Controls on Mac
 - Feature complete, moving to testing and validation
 - Get installed related apps
 - Work in progress
 - Desiring progress - followed up with email thread..

- Discussion: Alex Russell: Notifications made a mistake giving sites ability to always prompt. onBeforeInstallPrompt attempted to resolve this.
 - Document with use case screenshots, UX review: <https://docs.google.com/document/d/1PdQKKXVZhCia6zaikU1mJoFUSE0UhTV1q6gHv3SV9o/edit?usp=sharing>
- System accent color via CSS ([accent-color: auto](#))
 - Feature complete (no explainer)
- Web Install
 - Underway, coding in progress, expecting live demo at TPAC
- Working with Dan to improve PWA telemetry
 - Desire to have comparable 'minutes in PWA' and 'minutes in browser session'
 - Active discussion on <https://issues.chromium.org/issues/358404364>
- Investigating background tasks and system tray
 - Google has related <https://github.com/explainers-by-googlers/progress-notification>
- Acquisition Info
 - API currently experimenting with - in explainer stage. Pairs with install API. Allows app to query source of installation.
- Intel
 - No updates this week; just monitoring.

Aug 12, 2024 **Joshua Bell**, **Vincent Scheib**, **Thomas Steinert** not available

Attendees: nagaiton@microsoft.com alexrussell@microsoft.com alexis.menard@intel.com dmurph@google.com

- News
 - https://developer.chrome.com/blog/how_chrome_helps_users_install_the_apps_they_value
 - Future end-state - integration with IPH when we change the omnibox install icon -> controls menu.
- nagaiton@microsoft.com: WebShare (navigator.share) enabled on m128 - yay! Launched & enabled by default.
 - <https://issues.chromium.org/issues/40729163>
- MSFT Identity
 - <https://bit.ly/windows-identity-chromium-pwas>
 - Ongoing exploration
 - Ex: push notification for waking up chromium
 - Around long-requested incoming call notification style. We need to do something more aggressive
 - Maybe this would make background services easier
- Agenda topics for TPAC - PWAs run in the system tray. Still planning.
-

- ☐ Organize async filling out of doc for Windows Identity information for webapps <https://bit.ly/windows-identity-chromium-pwas> - nagaiton@microsoft.com

Jul 29, 2024

- dmurph@chromium.org - checking in on getRelatedInstalledApps()

- We will need a PRD-style doc describing the new user journeys, with 'good enough' mockups of what the UX will look like
 - Screenshots work, or wireframes, or just drawings etc
- scheib@chromium.org - Interested in floating the idea of encouraging more participation with web apps incubation stuff.
 - alexrussell@microsoft.com - when things are implemented, then let's talk. BiP, prompting API.
 -

Jul 15, 2024

Agenda items from participants

Use this space to report on what you or your company is doing, and to solicit feedback.

- Google
 - [File System Observers](#) OT launching soon
 - [Page-Embedded Permission Control](#) - OT
 - ML-powered [Translation API](#) - Explainer
 - ML-powered [Prompt API](#) - Explainer
 -
 - .
-
-
-
- .

Update from Developer Relations

- Chrome
- Edge
- Samsung

Questions from participants

Learn from other participants and other companies!

-

Topic for general discussion

- Continued from last time - [TPAC 2024](#)
 - Group meetings "Fugu" Googlers will be attending include:
 - WebApps WG
 - Web install?
 - Device & Sensors
 - WebML WG
 - WICG
 - Scope extensions / exclusions?
 - User link capturing?

- AudioWG
 - Any “Fugu-specific” conversations we want to coordinate?
 - Microsoft - ~6 people from Edge going, including 2 on PWA (Diego, Amanda)
 - Google - lots as usual :) - Dan & Marijn re: PWA
 -
- Scope extensions & exclusions FYI
 - <https://github.com/WICG/manifest-incubations/issues/105>
 - Feedback developers - want link capture before/at same time as scope extensions
 - Expected syntax changes % TAG feedback; don't think this will require another OT
- FYI News
 - <https://blog.pocketcasts.com/2024/06/25/introducing-pocket-casts-desktop-apps-version-2-0/>
 - Media player requirements, which we are working on yay!
- Web install
 - Synced on Monday - addressing comments from TAG. Will be requiring an id to future-proof installations. Writing a document with pros & cons. Reference Dan's document <https://bit.ly/navigator-install-and-manifest-identity>
 -
-
- Capabilities for electron apps
 - Add menu item bar for mac, top menu. MSFT is thinking about, not committed.
 -
-
- Google published explainers for some built-in AI -powered APIs - links up top.
- Compute Pressure - and anything that special-cases google.com domains
 - Meet extension - can we get rid of this in Edge?
 - Storage (docs offline)
 - Background Sync
-
-

Jun 17, 2024

Agenda items from participants

Use this space to report on what you or your company is doing, and to solicit feedback.

- Google
 - Blog post re: [ChromeOS using more Android tech](#)
 - barbara.hochgesang@intel.com - folks are following up re: that announcement
 - PWA: Shortcuts! Not Apps project
 - This is not moving away from apps, just splitting out the 'shortcut' usecase into it's own product thing, which removes a lot of complexity & edge cases. Still promoting app, etc.
 - allows us to remove "Create shortcut" -> creating app behavior, and instead that just creates a shortcut on desktop that always launches in the browser tab
 - Discussed upcoming install promotion, link capturing work
 - PWA product contact - robko@google.com
- Microsoft
 - Continuing work on Web Install
 - Offer from Chrome DevRel to collaborate with Diego on getting the word out about this API. Ping [Thomas Steiner](#)

- <https://bit.ly/navigator-install-and-manifest-identity>
- PWAs able to share Contacts to a platform.
 -
- PWAs to support system tray support
 - run-in-background
 - Joshua Bell Explainer for progress notification
<https://github.com/explainers-by-googlers/progress-notification>
 - There is some work with geolocation (geofencing, background geolocation) stuff here, discussion from Marcos (Apple) & Anssi (Intel)
 - There are some similarities, will be debated in Devices and Sensors working group in October. (Background in <https://github.com/w3c/geolocation-sensor/issues/60>)
- Scope Extensions OT updates will be implemented once [TAG has agreed to the proposed updates](#) (which were designed to address their concerns)
- Marcos (on Microsoft's side) will provide an update to Chromium on the planned steps for moving forward with the changes to getInstalledRelatedApps to support web apps.
- Intel
 - BG Segmentation I2P coming up this week
 - Device Posture API - TAG
 - AI models on the web: <https://intel.github.io/web-ai-showcase/>
 - (Shameless plug: <https://developer.chrome.com/docs/ai/cache-models>)

Update from Developer Relations

- Chrome
- Edge
- Samsung

Questions from participants

Learn from other participants and other companies!

-

Topic for general discussion

- TPAC 2024
 - The usual groups will be meeting - WebApps, Device & Sensors, WebAudio, WebML - any "Fugu-specific" conversations we want to coordinate?
 - Thomas Steiner - background geolocation / geofencing? @ D&S
 -
 -

May 20, 2024 EMEA

Agenda items from participants

Use this space to report on what you or your company is doing, and to solicit feedback.

- Google - I/O announcements / talks
 - [What's new in the Web](#)
 - <https://web.dev/blog/web-platform-dashboard> → <https://webstatus.dev/>
 - Question: What data set powers this?
 - From blog post: *The Dashboard is based on public data that is maintained by browser vendors and community contributors in various communities— [Browser Compat Data](#), [Web Features](#), and [Web Platform Tests](#).*
 - [A web revolution: Build great desktop-class apps](#)
 - “Universal Install”
 - Puppeteer / selenium support for web app actions
 - “Create shortcut” update -> desktop shortcut w/o app
 - FS Observers
 - GoogleIO pres [A web revolution: Build great desktop-class apps](#) PWA installability section
 - 100+ Million monthly installed web app users. 65% year over year growth.
 - 20,000+ desktop web apps with thousands of weekly users.
 - [Practical on-device AI for web developers](#)
 - Experiments with foundational model in browser & prompt API
 - Experimental translate API
- Edge currently working on
 - Amanda & Kristin having ITP confirm for [webinstall](#) commits for chromium
 - Lu & [scope extensions](#) - the OT on this is going to expire & start up again w/ feedback.
 - Will be updating the manifest parsing logic once we reach consensus with TAG on the proposed design changes
 - [App-like titlebar](#) is currently in OT (124 - 127)
 - getInstalledRelatedApps updates to detect web app installs is in development - will be having a discussion with Dan regarding scenarios and concerns next week
 - Microsoft store installed pwases get access to [local folder](#) of app private storage. For apps migrating from UWP to PWA - OT starting in 125
 - After webinstall progress - want to get acquisition api into chromium. Website that is an installed app get info about installer
- Intel : BG Mask - <https://github.com/w3c/mediacapture-extensions/pull/142>
-

Update from Developer Relations

- Chrome
- Edge
- Samsung
- Open github for Fugu. Examples
 - <https://github.com/hemanth/awesome-pwa>
 - <https://github.com/webmachinelearning/awesome-webnn> ** new. Intel is supporting the content.
 - <https://github.com/tensorflow/tensorflow>

Questions from participants

Learn from other participants and other companies!

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Topic for general discussion

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Apr 22, 2024 EMEA

Agenda items from participants

- Google
 - 124 - [Fugu & PWA Update for Chrome 124 - Newsletter](#)
 - [System Media Controls per PWA](#)
 - % stahon@microsoft.com - 🎉
 - Universal Install
 - [Desktop](#) & [Android](#)
 - [Web MIDI Permissions](#)
 - 125
 - Foldable ([device posture](#), [viewport segments](#)) - OT (% Alexis @ Intel) 🎉
 - [Compute Pressure](#) % Intel
 - 126
 - [Web Serial connected attribute and RFCOMM connection events](#)
 - Notification Attribution for PWA on Mac .
- Intel
 - Q: Chrome shipping models in Chrome w.r.t. Background blur etc?
 - Alexis: Foldable
 - Want YouTube feedback, e.g. video appearing centered in the middle of the fold when detaching the keyboard providing a terrible user experience; YouTube's fullscreen logic centers video in viewport. Alexis fixed the default Chrome fullscreen stylesheet moving the video to the top section of the laptop but because YouTube has its own fullscreen impl then it doesn't work. Also applies to YouTube in Chrome for Android (doesn't affect native app which has a dedicated support of foldable with a differentiated UX). Hacking stylesheet w/ devtools, only ~6 CSS lines does good enough fix, of course YouTube could go way further like they do on their Android app. Tom Steiner relayed ~1 week ago. youtube-frontend-team@
 - AI(jsbell): Follow up w/ tsteiner@ see if internal thread has traffic.
 - Also asked Alex for contacts @ Clipchamp - 2x screen real estate for editing, resize UI to fit segments, looks great, want contact to follow up w/ team
 - Other desired contacts - Google Meet, Microsoft Teams - use the added screen estate for e.g. chat, participants list, .. Meet has foldable support in mobile app. Translate to foldable PCs or Chrome for Android?
- Microsoft
 - Howard Wolosky - dev mgr, PWAs
 - 123 - OT for [scope extensions](#), discussions w/ TAG
 - 124 - OT for [web app title](#) (doesn't affect tab name if in tab)
 - Active implementing [web install API](#) - both same & cross-origin

- Active implementing getInstalledRelatedApps update to be able to support detection of dPWA
- Edge is currently shipping the [Acquisition Info API](#) which allows developers to know how and when the app was installed. Interested in putting this upstream into Chromium if there is interest. It pairs nicely with the Web Install API.

Update from Developer Relations

- Chrome
 - Google I/O messaging on PWA / Fugu?
 - Session capabilities
 - ML on the web. Will not include WebNN this round.
- Edge
 - Microsoft Build messaging on PWA / Fugu?
- Intel
 - WebNN - <https://www.intel.com/content/www/us/en/developer/topic-technology/ai-pc/webnn.html?wapkw=webnn#gs.7ry3nt>
 - Innovation will be in Sept - Starting to create what we want to highlight
 - “Web AI” - Across APIs, Across OSes, Across AI Frameworks, Partners Google / Microsoft. Bring the PC AI value to developers and End Users.
 - E.g. value of compute pressure to web AI developers
- Samsung
 -

Questions from participants

Learn from other participants and other companies!

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Topic for general discussion

- ML/AI?
 - Barbara: What's in scope for Fugu/PWA?
 - Alex: it does seem like we need an explicit "share to other origins" API; we might even phrase it in terms of storage buckets; or maybe an addition to the indexing API
 - Alex: Assistants/actions - coming back - Co-Pilot is mostly web tech
 - Riju: would like to learn more about Opera's on-device LLM vs. Microsoft
- Alex: migrating from native apps instore to web apps
 - Granting access to file system directory to support data migration
 - <https://github.com/MicrosoftEdge/MSEdgeExplainers/blob/main/LocalFolder/explainer.md>
 - Diego: gIRA updates to support PWA installations, not just native app installations
- Howard: “[acquisition info](#)” explainer
 - Allows an installed web app to understand how it was installed - origin that installed it, parameters included as part of install.
 - E.g. installed from store - can get referral ID
 - Interested in upstreaming; pairs well with web install
 - Dan: difficulty resolving conflicts from multiple install sources e.g. admin pushed vs. store vs. ... - does API support installation from multiple places!?!?
- Diego: reviving topic of manifest localization
 - Google POC: dmurph@google.com

- Dan: developing third party testing API in devtools
 - Will expose post-processed manifest, install, etc. This quarter?
 - Through devtools protocol (CDP)
- Alex:
 - <https://blogs.windows.com/msedgedev/2024/04/18/2024-web-platform-top-developer-needs-dashboard/>
 - dashboard here:
 - <https://microsoftedge.github.io/TopDeveloperNeeds/>
 -
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Mar 25, 2024 EMEA

Agenda items from participants

Use this space to report on what you or your company is doing, and to solicit feedback.

- Google
 - App Identity Updates unblocked (M124+finch) (Android launch)
 - Not related to app-identity for windows
 - Automatic Fullscreen Content Setting (admin-gated)
 - Web Serial connected attribute and RFCOMM connection events (awaiting feedback)
 - System Media Controls per PWA (M124)
 - Web MIDI Permissions redux (getting close)
 - PWA install changes coming in Chrome:
 - PWA install in chrome menu name changing
 - ML based Install promotion (Omnibox promotion icon remains. If ML signals indicate strong match there is a pop-up promoting install)
 - Discussion: Microsoft ran a similar experiment, choosing to not move forward with it.
 - Is there a clear message to developers of what criteria are needed to be promoted and how to achieve it?
 - Can we communicate how many installs are not happening that meet criteria. E.g. publish to web developers how much more installs they may be able to acquire if they implemented more PWA feature points.
 - Open - Status of experimental AI features announced at the end of January. (question from barbara.hochgesang@intel.com)
 - <https://blog.google/products/chrome/google-chrome-generative-ai-features-january-2024/#organize-tabs>
 - Browser features
 - Discussion regarding browser features, vs exposing compute resources for web-app developers (e.g. WebGPU, WebNN, access to system/browser LLM...?)
 - Win11 has ~5 models using Intel NPU.
 - <https://chromium-review.googlesource.com/c/chromium/src/+5086533>
- Intel

- [Device Posture](#) and [Viewport Segments](#) Update alexis.menard@intel.com
 - Impl finished, Android + Windows
 - Behind dev flag on Android
 - Working w/ Microsoft to rebase downstream patches
 - Preparing for OT. “one patch away” - waiting on security/privacy reviews
 - Can you have one OT token for both APIs? → will send mail to API OWNERS
 - Request for Google folks to poke security reviewers on these
 -
- Thanks to API OWNERS, Compute Pressure got 3 LGTMs to ship.
rijubrata.bhaumik@intel.com
- Background Segmentation MASK prototype done, API [here](#). Will start I2P.
[Rijubrata Bhaumik](#)
 - API updated, now returns mask data, you can use it for whatever.
 - “Works on NPU” for best performance
 - Have contacts w/ Meet team, meeting w/ them
 - Contacts w/ Meet, Teams, Zoom. Long tail... devrel help?
 - [Thomas Steiner](#) - will put you in touch w/ our Web Ecosystem Consulting (WEC) team
 - Have a blog post on web.dev % [Francois Beaufort](#)
- Microsoft
 -
 -

Update from Developer Relations

- Chrome
- Edge
- Samsung

Questions from participants

Learn from other participants and other companies!

-

Topic for general discussion

- alexruessell@microsoft.com - status of [Fugu tracker](#)?
 - Now redirects to buganizer query
 - Previous tracker built using scraping monorail tracker; asked for API? Answer: no
 - What was feasible? Deep link to search. Not ideal - paginated, etc.
 - Google stance (for our team) - should not be building sites like this, prefer Chromestatus
 - <https://github.com/GoogleChromeLabs/fugu-tracker/issues/47>
 - <https://github.com/GoogleChrome/chromium-dashboard/issues>
 - Can others contribute to chromestatus?
- [Joshua Bell](#) How are we feeling about needing “Fugu” as a rallying cry? Does it still signal anything useful to developers, us, ...?
 - Related: <https://developer.chrome.com/blog/is-project-fugu-done>
 -
 - GenAI Song for Fugu: 🎵🎧🎵
<https://app.suno.ai/song/7530528c-d9a0-4735-8a46-732dd9faeb32>
 - **Let's keep talking!**

Feb 12, 2024 APAC

- Storage - Edge interest in this area? -scheib@google
 - Thinking about camera roll. Events on filesystem.
 - Other apps, e.g. outlook.com -> webview 2
 - Indexeddb perf
- Edge Interest in IWA? -scheib@google
 - Sam Fortiner <samfort@microsoft.com>, under Megan, working to improve upstream contribution.
 - Policy
- Discussed some UXResearch from last year. Scheib to seek releasing that study publicly.
 - Not able to share presentation directly. (Marian Harbach)
- Windows Geolocation - changing to Windows API. -scheib@google
- iOS - technical limitations solicited:
<https://github.com/OpenWebAdvocacy/OpenWebCompetitionPlatform>

Jan 29, 2024 - EMEA

Agenda items from participants

- Google
 - M122:
 - [FS Permission Persistence](#) 🎉
 - Discussion: other capabilities persisting?
 - Bluetooth work in progress
 - ☑ Discussed some UXResearch from last year. Scheib to seek releasing that study publicly.
 - [Storage Buckets](#) (mentioned last time, just confirming 122)
 - Discussion: text on mobile when clearing, how users are notified when data clear affects PWAs. Josh to follow up. (related to navigator.persist)
 - Removed in <https://chromium-review.googlesource.com/c/chromium/src/+4122682> which has context
 - M123:
 - [Web Serial: connected attribute and RFCOMM connection events](#) (medium confidence)
- Intel
 - On device Speech to Text CL
<https://chromium-review.googlesource.com/c/chromium/src/+5015829>
 - On Meteor lake onwards will run on TPU.
 - Alexis worked with device posture / android back-end. Will differ from MS and Samsung implementations.
 - Suggestions for YouTube to adopt, will follow up to get contacts when ready.
- Microsoft
 - Work around media applications:
 - Thinking about camera roll. Events on filesystem.
 - Change observers being worked on at Google. Steve Becker at MS?

- Opportunistic Seattle Face to face with Storage folks? End of February.

Update from Developer Relations

- Chrome
 - Sorry, I have a conflicting meeting at the moment.
- Edge
 - [Tom on behalf of MS] [WCO DevTools support](#) is awesome!
- Samsung

Questions from participants

Learn from other participants and other companies!

- Google → All - Are you ready for issue tracker migration?
 - Alex: Have been experimenting, but not everyone at MSFT is aware
 - Alexis: Concern about default to google visible only.
 -

Topic for general discussion

-

Jan 8, 2024 - EMEA

- Google
 - [Storage Buckets API](#) : M122
 - FYI: Mozilla says they're open to shipping WebSerial using the same add-on-gating mechanism as WebMIDI:
<https://github.com/mozilla/standards-positions/issues/687#issuecomment-1879160383>
- Intel
- Microsoft

Use this space to report on what you or your company is doing, and to solicit feedback.

Update from Developer Relations

- Chrome
- Edge
- Samsung

Questions from participants

Learn from other participants and other companies!

-

Topic for general discussion

2023

Agenda items from participants

- Google
 - We need a new host!
 - Nothing coming in M121
- Intel
 - [alexis] Device Posture API & Viewport Segments next steps
 - Status
 - [Chrome status link?]
 - Device Posture API
 - Chrome Status [Entry](#)
 - Enabled default on Samsung Internet Android
 - Chrome: flag on Windows, Android needs implementation
 - Viewport Segments
 - Chrome Status [Entry](#)
 - Enabled default on Samsung Internet Android, Edge on all platforms
 - Chrome: flag on Windows, Android needs implementation
 - Other companies haven't replied
 - will other companies help with reviews?
 - they will do the work for Android even though Android isn't important for Intel, the company
 - [ben] everyone needs to support every platform, whether our companies care about the platforms in question
 - [vince] we can reach out to folks who could help with reviews. Will reach out to [agrieve@](mailto:agrieve@chromium.org)
 - Issue [1415351](#) - most activity by Andrew Grieve <agrieve@chromium.org>
 - Can an OT happen on just one platform? Windows is ready to go, but Android isn't yet
 - [vince] for Bluetooth, we didn't launch all platforms at the same time, which is uncommon and wasn't ideal
 -
 - [Intent to Prototype: Eye Gaze Correction API. \(google.com\)](#)
 - A sibling to Face Framing and Background Blur
 - Will work on Win 11 and other devices
 - Compensates for unfortunate camera placements, teleprompting
 - Patch should land this week / early next week
 - Relevant Intel laptops launch Dec 14
 - Microsoft
 - Web App Scope Extensions - Origin Trial in M121
 - [Chromestatus](#)
 - [dan] left some feedback around API shape, wildcard usage which he hopes will be addressed post-OT
 -

Use this space to report on what you or your company is doing, and to solicit feedback.

Update from Developer Relations

- Chrome
- Edge
- Samsung

Questions from participants

Learn from other participants and other companies!

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Topic for general discussion

Nov 6, 2023 EMEA

Agenda items from participants

Use this space to report on what you or your company is doing, and to solicit feedback.

- Intel
 - Would like to talk about how to measure user experience per watt instead of performance per watt which is less meaningful. MSFT/GOOG others work on measurements.
- Microsoft
- Google
 - [Fullscreen popups origin trial](#) starts in M119. Also [documented for developers](#).

Update from Developer Relations

- Samsung
- Chrome
 - Interesting [discussion](#) with the developer of [Graphite](#), a vector editor, who want to go Tauri.(Sorry for the noise, I'm in a parent-friendly co-working space... It was all quiet when I came here.)
- Edge

Questions from participants

Learn from other participants and other companies!

- [morss] We hear Microsoft is working on:
 - indexedDB latency
 - Capping rows on return
 - Returning data in reverse
 - Right now they're looking for who can help out here. They don't have specific plans at the moment, but they'd like to contribute

- Their partners have data and requests. `morss@google.com` asked Alex Russell if they could share anything, for example, data on difficulties in writing. Alex Russell offered to ask them to file bugs
 - Fullscreen and remote desktop "scam mitigations"
 - Talk to Kyle - `kypflug@microsoft.com`
- [morss] How are things progressing with unsanitized HTML on the Clipboard?
 - (we know discussion's ongoing, and it's been split into [read](#) and write)
 - Google-internal (sorry): this is the [draft of the developer-facing article](#) (granted access to Alex and Anupam). The [demo](#) is viewable by everyone already.

Topic for general discussion

- [morss] Time of this meeting
 - We'll keep it as is, on GMT, for now

Oct 9, 2023 EMEA

Agenda items from participants

Use this space to report on what you or your company is doing, and to solicit feedback.

- Microsoft
 - Diego: Nothing really new.
 - Install API at TPAC: `scheib@` question: Apple seemed interested in the same-domain use case first, cautious about cross-domain. Meeting with Marcos later this week. Igalia was very supportive of the API.
 - Also looking at Web Share and where something was shared to.
 - `dmurph@`: This could use `getInstalledRelatedApps`, but not for non-self use cases.
 - AlexRussell: Shouldn't be grateful to Apple that they implemented after all these years. You need some sort of event when the install can happen. Different question is if the API is ready for cross-origin. Spending more time on same-origin seems not useful.
 - AlexRussell: Alice.com installs Bob.com, then Alice.com can provide management, know that it is installed, etc. across cache clearing, Alice doesn't know.
 - Charlie.com can never know information here, can simply offer install of Alice.com too.
 - Diego: installation origin knowing that the other application is installed until cache clearing makes sense.
 - Scheib: [PEPC](#) interactions with install? I think they were initially only targeting cam&mic and location.
 - AlexRussell: sounds like a good future iteration
 - Diego: Chatted with Howard around UI being able to change from 'install' to 'open' as the UA knows if it is installed, can use PEPC here.
 - Haven't looked at it further - definitely on the radar
 - Alex: If this is going to change the API, then let's talk about it. Otherwise we shouldn't block
 - Scheib: definitely not trying to block, just want to make folks aware.
- Intel
 - Face framing API I2P : https://groups.google.com/a/chromium.org/g/blink-dev/c/LyQu9L_lv58
 - provides web apps access to existing OS facilities
 - Can we expose confetti as well :-)
 - TPAC : Web Workers QoS : <https://www.w3.org/2023/Talks/TPAC/breakouts/web-worker-qos/>

- Device Posture/Viewport Segment Android backend. Google/Microsoft interest to upstream/help. <https://bugs.chromium.org/p/chromium/issues/detail?id=1415351>
 - There's apparently some interest from Android tablet folks (and probably Pixel Fold folks) according to Paul Kinlan .
 - morss@google.com will reach out to our Windowing folks too
- Google
 - nothing new to announce for M119
 - we could use help letting developers know about OPFS and SQLite-over-Wasm
 - Tom: Got green-light from [Kiwix](#) on a case study of their OPFS usage in their PWA.
 - Didn't you give a talk on this Wikipedia-offline thing?
 - Slides:
 - ☐ From Web SQL to SQLite implemented in WebAssembly and backed by...
 - Does Edge need to do anything specific to enable FSA persistent permissions as we build those?
 - They've found cases where their permissions UI wasn't updated properly, so it's better to coordinate with Natasha Gaitonde <nagaiton@microsoft.com>, Kyle, or others

Update from Developer Relations

- Edge
- Samsung
- Chrome
 - The [Fugu API Data npm package](#) has been updated. This is what powers:
 - [How Fugu is my browser?](#)
 - [How Fugu is the Web?](#)
 - [HTTP Archive Fugu features detection](#)
 - [Kiwix now uses the OPFS](#) and sees a 10x speed improvement on Android

Questions from participants

Learn from other participants and other companies!

- Microsoft
 - [alex] compression streams. We don't support zstd... (morss@google.com to check on zstd)

Topic for general discussion

topics here

Sep 11, 2023 EMEA

(TPAC is happening this week so attendance might differ)

Agenda items from participants

Use this space to report on what you or your company is doing, and to solicit feedback.

- Google

- Serial over Bluetooth Classic
- Web SQL deprecation and removal
 - still no obstacles to removal in M119
 - deprecation trial M117-M123
- File System Access persistent permissions progressing
 - Would VSCode or github.dev be interested in giving feedback?
- ML - [Google Chrome Feedback on WebNN](#)
- (2024 planning in progress)
- .
- Intel
 - Contact Rich on new developer tools that will help (finders): (VS Code for Microsoft and [IDX](#) for Google)
 - They want to provide extensions to let IDEs take advantage of this
 - They want to be in touch with IDX and VS Code
 - They're already talking with Meet and Blink teams
 - developers find locations for WebAssembly SIMD,
 - Advantages of using APX and potential AVX10 (<https://www.intel.com/content/www/us/en/developer/articles/technical/advanced-performance-extensions-apx.html>)
 - frequency oversubscription reduction (currently have TBT).
 - vSync and Request Animation Frame Hints

Update from Developer Relations

- Chrome
- Edge
- Samsung

Questions from participants

Learn from other participants and other companies!

- [morss] For Intel: are you still working on screen refresh rates?

Topic for general discussion

- [morss] the state of Storage on the web
 - Richard: Some sites defy browsers' attempts to release memory for discarded tabs. indexedDB open connections etc is one. Edge shows a set of reasons in `://discards`. indexedDB is a common one. Could they put a finder in there?

Aug 14, 2023 APAC == Vince and Alex chat

- PWA
 - PWA brand
 - Google & other partner interactions
 - What forum?
 - TPAC event [Thomas Steiner](#) is trying to organize. Kenneth will be there. I believe he is connected to the meetings.

- BlinkOn
- Install criteria
 - Google heading towards less criteria etc.
 - What is the importance of having consistent criteria across browsers?
 - Do we have public data about how changing criteria improves things?
 - Penny: Just what I shared with them in an email, I've added it to a barebones doc here. We might want Devrel to share more data more publicly as part of the announcement I'll talk to Adriana about that
<https://docs.google.com/document/d/1biS5ieKegLL16GkGvWT4-JGJ8iFfnhr58-uUj6rmya0/edit>

Aug 14, 2023 EMEA

- Install API

Jul 17, 2023 (EMEA)

Agenda items from participants

- Google
 - Storage
 - File System Access persistent permissions - We have internal agreement on trust & safety and UX
 - We could use more partners to try this out
 - Quota/Evictions - morss@ and the Storage team will try to determine how often unwanted eviction happens (eviction of an origin that owns a tab which has been used relatively recently)
 - Storage Buckets - We could (still) use more partners to try out OT
 - [Web SQL - deprecation timeline announced](#). We're talking to Extensions developers now, who ended up being the heaviest users.
 - Windows/Screens
 - Opening multiple pop-ups:
 - We are moving forward with development of the ability to let a trusted web app open a set of popups, any of which might be fullscreen, after a single user gesture
 - Partner use cases would be useful here
 - Web Audio
 - Render Capacity - We are discussing with Security
 - Isolated Web Apps + dependent APIs progressing in dev trials
 - Borderless
 - [Controlled Frame](#)
 - Q from Alex: Loading from bundles? Yes
 - Q from Alex: Turn off network?
 - Use case: Sandboxing extensions for web apps (e.g. plugins for design tools like Figma)
 - Direct Sockets
 - Background Services
 - Starting exploration of what this would entail
 - Device
 - USB from extensions manifest v3 service workers
 - Persisting bluetooth permissions

- TPAC
 - Some Google attendance, coverage for: storage, web app manifest, web audio, device & sensors, gamepad, IWA.
 - Intel, Microsoft, mostly remote only.
- Intel
 - Device posture & Viewport segments
 - ABI Market data is showing a rapid rise in foldables.
[#5 Foldable will become more mainstream](#)
 - Alexis: implementation has been rocky - not on the standards side, but getting info from OS; not moving forward on Android at the moment, but not area of focus for Intel. Windows - APIs to get “is folded?” “is keyboard docked?” “what are segments?” - not there yet. Blocked on MSFT. Not expecting progress before next year. Now discussing w/ OEMs, will get info into Chromium via registry (approach already used for “is it in tablet mode?”), just adding posture/topology. Published [spec](#) on github, which OEMs are following. Landed the Device Posture backend for Windows, so might ship later this year. Currently working on upstreaming the viewport segment backend patch. Android - work was being done by Samsung, but needs Google to push forward. (Android has info, but would increase Chrome for Android binary size too much? See <https://bugs.chromium.org/p/chromium/issues/detail?id=1066842> for full history of Android. Google needs to move this [bug](#) forward.
- TPAC
 - [Google] Possible opportunity for directional alignment with Apple / buy-in
 - PWA-related topics we want to talk about here:
<https://github.com/w3c/manifest/issues/1093>
 - Alex
 - Better client-side visibility on display modes
 - Installed vs uninstalled
 - Common problem of “cookie copying for login transfer” “relogin across isolated install” is a classic problem now.
 - Declarative install - Apple needs to come to the well. They have smart banners.
 - Launch handling probably isn’t a short topic
 - Conversation around imperative install doesn’t take up too - and doesn’t end up spilling into a conversation about install criteria
 - Detecting install, navigator.install, these are great, as they force us to do the right stuff around the clients API
 - Emphasis that there is a difference between browser-managed install prompting (where you can control spam) and developer-initiated prompting, which can be spammy.
 - We want to keep two worlds separate. Want a place where the browser can make a call before even offers any of these APIs
 - Install API - can’t know before you trigger it if it will work - might need a gate.

Update from Developer Relations

- Chrome
- Edge
- Samsung

Questions from participants

Learn from other participants and other companies!

- Joshua Bell → Intel + Microsoft: updates/progress on WebNN ?
 - AI/Machine Learning goals have interests that includes WASM (WASI), WebGPU, NN.
 - Barbara is developing a roadmap for the progress across these, expecting to work on this over the next month. Draft of template below. What and when.
 - Alex: Edge very interested; on Windows, preferred layering: webnn front-end to DirectML backend for Windows users. Expect this to be most efficient way to do graph loading. Effort to get to OT soon. Workloads may be stressing WASM 32bit address space limits, so want end-to-end scenarios covered.
 - Alex: expect in Chromium, impl live in GPU process, so likely not in Fugu but parallel effort
 - Raphael working on this as well..
- Diego -> BlinkOn planning?

Web ML - Roadmap - What and when. Feedback welcome

Web ML	1H '23	2H '23	'24	'25
WebNN				
Spec				
Implementation				
Adoption Ecosystem				
WebGPU				
Spec				
Implementation				
Adoption Ecosystem				
WASI-NN				
Spec				
Implementation				
Adoption Ecosystem				
Frameworks / Native ML services				
TF / MediaPipe, ONNX RT, ...				
XNNPack, DirectML, MLService				

Topic for general discussion

Question for Intel: Compute Pressure is being restricted to 4 buckets, to protect user privacy. Is that sufficient?

Agenda items from participants

- Google
 - Storage Buckets OT ([chromestatus](#), [explainer](#), [design doc](#)) in M115
 - How common is eviction?
 - What's eviction, and what's data corruption or users clearing storage?
 - I/O was a thing
 - AI is a thing
 - but also [more web content](#): WebGPU, Wasm-GC, page transitions, Photoshop on the web, WordPress on the web, [INP](#), Baseline
 - WebNN discussion:
 - MS would like to see [WebNN](#) progress. WebGPU, even with smaller float16, int8, etc, will help but not reach full potential.
 - Include cwallez@google.com and kainino@google.com
 - Jonathan Bingham, belem.zhang@intel.com involved in this
 - Gradual effort over last several years, is approaching origin trial.
- .
- Intel
 - Background Blur is coming out. Meet and Zoom will try it. Will Teams?
 - [Richard W]: Discuss Interaction to Next Paint(t) metric [INP](#). He's working on frequency limitation. How to measure INP?
 - [JS library](#)
 - [Lighthouse npm module](#)
 - [Barbara] Intel's working on an avatar support prototype. 3-D!
 - They are using babylon.js, though they'd like to eventually support Unity
- [josh] Performance in Fugu APIs
 - we don't consider it as often as people do in some corners of the web
 - we're starting to work on it in indexedDB though

Use this space to report on what you or your company is doing, and to solicit feedback.

Update from Developer Relations

- Chrome
- Edge
 - *[Patrick Brosset is at Microsoft Build today, written update only]* OpenWebDocs is continuing to re-write the PWA docs on MDN. New sidebar is ready, with multiple guides and how-to pages. Next step: update the tutorial. → https://developer.mozilla.org/en-US/docs/Web/Progressive_web_apps
- Samsung

Questions from participants

Learn from other participants and other companies!

- Google asking MS: Re: "spec-ing "app-region" css property, performance issues"
 - Alex: Talk to Mike Jackson mjackson@microsoft.com, CC Kyle kypflug@microsoft.com

Topic for general discussion

Please submit ideas here.

May 8, 2023 / May 9, 2023 (APAC)

canceled due to insufficient attendance and agenda

Apr 24, 2023 (EMEA)

Agenda items from participants

- Google
 - Email addresses that no longer work 😊
 - jasonmcc@microsoft.com - no longer at Microsoft
 - austin.orion@microsoft.com - no longer at Microsoft
 - harneets@microsoft.com - no longer at Microsoft
 - jungkee.song@microsoft.com - no longer at Microsoft
 - Upcoming releases
 - [Storage Partitioning](#)
 - What will break when this rolls out?
 - Other browsers are already working on this
 - [Blink-dev thread](#)
 - <https://developer.chrome.com/docs/privacy-sandbox/storage-partitioning/>
- Intel
 - TBA
 - Email - Removed one name - Peter Jensen
 - Maximizing PnP via Hints - Next steps to create a public explainer - Rich / Riju

Update from Developer Relations

- Chrome: Google I/O
 - Advanced web apps @ Google I/O
 - "I/O Connect" local events in Miami, Amsterdam, Shanghai, Bengaluru
 - Keynote and demos
 - LEGO™ Spike uses the Web Serial and the Web Bluetooth APIs to get code onto the assembled models. At Google I/O and the four I/O Connect events, we will demo Spike together with engineers from LEGO™ in the keynote and at demo booths at the events.
 - Talks
 - **WebGPU unlocks GPU access for Javascript**
 - WebGPU is a new Javascript API bringing more featureful access to the GPU while being more idiomatic to JavaScript. WebGPU is now being released in Chrome so websites can start relying on it. This session will describe WebGPU's history, show

demos covering various aspects of how WebGPU improves compared to WebGL, the current alternative, and give a sneak peek at what's next in the future for WebGPU.
IO23_140_WebGPU: redefining compute capabilities in the browser_SlideDeck

- **The web: Your Platform For Growth**

Innovative and engaging web experiences enable companies to deliver business outcomes such as increased revenue and reduced costs. Watch this session to learn more about how websites have been able to create best-in-class web experiences to drive user growth and engagement.

https://docs.google.com/presentation/d/1FPL4Xx7mOc6dBgLAFKzASG4Y5F-D_zVtxoWxzKq3Pn8/edit?usp=sharing&resourcekey=0-3moCUntkPJ-cjqU-VteERA

- **Advanced web APIs in real world apps - Thomas S speaker**

A use-case driven talk to demonstrate how Google partners are taking advantage of the powers of the web and how developers can follow.

IO23_141_Advanced web APIs in real world apps_SlideDeck

- **WebAssembly: a new development paradigm for the web - Thomas N speaker**

WebAssembly (Wasm) is a low level, high-performance binary format for the web, which can be compiled from languages such as C++, Swift, Dart, & Kotlin. In this talk we'll showcase new developments in language support, usability, and increased performance. We'll also show you how to get started quickly yourself!

IO23_130_WebAssembly: a new development paradigm for the web_SlideDeck

-
- Edge
 - Soon: tell us about Build!
 - May 22-24, Seattle and virtual
- Samsung

Questions from participants

Learn from other participants and other companies!

- For Microsoft: what are your feelings on Webview 2 vs Electron?
- For Intel: are you still working on exposing screen refresh rates?
 - Yes, We have a proof of concept that is being tied into the Mojo process that will be used by a new "hardware performance monitor" service.
 - This should let the browser expose both current refresh rate and correct info when there's a variable rate
- For Chrome: what is the status of the tabbed PWA feature?
 - Diego: looking at their contributions for next semester and wondering what to be involved in. It's been floating around for a while... Can they help?
 - Josh: some people have been thinking about the Chrome OS experience, but there's not been much activity.
 - Dan: we've thought about it technically for various platforms but haven't prioritized the work.
 - <https://web.dev/tabbed-application-mode/>
 - <https://paint-rightful-patch.glitch.me/>
 - Diego's already connected to Penny to discuss collaboration

Topic for general discussion

Please submit ideas here.

Interesting things noticed

- WebKit discussions on BeforeInstallPrompt (and or hypothetical.install() API) in [255716](#) and [198673](#).
 - Developers often want this. Diego's curious about it too.
- [WebKit bug](#) means SQLite-over-Wasm doesn't work in Safari
 - [SQLite forum post](#)
 - We thought the problem involved subworkers. But, in fact, it's a more subtle bug.
 - It's fixed in WebKit, but the fix hasn't made it into Safari yet.

Mar 27, 2023 (EMEA)

Agenda items from participants

- Google
 - App home
 - redesign of chrome://apps page, started by Bytedance, finished by Google
 - Fullscreen popups
 - Prototype in M113 as dev trial behind a flag
--enable-features=FullscreenPopupWindows. Explainer [here](#).
- Intel
 - Intent to Experiment aka Origin Trial for BG Blur API :
<https://groups.google.com/a/chromium.org/g/blink-dev/c/Jr9vE8mSS-8/m/Pv0vcDhBwAJ>
 - 3-milestone origin trial
 - *(Belem Zhang included this in an agenda for our cancelled March 13 APAC-friendly meeting. We discussed over email but I'd like to include it here as well)*
 - Consult the Fugu team's attitude towards Web Wi-Fi Direct API
 - Will mail you about this topic instead if the APAC meeting will be canceled (belem.zhang@intel.com, before going to any formal processes, I'd like to hear your feedback at first about the feasibility, then Intel PRC Web team can continue and invest resources for POC and further actions)
 - Observed requirements from end users that PWA doesn't support file transfer based on Wi-Fi Direct between mobile, pad and PC devices, even the printers
 - Drafted a very rough doc: [Web Wi-Fi Direct API Feasibility Analysis](#)
 - The CLs review of Power Measurement (EnergyMetricsProvider) started, next step is to integrate the data into tracing.

Update from Developer Relations

- Chrome
 - Take a sneak peek at the Fugu I/O talk ([slides](#)). The idea is to show five different partners use five different Fugu APIs. (Non-Google folks: not sure if the "Request access" feature works. If it works, I'm happy to grant view access.)
- Edge
 - Storage quotas and eviction criteria docs got merged on MDN:
https://developer.mozilla.org/en-US/docs/Web/API/Storage_API/Storage_quotas_and_eviction_criteria
 - Please file issues here if anything is wrong or changes:
<https://github.com/mdn/content/issues/>
- Samsung

Questions from participants

Learn from other participants and other companies!

- Barbara Hochgesang (Intel) asked about Fugu @ I/O, and WebGPU specifically, and if Intel can help in any way
 - Adriana Jara: Sessions pre-recorded already, but thanks
 - Talks include Fugu (advanced web apps), WebGPU, Wasm
 - FYI - Apple's announcement - WebGPU / WebRTC optimization. Opportunity for Google or Microsoft. Intel would be interested in working with the Fugu team on WebGPU optimizations.
Apple Releases Safari Technology Preview 165 Performance Improvements
<https://www.ghacks.net/2023/03/09/apple-releases-safari-technology-preview-165-with-bug-fixes-and-performance-improvements/>
- How does this group feel about [chrome.offscreen](#)? (It lets Extensions continue to use an offscreen document for a limited [set of reasons](#)). If you have feedback/concerns, please contact oliverdunk@google.com, who's our extensions new-hire and active in the WebExtensions CG in the W3C.
- Marcos Caceres <marcosc@apple.com> looking for additional editor(s) for Badging spec ([mail thread](#))

Topic for general discussion

Please submit ideas here.

Feb 27, 2023 (EMEA)

Agenda items from participants

Use this space to report on what you or your company is doing, and to solicit feedback.

- Google
 - Devices
 - [WebHID in Extensions Service Workers](#), with new UI.
 - [WebUSB](#) should follow in M113
 - An enterprise partner was blocked from migrating their extension to manifest v3 which requires service worker access to HID (vs old background page). This feature work included substantial new UI for system level notifications and settings for API and site settings. Expecting narrow usage for select enterprise use cases (where access to device is pre-approved). Maybe hardware wallets in the future.
 - Storage
 - move() for non-OPFS files, as in, real user files
 - move() for directories will require refactoring
 - Safe browsing might make it harder for directories
 - Where are we with permission persistence?
 - Work on this is happening. Handle to files can be saved in IDB, so you can work with the same file across sessions. Moved from a time-based thinking to a different model (not public yet). There will be some sort of UI to always allow access.

- Also work happening on storage buckets.
- Where are we with storage pressure?
 - Buckets are a declarative way to express persistence, pressure is lower prio. We need this, too.
- [Web MIDI permission prompt](#)
 - We're starting to work to require a permission for any Web MIDI access. Details are currently being discussed and we're planning to send out a PSA, but what do other browsers think?
 - Will this be for non-sysex MIDI access? Yes! This is the right way to do it, and matches Firefox's flow. It's a little weird, but isn't too bad, it's all autogenerated.
 - Breakage shouldn't be too bad. We expect there will be a website you go to, and then you need to accept the prompt. You may see in the docs that this is a breaking change. The API stays the same. There is a way to access it in a headless mode, so users may never see the prompt. There's usage not inline with the intent of the API. It will break this usage on purpose. Will match Firefox's behavior. Is this being rolled out via Finch? Yes, with a killswitch. Should be run by the API OWNERS.
 - (Compare to [Firefox's approach](#))
- Windowing
 - [Fullscreen Popup Dev Trial](#)
 - Alex: we have `openWindow()` from workers! Could introduce in ``window``
- PWA
 - App Home: redesign of `chrome://apps`
 - Work done by ByteDance (they asked for Chromium contrib opps, and we suggested this, among other things), but not finished. Taken up by Chrome team now. Nice clean look.
 - MS interested in an imperative install API. Got design docs and surfaces where this can happen. Diego is working on this at MS, Penny at Google.
- Intel
 - <https://github.com/riju/web-worker-quality-of-service/blob/main/explainer.md>
 - Used for processing-intensive work. Doesn't make use of the CPU architecture well. Introducing a QoS for web workers to determine things like scheduling. Interest comes from WebRTC. Seeing good reduction in power consumption. Showed this to Zoom. Please send feedback to Riju. Might be interesting to combine this with the lifecycle. Have you considered this approach for worklets? Audio worklet uses realtime audio, is latency-sensitive. Should be looked at in the explainer if the work needs to be set apart. For latency, it's a prio selection, not a QoS selection. Chrome doesn't look at prio right now. Happy to bikeshed over the naming. Think of it as a hint where to put the node (to which processor).

Update from Developer Relations

- Chrome
 - The new Project Fugu API Showcase soft-launched:
 - <https://developer.chrome.com/fugu-showcase/> (we'll properly announce this once some [final tweaks](#) have landed).
 - Searches <https://developer.chrome.com/fugu-showcase/#photo>
 - APIs <https://developer.chrome.com/fugu-showcase/?api=web-nfc>
 - FR: RSS feed
 - Form at top of page to submit entries

- <https://docs.google.com/spreadsheets/d/1vfkeHf5MEcAr6hle3vPb8YvHQQf5UqEAjAjTHET0E/edit#gid=0> is Google's API documentation backlog. Add stuff if it's missing.
- Edge
 - PWA: starting to refresh the MDN PWA docs.
 - <https://github.com/mdn/mdn/issues/280> Was talking to Open Web Docs about refreshing the PWA docs on MDN. There's a shared roadmap. On the radar for this year.
 - <https://docs.google.com/document/d/1-skaKXoJ0rKhgBHchTWSTAW5dxrlmVYkPeKUWpet9nE/edit#> is the plan of action.
 - We talked a lot about storage. Is there anything we can talk about storage, and storage eviction? Would love to bring this to MDN. Storage is there, and there's an issue open.
- Samsung
 - N/A

Questions from participants

Learn from other participants and other companies!

- N/A

Topic for general discussion

Please submit ideas here.

- nattedstad@: Some [new JS concurrency primitives](#) for advanced apps we'd like feedback on
 - The Chrome V8 team is looking for feedback on experimental JS shared memory features.
 - These features enable better parallelization of your JS code by allowing structured data and JS primitives to be shared among threads. This is useful for scaling runtime performance by leveraging more cores, or for off-main-thread processing using multiple worker threads. If you've tried using workers but found the message passing or SharedArrayBuffer mechanism too limited, this may be perfect for you.
 - Details on the API and flag for the dev trial are available [here](#).
 - These aren't Fugu APIs but are targeted at enabling advanced apps and we are hunting for early adopters - anyone got suggestions?
 - Please reach out to Shu-yu Guo (syg@google.com) and Thomas Nattedstad (nattedstad@google.com) with any feedback, questions, and bug reports.
 - Notes:
 - Alex: babylon.js is excited about this.
 - Sulekha Kulkarni: sukulka@microsoft.com on MSFT side V8 is working on this and in communication with Babylon.js
 - There was a proposal ~10 years ago. Some of the terminology is the same, but overall it's new.
 - Beneficiaries could be some apps in MS, like Clipchamp, or Workspace at Google. Maybe Teams who use a shared worker.
 - AI Alex : Reach out to partners
- Intel blog post % Riju:

<https://community.intel.com/t5/Blogs/Tech-Innovation/open-intel/From-Burning-Oil-Platforms-to-Web-Platforms-Meet-Riju-Bhaumik/post/1455902>

Feb 13, 2023 (APAC)

canceled due to insufficient attendance and agenda

Jan 30, 2023 (EMEA)

Agenda items from participants

Use this space to report on what you or your company is doing, and to solicit feedback.

Google

- Audio
 - setSinkId() & [blog post](#)
- Storage
 - [SQLite over Wasm](#) launched in November (on dcc [SQLite Wasm in the browser backed by the Origin Private File System - Chrome Developers](#))
 - [Issue #7](#) DuckDB interested
 - FileSystemHandle.remove()
 - FSA
 - Alex: we're creating a .crswap file, and that confuses apps that watch directories for changes
 - Alex: people complain about the lack of persistent permissions
 - removal of Web SQL in insecure contexts
 - removal of window.webkitStorageInfo
- PWA
 - Default Offline Experience for Installed Web Apps on Desktop
 - related to [this for mobile?](#)
 - [Web App Launch Handler](#) (On MDN [Launch Handler](#), on dcc [Launch Handler](#))
 - M110
 - Experimenting with user-initiated link capturing this quarter.
 - Expecting to have eventual standard support for parsing manifest w/o document ([pull](#)).
Coming from offline-install requests, non-document installs.

Intel

- Pen Customizations API introduction : [Explainer](#) with video.
- Update on raf and application hint work.

Update from Developer Relations

- Chrome
 - Launched the [How Fugu is my browser?](#) microsite.
 - Launched the [How Fugu is the Web?](#) browser extension.
 - Both introduced in [Discovering the capable web](#) article.
 - GDE event in Berlin featured a Fugu expert gathering with lots of activity
- Edge
 - [Patrick] Did some research around web storage and published: <https://patrickbrosset.com/articles/2023-01-17-web-storage/> (plus an Edge-only version here: <https://learn.microsoft.com/en-us/microsoft-edge/progressive-web-apps-chromium/how-to/offi>

ine).

Next step is to update MDN's docs about it, which are outdated and incomplete. I filed:

<https://github.com/mdn/content/issues/23557>

I was made aware of this [Chrome storage and quota document](#), which seems like the help I needed.

- Samsung

Questions from participants

Learn from other participants and other companies!

-

Topic for general discussion

Please submit ideas here.

- People wanted an explainer for quota beyond <https://web.dev/storage-for-the-web/#how-much>
 - Try [Chrome Web Storage and Quota Concepts](#)
 - We could use an easy-to-find, clear explainer detailing quota and eviction
 - Googling should give a developer an easy answer to:
 - How much can I store?
 - Will the user be prompted?
 - When will it be evicted?
 - Eviction events need to be added; it's a bit silly that we still don't have them, even though we know there will be cases even w/ buckets where they're needed.
- [Python... in the browser?](#)
- [Wordpress.. in the browser?](#)
- Firefox supporting File System Access Handles
- Community-sourced databases

2022

Engineering: 2023 plans

- Samsung
- Intel
- Edge
- Chrome
- ByteDance
- more?

Intel: 2023 plans

- WebDriver:
Implement WebDriver for accelerated validation of DAS specs (and hopefully help increase adoption of said specs).
- Face Detection, Background Blur, Face framing, Lighting Correction
Start BG Blur OT sometime Q1 2023 on ChromeOS initially and hopefully ship by 2023.
Similar timeline for Lighting Correction.
Face Framing and Face Detection, we would start Dev Trial 2nd half of 23
Spend some time to improve feature completeness and spec conformity in the imagecapture/ code.
- Video Processing Proposal
First draft [explainer](#). WebCodecs already brought efficient system-provided video encoders and decoders into web applications. Now we want to extend it for Video Processing also..
- Compute Pressure
Bring v1 of Compute Pressure to Dev Trial (behind a flag, good test coverage). Go through TAG review as well as work towards an Origin Trial.
- Dual Screen/ Foldables
Upstream code for DevicePosture API Windows backend.
- Pen and Stylus
Finish upstreaming USI Web API proposal.
- WebNN (better tracked with WebGPU)
Chrome implementation to have XNNPack based CPU backend and DirectML GPU backend.
WebNN spec CR and Dev Trial (R112 target).
- VRR Enabling - Adjust refresh rates based on panel rate
requestAnimationFrame improvements - Reduce power and improve user use case. PoC working internally at Intel. Need to work with others to propose.
- Application Hint API - not meeting, meeting, exceeding performance requirements to adjust frequency and core selection. Still held up by implementation details
Looking to introduce an API similar to compute pressure but compute capacity.

Edge (preliminary plans):

- In-App [Ratings and Reviews](#)
- [Scope Extensions](#) for PWAs
- Fixing several PWA UX ([document subtitles among others](#))
- [WebInstall](#), WebAPK.

- [PWA Widgets \(dev preview docs\)](#)
- Possibly more, list is not final.
- (WebNN - interest from Edge*)
- What does having a PWA in the system tray mean?
 - goal maybe: UI presence, running as needed.
- from dmurph@: PerformanceNavigationTiming from MSFT ([CL](#), [I2P](#)) - We are interested in this through partners, and also adding a 'launch time'. It is currently waiting on a design document w/ design explorations. I'm happy to reach out to the developer to help guide this process - is this something that MSFT is still interested in?

Chrome:

Big thoughts

(Related: BlinkOn 17 Presentation [slides](#) [Video Recording](#))

- Less work to fill an "app gap", more to meet emerging needs and enable web use cases
- Complete logical set of primitives for our APIs in progress
- Improve and enhance what we already have
- Add features where we see an opportunity to advance an emerging use case, achieve broad adoption, and/or get adoption from a few large partners

2023 Pillars

- Performance improvements (e.g. audio, storage)
- Capability activation (API round-out, improved reliability and debugging)
- PWAs and installed apps

Audio

- Work to greatly lower latency
- Ship setSinkId()
- New permissions model for WebMIDI

Devices

- Improve existing features
 - Smoother permissions
 - persistent permissions for Bluetooth
 - seek heuristics to enable persistent permissions everywhere
 - beautify permissions dialog
 - WebHID and WebUSB in Extension Service Workers
 - WebHID exclusive access, if partners need it
- Complete MVP, if time
 - BLE Scanning
 - Serial over Bluetooth

Storage

For sophisticated storage: improve existing APIs and launch new ones

- indexedDB: look for opportunities to improve performance and stability
- File System Access: finish essential primitives - move, remove, change events
- Replace WebSQL with developer-created database solutions
 - market SQLite-over-Wasm
 - deprecate WebSQL
- and more!
 - Ship Storage Buckets
 - Local Fonts enhancements
 - change events

- add an option to only show system fonts, omitting user fonts
 - restrict access to unusual fonts that would make fingerprinting easy
- Storage Pressure?
 - Slightly off: consider integrating w/ reporting API (e.g. eviction reports, quota pressure)
 - <https://web.dev/storage-for-the-web/> - great but not sufficient
 - “How much do I have?”
 - Grouped eviction not clear
 - Space fuzzing for opaque resources
 - Eviction criteria / protection not clear
 - Big media app - “can I store data?”
 -

Windowing

Allow trusted web apps to control windows on screens without unnecessary permissions prompts

- Fullscreen popup (after one user gesture)
- Many windows on many screens (after one user gesture)
- Support many other projects, including screen refresh rates
 - ... Including Additional Windowing Controls

PWA

- File handling icon support.
 - Most of the complexity is on Mac.
- Stability & execution speed work for OS integration code.
 - Fixing broken PWA icons in many enterprise cases.
- Allow apps to update their name and icon
- Make any site installable on desktop
 - Possible: declarative imperative install (navigator.install)
- Better installation UX
- Possible: Product refactor of 'Create Shortcut' to mean something different, come from bookmarks.
- Mac: PWA permission delegation. Notifications seem easy, camera/microphone might be weird.

WebGPU

- Launch WebGPU 1.0
- Launch WebGPU support for wide color gamut
- Expand WebGPU compatibility

Developer Relations: 2023 plans

- Samsung
- Edge (Patrick)
 - Mostly focused on PWA-related features: blogs, conferences, videos.
 - A bit of a documentation refresh on learn.microsoft.com for PWAs.
 - 3rd-party [PWA widget](#) announcements. In dev-preview now.
- Chrome

Questions from participants

Learn from other participants and other companies!

- Richard: Would like to have a couple of point of contact that are interested in efficiency mode of browser and impacts to PWA. Have a contact at Google. Would like to include MSFT and others. May impact Page Life Cycle. If interested drop email or notes.

Topic for general discussion

Please submit ideas here.

- (jsbell@): Clipboard work / review stalls

Nov 7, 2022(EMEA)

Agenda items from participants

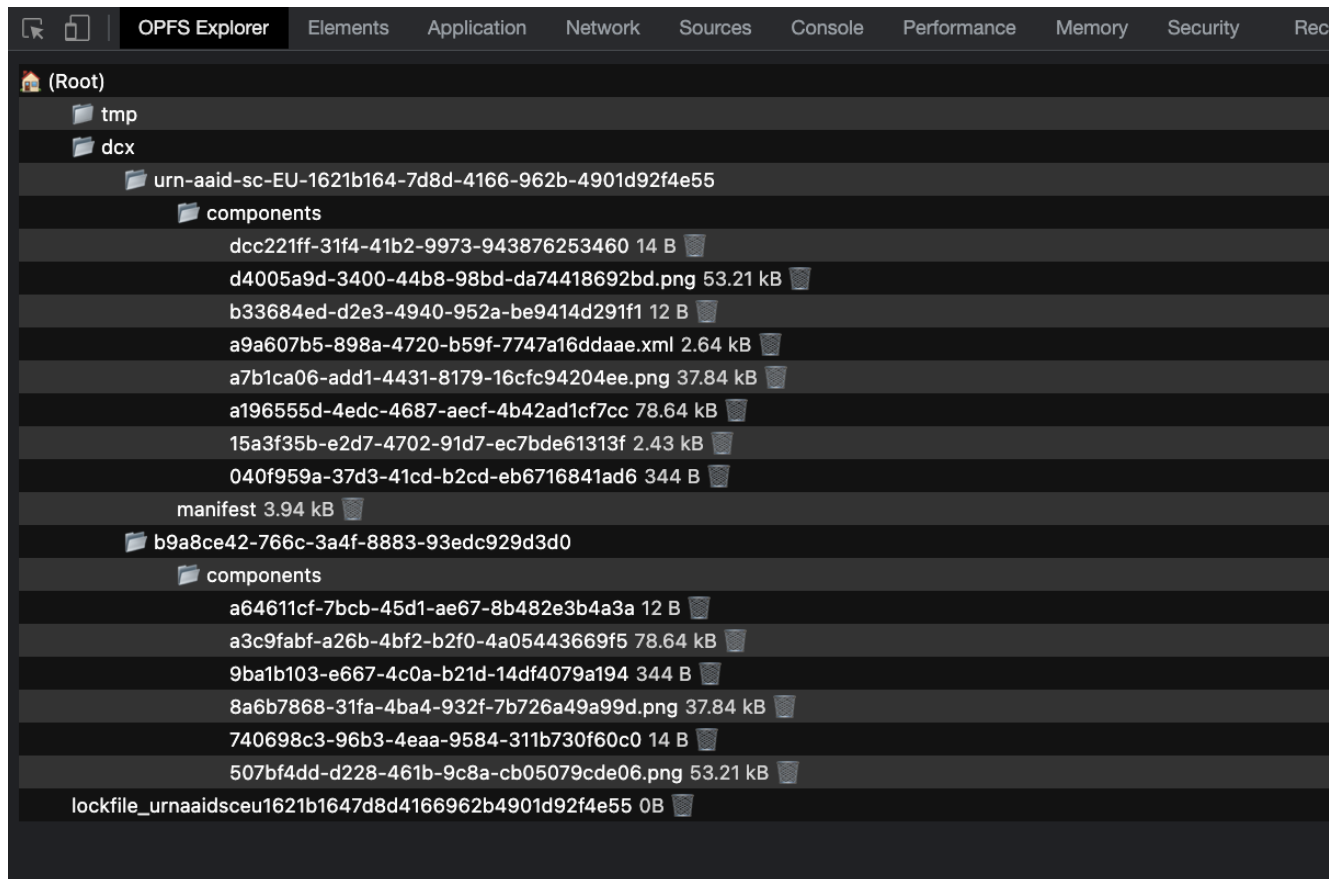
Use this space to report on what you or your company is doing, and to solicit feedback.

- At another sparse APAC meeting, the participants agreed to reduce the frequency to quarterly. We don't want to simply cancel instances with no agenda, since that would mean skipping almost every meeting.
- [jsbell] Should we have a meeting where we share 2023 plans?
 - Nov 21 or Dec 5? Probably **Dec 5**. Or Jan?
 - Dec 5 it is!
- Google
 - Storage
 - Databases
 - Excitement about community-created web databases on [Hacker News](#)
 - Current download size (compressed) is 312K for the Wasm binary and 60K for the JS glue
 - <https://sqlite.org/wasm/doc/trunk/persistence.md#opfs>
 - <https://sqlite.org/wasm/doc/tip/demo-123-worker.html> (not persistent I think)
 - Can we get a preview build over to MSFT?
 - Devices
 - [Arduino blog post about Web Serial](#)
 - WebHID and WebUSB in Extensions Service Workers, soon...
 - Questions
 - Serial - is there work for higher transfer rates?
 - Is there work on Bluetooth?
 - Audio
 - [setSinkId\(\)](#), soon...
 - PWA stuff coming up
 - Richer Install Modal (Desktop) - launching 109(?)
<https://bugs.chromium.org/p/chromium/issues/detail?id=1326252>
 - "Dark mode" support - going to OT
<https://github.com/WICG/manifest-incubations/blob/gh-pages/user-preferences-explainer.md>
 - Intel
 - Update on the application performance hint API (an API to prevent over subscription in frequency and in future help with selection of P-core E-core hints).
 - Need update on progress of display rate capabilities exposed through JavaScript
 - PoC on improving power based on frame rate options using requestAnimationFrame
 - Richard still interested in working on exposing current screen's frame rate etc.

Update from Developer Relations

- Chrome
 - [tomac] Working on an "OPFS explorer" DevTools extension 🔥🔥🔥
 - Need file change observer

- Need a way to find out if a file is currently locked
- Actual screenshot from analyzing Photoshop:



-
- Edge
- Samsung

Questions from participants

Learn from other participants and other companies!

- [morss] for Microsoft: We have a [regression in the EyeDropper](#) from M106 → M107
 - [jsbell]: Yeah, we broke it (no test coverage?) Break/fix details in <https://bugs.chromium.org/p/chromium/issues/detail?id=1372110>
 - Merge to 107 stable rejected, unfortunately.
 - DevTools may now use this API, in which case we should get this cherry-picked and released
- [jsbell] for @all - Interest in driving a “menu bar API”?
 - I.e. native menus for PWAs on Mac
 - IIRC @slightlyoff did some investigation here
 - https://github.com/slightlyoff/declarative_web_actions
 - Probably right around the cut-off line for 2023 for Chrome’s dPWA team
 - There’s a Fugu request for this: <https://bugs.chromium.org/p/chromium/issues/detail?id=1295253>

Topic for general discussion

Please submit ideas here.

- [jsbell] BlinkOn next week
 - tomac@ has Fugu session scheduled I think? (Nope, since personally I can’t make BlinkOn due to some internal team event.)
 - Ah, scheib@ proposed something, not scheduled yet (?)
 -

Oct 24, 2022 (APAC)

Agenda items from participants

Use this space to report on what you or your company is doing, and to solicit feedback.

- Google
 - WebSQL deprecation
 - Searching for people using WebSQL, but we've still only talked to one company.
 - Running analysis to determine which open-web usage isn't from standard libraries
 - M109 launches, so far, are things that didn't launch in M108

Update from Developer Relations

- Chrome
- Edge
- Samsung

Questions from participants

Learn from other participants and other companies!

-

Topic for general discussion

Please submit ideas here.

Oct 10, 2022 (EMEA)

Agenda items from participants

Use this space to report on what you or your company is doing, and to solicit feedback.

- Google
 - Audio
 - `AudioContext.setSinkId()` ([bug](#), [spec discussion](#)) ready to launch in M108
 - Storage
 - File System Access: we may separate `file move()` from `directory move()`
 - `FileSystemSyncAccessHandle`: change async methods to sync
 - <https://chromestatus.com/feature/5149644305203200> - `flush()`, `getSize()`, `truncate()`
 - We would still like to release an async version of this API, perhaps next year
 - See <https://github.com/whatwg/fs/issues/7>
 - OPFS on Android

- <https://chromestatus.com/feature/5079634203377664> - M108
- SQLite over Wasm/Access Handles is going very well, and it's fast
 - morss@google - Will follow up w/ SQLite folks about public comms/landing page/progress tracking
 - Other DB authors interested in Emscripten ports
- Devices
 - WebUSB and WebHID in Extensions Service Workers
- PWA
 - if you are adding a window "display" mode, make sure to update the "display-mode" media query too!
 - WCO was launched w/o a media query
- Intel
 - Intel ON 2022, San Jose.
 - Thanks a lot Joshua Bell and Alex Russell. We had 2 talks on the Web track - Intelligent Collaboration on the Web, PWA optimized for Intel architecture, Driving Standards Web APIs for XPU-AI (WebNN, WebGPU, Wasm)
 - <https://www.intel.com/content/www/us/en/events/on365/progressive-web-applications-optimized-for-xpu.html> (video for 1 of 2)
 - PWA Summit - Kenneth's [talk](#)

Update from Developer Relations

- Chrome
 - [New patterns for amazing apps](#), please reshare the [announcement tweet](#).
- Edge
 - [patrick] Focusing on Desktop PWAs at the moment.
 - 2 demos: [wami](#) and [PWAmP](#)
 - Upcoming conferences ([slides](#))
- Samsung

Questions from participants

Learn from other participants and other companies!

- TPAC
- [barbara] Should we track innovation areas like web3 and the metaverse?
 - [alex] Msft is interested in web bundles, devices, wasm multithreading, etc
 - Metaverse Standards Org - Microsoft, Google, Intel, W3C are involved. <https://metaverse-standards.org/>
 -

Topic for general discussion

Please submit ideas here.

Sep 27, 2022 / Sep 26, 2022 (APAC)

Agenda items from participants

Use this space to report on what you or your company is doing, and to solicit feedback.

- Google
 - PERSISTENT quota removal in old File System in M106, which should not break anyone's code ([bug](#)) ([chromestatus](#))
 - Deprecate and remove support for the legacy window.PERSISTENT quota type. Unlike other removals of old, little-used storage features that only Chromium supports, this one shouldn't break anyone's code. Going forward, `webkitRequestFileSystem` will simply ignore the type parameter, and requests for PERSISTENT storage will create regular, non-persistent storage.
 - Legacy quota API `navigator.webkitPersistentStorage` will be an alias to `navigator.webkitTemporaryStorage`. Deprecated quota API `webkitStorageInfo` methods will also ignore the type parameter.
 - PWA richer install dialog likely to go out in M107
 - We're doing some UX work to make it clearer when an extension is using the Device API, and to provide a nice way to revoke permission
 - Support "Bring Your Own Buffer" reader for `SerialPort`'s `ReadableStreams`
 - Noticed WebKit ["land stubs for" Screen Wake Lock API](#)
- Intel
 - Rich - Application Power Lowering in browser. Had joint with Google on changes that would be required to take advantage of an application hint. Microsoft recommends using MMCSS while in it current state it doesn't yet met the needs of the browser. Review an explainer document by Android team:
<https://docs.google.com/document/d/1OK0VIIIZ-llvzdwEaiXxBrl5eF6ivmajeQ1MzCBnf6aE/edit>
 - Belem - Power Meter Integration with Chrome Dev Tools
 - Shared preliminary PoC and doc of Intel SoC Watch integration with DevTools on both Windows and Linux to Chrome performance tooling / DevTools team
 - Limitation: Administrator privilege on Windows
 - New proposed path for Windows - Read RAPL power data via energy meter interface (EMI) on Windows to read from Intel register
 - Zhenyao Mo also CCed Catan team and meet team who are interested in power data integration
 - Sunny Sachanandani suggest integrating into `chrome://tracing` first (latest feedback)
 - Intel Web team expressed the willing to contribute and secure dedicated engineers working on this
 - We will start to draft the high level design doc and add power consumption to tracing as the first step

Sep 11, 2022 (EMEA)

Agenda items from participants

Use this space to report on what you or your company is doing, and to solicit feedback.

- Google (*save til next time*)
 - PERSISTENT quota removal in M106, which should not break anyone's code
 - PWA richer install dialog likely to go out in M107
 - We're doing some UX work to make it clearer when an extension is using the Device API, and to provide a nice way to revoke permission

Update from Developer Relations

- Chrome
- Edge
- Samsung

Questions from participants

Learn from other participants and other companies!

- Is Microsoft working on Clipboard change events?
 - I don't believe we have any plans at the moment.

Topic for general discussion

- TPAC this week

Aug 29, 2022 (APAC)

Agenda items from participants

Use this space to report on what you or your company is doing, and to solicit feedback.

- General
 - Do we have a contributor at LG? "lokeshkumar.goel@lge.com" no longer works.
- Intel
 - Compute Pressure
 - [3771113](#): [ComputePressure] Implement PressureObserverManager in Blink – Resolved comments from Reilly and Mojo reviewers and merged
 - Currently media focused
 - Want to ensure CSS / rendering is represented.
 - Annie Sullivan - speed metrics: Interaction to next paint (INP)
 - Jake Archibald - possibly to help with outreach
 - Chris Harleson good for rendering
 - SoC Watch integration with Dev Tools
 - Initial POC on Linux, will send the draft design doc
 - Power consumption measurement
 - We can do this on Linux. On Windows, though, this requires admin powers.
- Google
 - Communicating deprecations
 - E.g. webSQL

- Salesforce can audit their (quite large) codebase and find possible risks. Greg is eager to help out.
- Richard & Mike are talking about exposing screen refresh rates
- TPAC Breakout Sessions [scheib]
 - [Fugu](#)
 - Co-presenters?
 - Intel: Kenneth, cc Richard,
 - Microsoft: Alex to check who's attending. E.g. windows control overlays, ping
 - Diego Gonzalez - luigonza@microsoft.com
 - Amanda Baker
 - Messaging
 - [alex] Communicate the care taken. This has been done responsibly. We worked hard to make this potentially scary stuff not scary.
 - E.g. Origin trials
 - Explainers
 - User agent optionality in how permissions are handled (request pattern with promises)
 - WICG
 - Did not select a single "escape hatch" that would have removed the ability of browsers to be a user agent.
 - Choosers/pickers
 - Quieter notifications vs turning notifications all the way off.
 - We knew we didn't know the solution, and planned for change, and later found other approaches.
 - Background sync APIs had similar design optionality.
 - Long term incubation, seeking working groups. It's not meant to be a proprietary Chromium thing. We want to standardize these features.
 - We don't confuse specs with standards, we do seek consent.
 - Framing of "What can a native implementation do vs web"
 - Non Chromium
 - FS (core bits like Origin Private File System, not pickers/user facing)
 - Web Transport
 - Web Codecs
 - Web Share / (not Web Share Target)
 - Async Clipboard
 - WebOTP (Did we get overlap with WebKit on e.g. message format?)
 - Questions?
 - Mozilla experimented with extension to enable access to WebMIDI. Good to see experiments?
 -
 -
 -
 - Device APIs, joint? No reply yet from
 - Jungkee Song <Jungkee.Song@microsoft.com>,
 - Gabriel Brito <gabrielbrito@microsoft.com>
 - (Maybe as a [WICG session](#)?)

Update from Developer Relations

- Chrome
- Edge

- Samsung
- Intel
 - The China PWA Developer Day 2022 was successfully held in August 6th
 - 10K live viewers 🎉🎉🎉
 - <https://pwadev.io/>
 - Microsoft: PWAs and MiniApps (Alex Russell), PWA Builder, Revisiting the real world significance of PWA
 - Google: Take full advantage of a PWA
 - Intel: New web capabilities
 - PRC:
 - JD Taro introduction: Convert MiniApps to the Web
 - ByteDance/Tiktok: The journey of web nativeization
 - Tencent: Tencent documentation PWA development practice
 - Alibaba.com: Reduce costs and increase efficiency via PWA
 - PWA on Linux

Questions from participants

Learn from other participants and other companies!

- TPAC!

Topic for general discussion

Please submit ideas here.

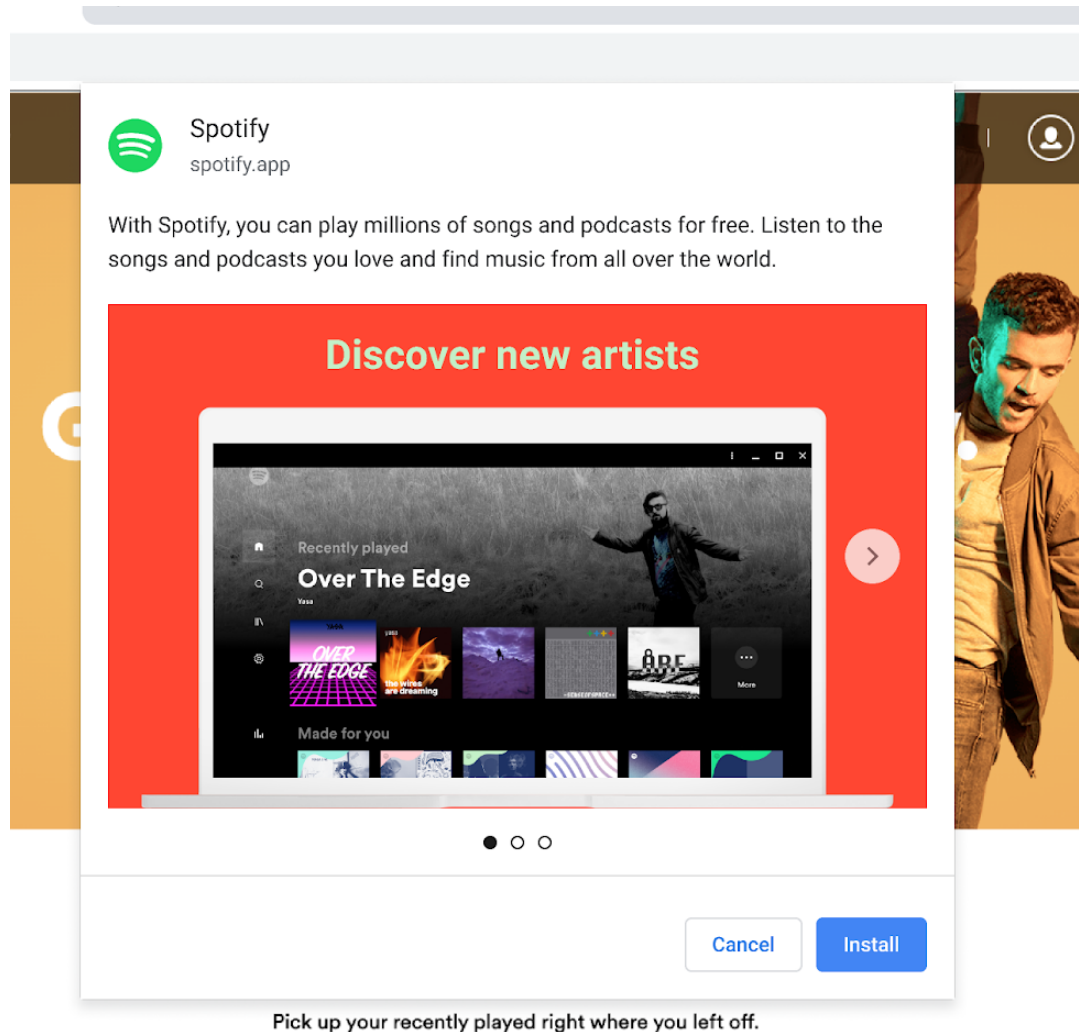
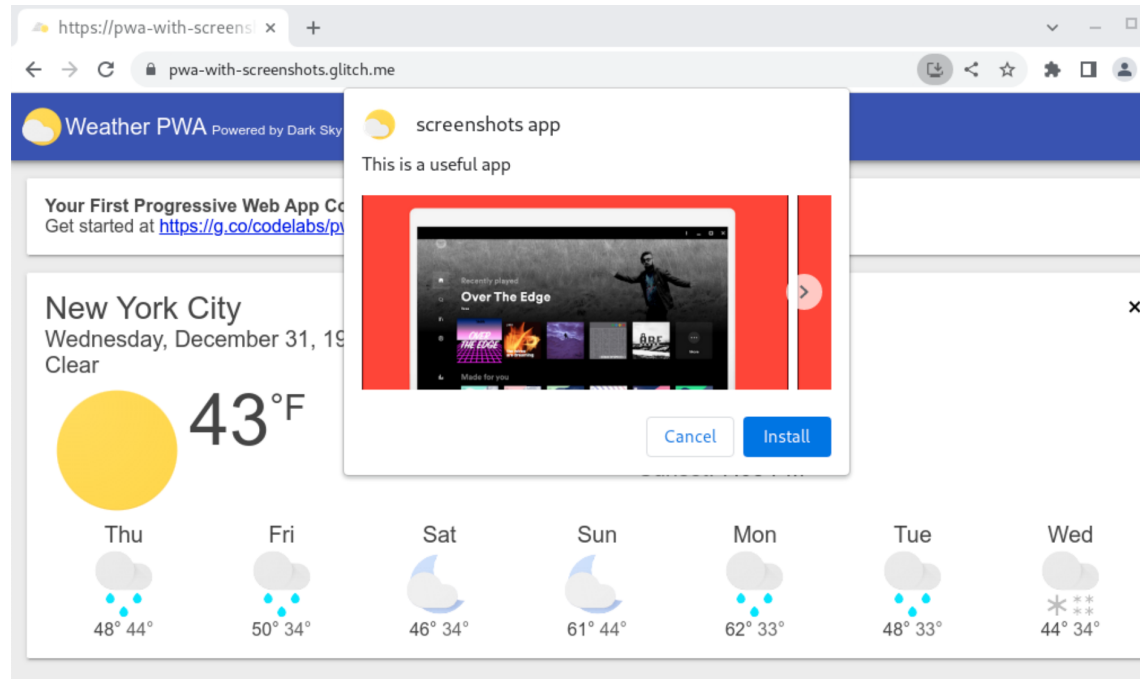
Aug 15, 2022 (EMEA)

Agenda items from participants

Use this space to report on what you or your company are or is doing, and to solicit feedback.

- Google
 - Deprecations
 - [Remove WebSQL in non-secure contexts](#): we'll still put a warning in DevTools Console in M105, but we're delaying removal until we - and you - reach out to potentially affected developers
 - Speaking of which, please warn Enterprise partners about "Block iframe contexts navigating to filesystem: URLs" ([chromestatus](#)).
 - Legacy PERSISTENT quota deprecation ([bug](#)) ([chromestatus](#)) (M106)
 - window.webkitStorageInfo ([bug](#)) ([chromestatus](#)) (M106-107) - we'll likely put this off to allow time for communication with Enterprise
 - More details about these old APIs at: [Chrome Web Storage and Quota Concepts](#)
 - Nondeprecations
 - [Partial claim for USB detachable devices](#) - really fixes a bug in which an attempt to detach one driver for a hybrid device in fact detached all drivers.
 - dPWA richer install dialog (M106, possibly) - ([bug](#))

- Show screenshots and description of app, similar to what is already launched on Android.



-
- Create Shortcuts vs Install distinction work, possible functionality split - dmurph@
 - Closing loop for --list-apps work - dmurph@
- Intel
 - Background Blur ([Intent to prototype](#), [Explainer](#), [CL](#)) : Should land this week

- Compute Pressure :
 - Windows and Mac backend implemented and pushed to Chromium
 - First Major change under review now [\[Link\]](#)
 - crbug.com/1208897 ? Kenneth will follow up w/ Thomas Nattestad
- JPEG-XL
 - Important for content creators; eng work is “done”. Path to ship?
 - Google - “focusing on AVIF, do we need to support JPEG-XL too?”
 - Josh will kick the thread / poke Googlers
 - Interested in hearing from Google’s partners here
-
-

Update from Developer Relations

- Chrome
- Edge
- Samsung

Questions from participants

Learn from other participants and other companies!

-

Topic for general discussion

Continued from last time

- [hochgesang] Open Innovation - Monitor or Discuss? Web3 / NFT / Blockchain / Distributed Ledger / dApps / Smart Wallet? Others?
- Gartner Hype Curve [Gartner Hype Cycle for Blockchain and Web3, 2022](#)
- Usage / Use Case - DeFi, Creator (Music, Art, ...), Metaverse / 3d, Gaming
- Headwinds - Adoption, Killer app, User / Developer - shifting mindset to token ownership, Security
- Impact to W3C - TPAC Breakout section?
- Scheib has found analysis and discussions valuable from:
 - <https://stratechery.com/>
 - <https://a16z.com/> - (podcast interviews useful)
- [morss] skeptical as always, but [Albert Wenger’s article](#) made me take web3 more seriously

New

-

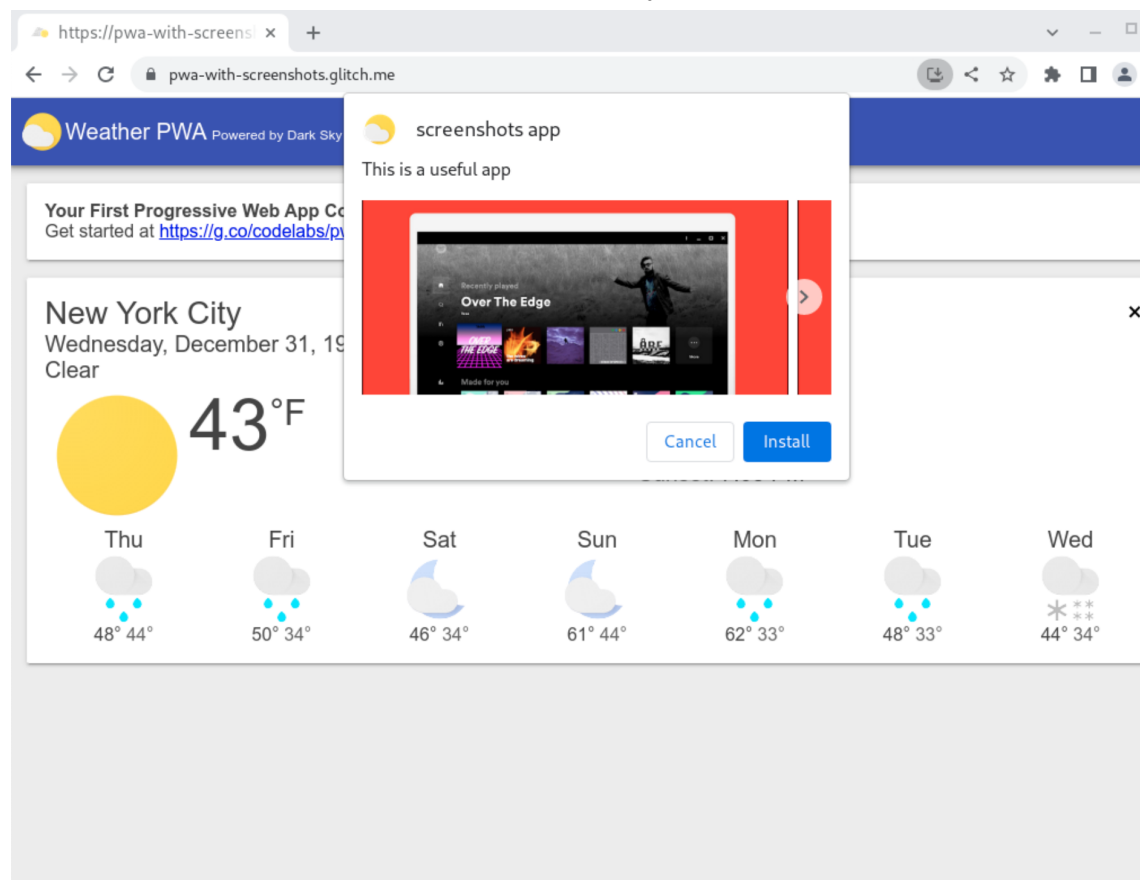
Aug 1, 2022 (APAC)

Agenda items from participants

Use this space to report on what you or your company is doing, and to solicit feedback.

- Inviting others to this meeting
 - Best approach now for meeting invite is email morss@google.com

- Intel - Compute Pressure
 - Landed 7 CLs
 - Make ComputePressure as a service
 - Remove CPU frequency information
 - Make class name in implementation aligned with spe
 - Platform support:
 - CPU Probe for Windows using PDH (Ready to merge)
 - CPU Probe for Mac using host_processor_info (Ready to merge)
 - Implement PressureObserverManager in Blink (under review)
- Intel - China PWA Developer Day 2022 <https://pwadev.io>
 - Similar to pwa summit hosted earlier.
 - MS, Intel, Google, Alibaba, Tencent, ByteDance, others attending.
- Google
 - Window Placement: Accurate Screen Labels Launch [1317749](#)
 - storage
 - Enterprise policy support to pre-allow R/W permissions for File System Access API Launch [1333639](#)
 - Remove WebSQL in non-secure contexts [1330789](#)
 - FSA: Allow returning a writable directory with a single permission prompt [1213159](#)
 - **Discussion:** How long until we can persist the permission for a longer period of time?
 - Planned work, hopefully later this year.
 - PWA
 - dPWA richer install dialog work for Desktop crbug.com/1326714 (already shipped on mobile)
 - command line feature flag: `DesktopPWAsDetailedInstallDialog`
 - current screenshot (doesn't have domain subtitle yet):



- - dPWA UX - Remove status bar UI WML crbug.com/1336681
 - Launch Bug: Allow developers to update name for Clank (User-installed apps only) crbug.com/1213270

- File Handler Icons being explored, T&S, UX
- Windows control overlay css media query is in our backlog, need to implement
- **Discussion:**
 - Command line integration for PWA. e.g. adding PWA to the path. Launch a PWA with parameters such as paths to open.
 - file paths:
 - https://source.chromium.org/chromium/chromium/src/+main:chrome/browser/apps/app_service/launch_utils.cc;l=146;drc=ddce2fc4e67fd4500d29cbe5f4993b3fb8e4e2ba;bpv=1;bpt=1
- **Discussion** Launch: Window Controls Overlay
 - [1108107](#)
 - <https://www.chromestatus.com/feature/5741247866077184>
- **Discussion:** [Intent to Prototype: Borderless Mode for Installed Desktop Web Apps - chromestatus](#)
 - Being explored as something to be exposed within [Isolated Web Apps](#)
 - Would also need the ability to then minimize / maximize / close window so that controls can be app-rendered.

Update from Developer Relations

- Chrome
- Edge
- Samsung

Questions from participants

Learn from other participants and other companies!

-

Topic for general discussion

Please submit ideas here.

TPAC

- Any specs in incubation (WICG) that we want to discuss?
 -  WICG - incubation meetings at TPAC
 - FYI - hinted at in previous meetings: [Exploring Improvements to Fingerprinting Risk for Open Web APIs](#) - arcsjs
 - <https://wicg.github.io/local-font-access/> anyone?

Application Model Thoughts?

- Incremental and progressive features, meeting users where they are and allowing them to invest more etc.
- Windowing / tab methods and user behavior has
- Alex
 - Design APIs that can work in multiple ways. If we get started by 'install only' OK – so that we can get something out there. Goal is to get to all endpoints .. the tabbed web.
 - https://infrequently.org/2020/06/platform-adjacency-theory/relevance_gap_healthy_opt.png
-

Jul 18, 2022 (EMEA)

Agenda items from participants

Use this space to report on what you or your company is doing, and to solicit feedback.

- General
 - TPAC is coming up
 - At least 8 people from Google's fugu/pwa team are attending in person
- Intel
- Samsung
- ByteDance
- Google
 - [SerialPort.forget\(\)](#) shipped in M103
 - should there be a general revoking/forgetting method for the Permission API, to avoid duplicate methods?
 - [Permissions.revoke\(\) - Web APIs | MDN](#)
 - Why didn't this happen? It's more that it didn't happen. But people did fear that nefarious apps would then prompt users for more unneeded permissions. Though there isn't data to back up this fear.
 - Multi-Screen Window Placement API
 - [Fullscreen Companion Window](#) in M104
 - [Fullscreen Capability Delegation](#) in M104
 - [Accurate screen labels](#) is scheduled for M105
 - [PWA sub-apps](#) entering Dev Trial
 - [Deprecating WebSQL in non-secure contexts](#) may come in M105 ([I2D](#))
 - Have we talked to Salesforce yet? (The contact there is Leo Balter and/or his boss Greg Whitworth [\[video\]](#).)
 - Google should partner also with Microsoft to find Enterprise customers
- Microsoft
 - [morss] [Clipboard Pickling](#) launch

Update from Developer Relations

- Chrome
 - (More of an MS news item actually): WebUSB, WebSerial, and WebHID access on web: [Visual Studio Code June 2022](#).
- Edge
- Samsung
- Apple/Mozilla
 - Anne van Kesteren joined Apple ([announcement tweet](#)).

Questions from participants

- [nattestad] Mozilla seems to be going in the direction of supporting some permissioned capabilities through extensions: <https://extensionworkshop.com/documentation/publish/site-permission-add-on/>
 - Thoughts on this as an approach?
 - Google is currently evaluating the companion extension space and trying to align on strategy

- [winterton] Question about application hint. Is it okay to have a child process thread inherit the priority of a parent process/thread (e.g. including thread pools)
- [winterton] Would Fugu be interested in a compute capacity API that would be measured differently than compute pressure. Capacity would be core independent in that it would be based on CPI and Frequency / Max Frequency. Utilization is less meaningful as it is very dependent on frequency (inversely proportional to each other and doesn't relate to true capacity)
- [winterton] Possible new API on "refresh rate" of a panel. With Variable Refresh Rate's now becoming more available, providing the information about the panel to the application/browser could provide opportunity to generate a more customized refresh as high as 120 Hz to as low as 1 hz. This has shown significant power reductions. Perhaps this could be tied into requestAnimationFrame?
 - They've seen apps using rAF repeatedly and consuming lots of power, notably a government website
 - Google / Intel to discuss
- [hochgesang] Open Innovation - Monitor or Discuss? Web3 / NFT / Blockchain / dApps? Others?

Topic for general discussion

Please submit ideas here.

Jun 6, 2022 (APAC)

Agenda items from participants

Use this space to report on what you or your company is doing, and to solicit feedback.

- Some people are taking June 20 off for Juneteenth. I propose we cancel the EMEA sync.
 - We'll cancel on June 20 and July 4
- Google
 - [Shared Storage API](#) ([chromium bug](#)) coming in M104
 - File System Access Handles - [a better name](#)?
 - we don't want to change names for methods already in use. But a cosmetic name change for the full API seems possible
 - File System Access - [combined read/write permissions](#) for directories
 - [Permission API proposal permissions-request](#) includes a way to create conjoined permissions.
 - Multiscreen Window Placement
 - [Fullscreen companion window](#)
 - [Fullscreen capability delegation](#) ([design doc](#))
 - [Letting PWAs create multiple taskbar/dock icons](#) (sub apps) - dev trial in M104
 - found [the explainer](#), which we'll add to the bug
- Microsoft
 - Considering a ring-like notification with a high-priority permission and a ringtone etc.
 - Async clipboard: should we delay a little bit after the copy to wait for the paste?
 - People are excited about file type handling
- Samsung
- Bytedance
- Intel
 - Progress on Compute Pressure
 - Want to contribute more to PWAs
 - Having a Developer Days event in China

Update from Developer Relations

- Chrome
- Edge
- Samsung

Questions from participants

Learn from other participants and other companies!

-

Topic for general discussion

Please submit ideas here.

- Deprecating WebSQL
- Miniapps

<https://www.w3.org/TR/mini-app-white-paper/comparison.html>

May 23, 2022 (EMEA)

Agenda items from participants

Use this space to report on what you or your company is doing, and to solicit feedback.

Recognition at [BlinkOn 16 Keynote!](#)

- Google
 - [File System Access Handles merged into M102](#)
 - Permission persistence :party
 - Multi-Screen Window Placement: Fullscreen Companion Window
 - [Mozilla position requested](#), Webkit position also requested
 - [AudioContext.outputLatency launched](#)
 - [Local Font Access](#) approved for M103
 - [jsbell] Interest in follow-on work?
 - Give me a system font
 - Request all system-shipped fonts, vs. user-installed fonts
 - Alex Russell: web font without redownloading?
- Samsung
- Bytedance
- Intel
 - Question about how people are using compute pressure. Would a measurement of compute capacity of $CPI * operating\ frequency / max\ frequency$ actually be a better measurement for applications with hybrid cores? Request input on how applications use compute pressure if

possible so we can determine if capacity is something we want to expose to the browser/apps?

- ... [Cursive](#) might scale back compute heavy features in favor of responsiveness (mostly a concern on low power low cost chromebooks)
- GPU? Right now, just CPU
- Microsoft
 - Position fix overscroll bug, but nothing else pressing
- Others

Update from Developer Relations

- Google:
 - Check the [slides](#) from the **BlinkOn 16** breakout session on “Increasing Project Fugu 🌞 API adoption”. The [recording of the session](#) is already up, too.
 - Shoutout to Web Engines Hackfest, where I’ll give a [Fugu talk](#), too.
 - [Project Fugu API showcase](#) ([source](#) ⇒ Will be moved to an “official” repo soon)

Questions from participants

Learn from other participants and other companies!

- [morss] What is the current status of Clipboard 🥒 ? (that’s a pickle)
 - [jsbell] Also curious about clipboard roadmap?
- [jsbell] Status of PWA scope extensions?
 - [Diego]: Microsoft looking at [scope_extensions](#) after finishing with the browser link handling feature.
- Scope extensions [proprietary implemented by Meta](#)
 - [PWA Summit 2022 is coming up!](#), presumably for Slack.
- Alexis Menard (Intel) - home for stylus preferences (e.g. color, brush width, etc) ?
 - Explainer currently in personal repo
 - Guidance: WICG, while talking to WGs. Pointer Events preferable? Maybe navigator.ink, device & sensors.

Topic for general discussion

Please submit ideas here.

- Keeping the fugu tracker updated - Our bugs are [tracked here](#) and feeds into <https://fugu-tracker.web.app/> which is public for developers - we put labels for milestones which we should aim to keep updated

May 9, 2022 (APAC)

Agenda items from participants

Use this space to report on what you or your company is doing, and to solicit feedback.

- Google
 - Exploring Writeable file system ← → Cloud providers (dropbox, etc). “User-centric” storage
 - rbeard@google.com is investigating this - contact him and dmurph@google.com
 - Would be very cool to launch PWA from command line!
- Samsung

- Bytedance
- Intel
 - [yang] Working on Compute Pressure
 - [yang] Interested in power consumption
 - Currently they can access this information on Linux, but not Windows.
 - [alex] total package power on ARM is hard to obtain. AMD might be challenging too. Can we at least do this for most chips? Privacy concerns would cause us to fuzz the values or timing.
 - [yang] this info is useful for telemetry, sending data out to improve performance
 - [josh] for privacy, perhaps this could be enabled not for every site, but used in enterprise, as admins are very interested in power consumption data
 - [alex] perhaps we should report to web apps when they're pushing the CPU, or report this info anonymized to Google via CrUX, generating a histogram per site
 - [yang] how about GPU?
 - [josh, alex] often discussed. Worth pursuing.
- Others

Update from Developer Relations

Questions from participants

Learn from other participants and other companies!

Topic for general discussion

Please submit ideas here.

Apr 25, 2022 (EMEA)

Agenda items from participants

Use this space to report on what you or your company is doing, and to solicit feedback.

- This meeting's cadence, and EMEA/APAC-friendly versions
 - AI to Ben: add everyone to both (*done*)
- Google
 - [I2S](#) sent for [Local Font Access](#) - M103? ([PR](#) for our developer-facing docs) 🍷
 - [New features in progress](#) for Multi-Screen Window Placement API
 - bug fixes, ["user-friendly" screen labels](#)
 - +1 from Alex
 - *q for Microsoft and Samsung*: what's the latest with foldables?
 - Diego: viewport segments are already shipped on Edge/Samsung. DevRel is working on this too!
 - Laura: we're trying to ship viewport segments (maybe next release), working with Intel on PR for device posture API.
 - Kenneth: Intel is working on this too
 - [nattestad] A cache API

- A partner requested a way to help mitigate OOM crashes - either a low level memory pressure API or a type of memory cache API with policy such as “clearable” that responds to memory events
 - Incredibly early days - just starting to think about it - work wouldn’t start for multiple quarters
 - [alex] MS is seeing a lot of these crashes. It would help to send Storage Pressure event to any context where it could matter. And to have new options for Worker constructors, to tear down Workers if memory’s stressed. And more.
 - [morss] Also a problem when memory gets tight and an app’s storage gets suddenly evicted
- Devices
 - Implementing support for WebUSB, WebHID in Extension Service Workers ([for example](#))
 - Bluetooth scanning, Serial over Bluetooth Classic, persistent permissions?
- [Runway](#): another web-based video editor
- **Samsung Internet:**
 - 17.0 Beta with Web Authentication, will be released in our 17.0 stable release planned for next month
 - Privacy: HTTPS scheme by default, [Smart Antitracking](#) enabled by default
- **Intel:**
 - App Performance Feedback
 - Adding an indicator saying whether the system is meeting or not meeting performance requirements.
 - Now talking to a couple of OS’s
 - Could become a Fugu API

Update from Developer Relations

- **Samsung Internet:**
 - Looking to sponsor web communities / events around Europe
 - Started in person events like JsDay Italy
 - Looking forward hybrid developer meetup, open to discussion weekly at Samsung KX, London / online
 - New video series coming up, looking for collabs!
- **Microsoft**
 - back doing some events, talking about foldables, PWA, more
- **Google**
 - **Developer pain point:** Where are we with persisting permissions for the File System Access API? ([spec issue](#), [crbug](#), [launch bug](#))
 - **Announcements:**

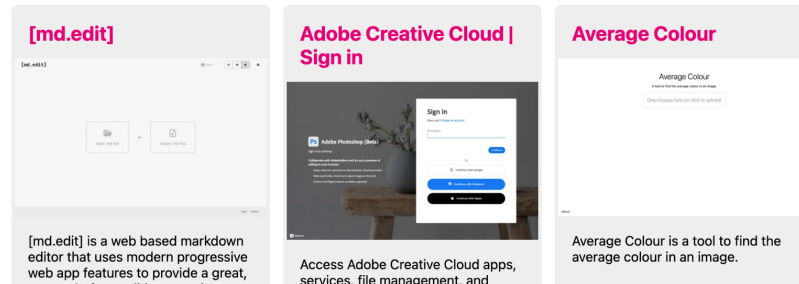
- New Fugu API Showcase: developer.chrome.com/blog/fugu-showcase. AI (if you don't mind): Spread the [announcement tweet](#).

Project Fugu API Showcase

This showcase of [Project Fugu APIs](#) is sourced by community submissions. You can propose missing apps by submitting them via this [form](#). Submissions are reviewed on a regular basis and the site will be updated accordingly.

Filter used APIs:

Absolute Orientation Sensor Add to Home Screen Async Clipboard Async Clipboard (Images) Background Fetch Badging
 Cache Storage Contact Picker Digital Goods EyeDropper File Handling File System Access getInstalledRelatedApps Gyroscope
 Launch Handler Linear Acceleration Sensor Local Font Access Media Capabilities Media Session Notification Triggers
 Payment Request Persistent Storage Protocol Handlers Push Relative Orientation Sensor Screen Wake Lock Service Worker
 Shortcuts Storage Estimation URL Handlers Web Share Web Share (Files) Web Share Target Web Share Target (Files)
 WebBluetooth WebHID WebNFC WebSerial WebUSB Window Controls Overlay



- New Fugu Status landing page URL: web.dev/fugu-status ⇒ developer.chrome.com/blog/fugu-status
- Complete PWA course now live at: web.dev/learn/pwa, contact ajara@google.com with any feedback.

Questions from participants

Learn from other participants and other companies!

- [morss] for Richard & Alex: from February frame rate discussion - would it ever be of interest to expose a monitor's current refresh rate and maximum refresh rate?
○
- [morss] for Patrick: any update on whether Lego Spike works on Edge?
- [morss] for Microsoft: is anyone (Gabriel?) working on [Bluetooth permissions policy support in iframes?](#)

Topic for general discussion

Please submit ideas here, and please vote on ideas that appeal to you.

- The desire to deprecate WebSQL

Apr 11, 2022 (APAC) - canceled

Mar 28, 2022 (EMEA)

Agenda items from participants

Use this space to report on what you or your company is doing, and to solicit feedback.

Google updates

- [Multi-Screen Window Placement API](#) is launching, hurray

- [AudioContext.outputLatency](#) ([launch issue](#)) - soliciting feedback on proposal to hinder fingerprinting
- [USBDevice.forget\(\)](#) shipped in M100
 - add it to other device APIs!
- **Lego** using WebSerial and WebBluetooth in [Spike](#) (Chrome dev [twitter](#))
 - Patrick says “not supported in Edge”... why? He will see if he can find a browser string check
- [Stem Player](#) uses WebUSB to deliver Kanye West's latest album (and or other music) to a unique playback device.
- [riverside.fm](#) pushing Web APIs to their limits

Intel:

Compute Pressure going well. François is helping with reviews.

Performance Frequency Hint API :

Update from Developer Relations

- **Microsoft:**
 - We just wrapped a series called [30 days of PWAs](#) ⇒ [signal-boosted via @ChromiumDev](#) now that the content block has been lifted.
 - WCO ready to go, working on documentation to share about the position fixed bug.
 - Added [UI recommendations](#) to the existing article.
 - New Fugu bug on [App Menu API](#) (exploratory).
- **Google:**
 - Google I/O:
 - Talk 1: Making the most of PWA install
 - Talk 2: Bringing Adobe's Creative Cloud to the Web: Photoshop and Illustrator
 - I/O Adventure (game) with interactive demos (see [brainstorming doc](#) from last meeting)

Questions from participants

Learn from other participants and other companies!

- N/A

Topic for general discussion

Please submit ideas here, and please vote on ideas that appeal to you.

- Fugu perception: “*Much of the discussion around mobile capabilities has been driven by Google’s Project Fugu*”—[Mozilla](#) ⇒ Help overcome the misconception Fugu is just Google.

Mar 14, 2022 (APAC) - canceled

Feb 28, 2022 (EMEA)

Agenda items from participants

Use this space to report on what you or your company is doing, and to solicit feedback.

- Google updates
 - We are opening up the Fugu and User safety forum to externals
 - Not default open to all but if there are topics you’d like user safety input on, reach out to Ben Morss

- Adding fugu-dev@ might overwhelm the group, so we didn't do that
- Alex: please add Mike Jackson and Diego Gonzalez to this forum
- We are amazingly close to launching the [Multi-Screen Window Placement API](#) in M100
 - a couple more approvals to go, but so close
 - Alex: will we promote this further?
 - Tom: we'd like to learn more about who's using Fugu APIs in general. See DevRel update below.
- [WebHID](#) Enterprise policy launching in M100.
 - WebHID launched in M89. This is to allow admins to control it.

Update from Developer Relations

- Collecting **Fugu API PWA examples**, please share this [tweet](#) (and act upon it yourself). The objective is to create an (ideally) evergreen showcase of PWAs, big and small, that show some of our APIs in action.
 - Spread the word! Not just on Twitter, but also LinkedIn and other forums.
- Sam Richard is no longer maintaining the Fugu Tracker. François will maintain it for the time being, but we're looking for a way to improve/replace this Tracker.
- Alex: some Microsoft folks have been thinking about ways to publicize APIs and solicit requests. Once people get to Web We Want or the Fugu Tracker etc, where do we send them? To crbugs?
- Tom: making a Chromium :-) extension that will do static code analysis and just look for Fugu API usage.
- [Brainstorming](#) about **Project Fugu at \$BigDeveloperConference**. We need to see what can be realized, but check out, add new, or comment on the existing ideas so far.
- Tom has talked to the Oculus PWA people as well
- Diego will connect Tom with Microsoft DevRel. Tom points out they're already in touch on Twitter and Github.

Questions from participants

Use this space to ask questions of other companies or participants.

- Alex: Intel folks, how's media stuff going?
 - Rijubrata: Compute Pressure is going well. They'll see how security/privacy reviews go. He's hoping to share more on media next time.
- Richard: for native apps, they're looking into an API that will let an app declare they're meeting a frame rate requirement, say, 24 fps. If so, the system would provide computing resources appropriately. It could provide a smaller core. Could this be implemented via Wasm?
 - Alex would this apply also to, say, CSS animations? Should it be exposed to Workers?
 - and, a lot more was discussed...
 - Josh: Perhaps this could be exposed in a Worker. Expressing the desired behavior of content, rather than requesting priority *n*, seems very webby.
 - Alex: perhaps a frame rate hint

Topic for general discussion

(Please submit ideas here, and please vote on ideas that appeal to you.)

- Browsers provide support for printing, but not scanning. Is it time for a Scanning API?
 - Josh: we looked into this when we first started Fugu. Chrome apps have a scanning API, but we didn't have customers for it. Where does it fit? Media Capture? It might be hard to build on top of USB/Bluetooth, since Windows would claim the device in advance.
 - What is the difference between what chrome scanning API provides and what customers want?
 - Alex: creative partners might want scanning as well

Plan for this meeting going forward

The group discussed this and reached a consensus, as follows:

- It's useful for people to get the chance to see each other in person on a regular basis.
- We'll keep this meeting on a monthly cadence.
- Before each meeting, Ben will solicit agenda items from participants. He'll also ask people if they'd like to submit questions to other participants/companies or suggest topics of interest. This should help populate the agenda.
- Every month, participants involved in developer relations will give an update.
- Every month, the group will choose a topic for further discussion. Roughly speaking, we'll devote the last half of each meeting to this.
- We can always end early.
- For more regular and direct communication, there's [the Slack channel](#).
- As interest arises, we can spin up smaller groups for specific workstreams.

Agenda

- 2021 Recap
 - Josh: Adobe Photoshop launched in beta (AccessHandles is enabled by default in Safari, too 🍌)
 - Lots of focus on filling in gaps partners were missing
 - Additions to the Filesystem API - access handles, etc
 - Alex: people started noticing we shipped these additions to the Filesystem API. He's working with the VSCode PWA preview.
 - People are curious about link capturing.
 - Pete: we landed hardware APIs, webshare. Lots of launches that helped various sites, but perhaps nothing that changed the world for everyone (File System Access is a really big thing for apps, though.)
 - Kenneth: for videoconferencing, pan/tilt/zoom is a big deal. Compute Pressure will help lots of sites.
 - Josh: link handling and protocol handling will be a big help for PWAs. They're close to shipping. Diego: customers really want this. (Tom: Meta has shipped a [proprietary variant](#) of this, since their launch partners [supposedly Slack] needed it)
 - Diego: Eyedropper (used by DevTools now), Idle Detection
 - Run on OS login as well shipped in 2021.
 - Vince:
 - hardware wallets have begun using Device APIs like WebHID for crypto. WebAuthn doesn't do it all.
 - HID and Serial are being used more on Chrome OS.
 - The Gamepad API is happening.
 - Bluetooth: there's interest in Serial over Bluetooth. Also, persistent permissions for multiple devices after tab is closed. People are also interested in Bluetooth scanning, Bluetooth peripheral mode, configuring ChromeOS settings like WiFi
 - Makerspace, with Arduinos, Microsoft MakeCode
 - [Cool list of implementations on Twitter](#)
 - Device News highlights
 - [Web Almanac 2021](#) highlights usage of [Capabilities APIs](#) across the web.

- [Adafruit Code Editor](#) supports wireless programming with Web Bluetooth. 2021-11
 - [Adafruit ESPTool](#) uses Web Serial to flash ESP32 microcontrollers. 2021-11
 - [Texas Instruments](#) uses WebUSB to connect to their TI-Nspire CX II calculator. 2021-10
 - [LiveHeats](#) uses WebNFC ([demo](#)). 2021-09
- We can't tell what the updates happening over Bluetooth are all the time, but we do recognize drones, robots, other devices
- 2022 Preview
 - Barbara: PWAs create a new workload. How do we measure performance and user experience? What optimizations do we find?
 - Kenneth: Intel does have telemetry revealing what's being used. We'd like to get that for the Web too, beyond just the browser name. He's working on this, as it will inform their focus in Fugu.
 - Diego: Microsoft is looking forward to working on link handling and launch handlers. UX improvements in Window Controls Overlay. DevTools support for some of the new features, so people can debug these new implementations. Manifest improvements - SVG icons. Ratings and reviews. Maybe the Digital Goods API
 - Barbara: Important to support developers with tools. This helps us move from early adopters to the mainstream.
 - Can Fugu help with Search?
 - Alex: apps can add features into their window bar with controls overlay.
 - How about using Search as a way to discover PWAs? Along with the Play Store and Windows Store? Msft is working on this - but also how about the Install API? Even though the only customers are search engines...
 - Josh: we'd like to staff the Install API...
 - Alex: tabbed PWAs!
 - Josh: File handling for PWAs, Font Access API despite its intriguing privacy issues
 - Ben: we're hoping that a libusb fork will help manufacturers port drivers to WebUSB using wasm
 - Ben: in WebAudio, there are further efforts to reduce latency. Web music creation apps are surging
 - Josh: spell check, accessibility work for canvas-based apps. A new person has joined to work on accessibility.
 - Josh/Alex: Edge is working on Clipboard. Hoping something will be released for Pickling this quarter.
- Incoming partner requests
- Should we make this meeting less frequent? Or find a way to encourage participants to better populate the agenda?
 - Suggestion: an email poll reminder a week in advance.
 - Other ideas
 - each company or group provides an update during each meeting
 - rotate the person who runs the meeting
 - let people submit questions to other companies or groups
 - Barbara: should we create workstreams for smaller groups, like security/privacy or tools?
 - Josh, Laura: +1
 - Laura: Samsung is focused on PWAs. And also interested in device APIs, viewport segments.
 - Alex: we do have a Slack! It's in the Chromium Slack.
 - Kenneth: in-person communication is good
 - Diego: monthly is good. We can always shorten it.
 - Alex: we could solicit questions/interests as well as updates.

- Josh: we can spin up meetings for specific interest groups as interest rises.
- Tom: should DevRel folks have more communication? Perhaps a monthly update from the DevRel people?
- Kenneth: we could also have a specific focus.
 - Ben: that could occur after the main agenda.
 - Alex: ½ hour for each
- Intel -
 - Compute Pressure :
 - Spec more or less covers current implementation
 - Looking into a more high level states approach
 - NFC:
 - I2S: NDEFReader makeReadOnly() got [approved](#). Thanks François !
 - Device Posture :
 - Implementation update
- Open / Reminder
 - Review / update the collaboration member list
 - Keep the [Fugu Tracker](#) updated
 - Meeting Invitation - Ben will update

Jan 3, 2022 - canceled

2021

Dec 6, 2021

- FYI Intel is going to be taking on [compute pressure API](#)
- Google's T&S team is open to having External Fugu + T&S Office Hours/regular meetings
 - Diego @ MS will ask around internally to see if there's interest
- GDE Meetup next week
 - Look back at last year's accomplishments
- Question on WCO (Thomas -> Diego): OT running out, what are plans?
 - Diego: no plans to do another OT, working on final approval
 - Thomas: when installing from Microsoft store, didn't see chevron? Is it higher level of trust? [SVGcode](#) if you want to test the install and be auto-WCO'ed.
 - Diego: working on mockups for removing chevron altogether. Have been some discussions, wasn't sure it was implemented. Will ping with some ideas.

Oct 11, 2021

- [Pwasummit.org](#)
 - Strong engagement from community
- TPAC is coming :D <https://www.w3.org/wiki/TPAC/2021/SessionIdeas> : Intelligent Collaboration for WebRTC - breakout session open to the public, please join.
 - PWA and gaming
 - Streaming (Luna, Stadia, etc, using PWAs)
 - Netflix entering this space.
 - Game community group
 - Fugu session
 - Run by Tom Steiner, what's on the agenda etc?
 - API overview at the example of a [virtual conference badge PWA](#)
 - Presentation [deck](#)
 - Discussion
- Riju Intel overviewed work related to video conferencing
 - On-client text to speech, speech to text
 - Face detection for streaming <https://github.com/w3c/mediacapture-image/issues/289>
- Diego Gonzalez, MS
 - Continuation of current work:
 - URL Handling and related (handle_links, scope_extensions, launch_handler)
 - Window Controls Overlay
 - New features
 - SVG Icons in the manifest (build)
 - Install time permission prompts (design/build)
 - Tabbed PWAs (support/help)
 - Fixing bugs and working on testing systems
 -
- Vincent input on Chrome OKRs
 - PWA installability

- Supportive roles for MSFT contributions (e.g. File handling, protocol handling)
- User interface work
- PWA permission associations (App level settings vs origin 'site settings')
 - Alex request: manifest link to settings.
- Multi-stream window placement API
 - Good early testing with partners identified bugs.
 - Goal of intent to ship in Q4
- Audio
 - [Render Capacity](#)
 - TPAC
 - [Audio WG Agenda](#) ([Schedule Wiki](#))
 - Joint session between WebRTC, Media WG, Audio (Oct 26th 14:00 UTC)
 - TAG review for how this relates to compute pressure?
- Device
 - Enterprise policies
 - Serial over Bluetooth
 - Prototype on macOS
 - Will be bringing windows, linux, crOS, android
 - Gamepad Events
- Daniel on Future PWA topics
 - Install API
 - Triggering, UI,
 - Better install dialog
 - How PWAs relate to e.g. extensions.
 - Upfront permissions
- Site having the 'am I installed' signal
 - <https://github.com/w3c/manifest-app-info/pull/32>
 - <https://github.com/w3c/manifest-app-info/issues/42>
 - <https://github.com/w3c/manifest-app-info/issues/19>
- PWA promoted at Intel Innovation Oct 27-28 - intel.com/innovation
 - Deep link to any particular PWA session?
 - [The Best Cloud-to-Client Experience](#) - Suggested Sessions:
 - Deliver the Best User Experience with Modern Web Applications [CLI007] The web has evolved to be a modern rich application platform with the introduction of Progress Web Application (PWA) and new W3C Web API standards. Yet, the PWA application user experience can be greatly enhanced by the utilization of Intel hardware innovations. During this session, Google and Intel experts will share tips and tricks related to key use cases like video conferencing, AI, content creation and productivity tools.
 - Developer Opportunities with Progress Web Application (PWAs), Chrome OS and Intel Architecture [CLI001] Learn directly from Google, Intel and key ISVs about the increasing opportunities for developing PWAs for Chromebooks and Intel Architecture. You will walk away with a deep understanding of the challenges and benefits for developing PWAs, receive the tools and resources to get started immediately, and be part of a surprise announcement!

Sep 27, 2021 - cancelled

Aug 30, 2021 - cancelled

Aug 2, 2021 [APAC] - Cancelled

July 19, 2021 [EMEA]

- Welcome Microsoft Alex!
 - Any input on how folks should engage / any shift in what we should go to Alex for?
 - Don't come to Alex for anything except perhaps API owner - working on other things
 - Ping for help with intents - use
- Google has been collaborating with Citrix who has been adding optimized MS Teams support - they've told us they are now required for optimized 911(emergency call) support
 - This would require them to collect all kinds of scary privacy related info
 - Curious for any input on how VC apps, including Teams, is planning this support for their web versions
 - Is there demand for a "call 911 / emergency number" API?
 - Sounds like Zoom solves this by asking their users to input an address
 - Tom: Saw Skype (native app in Germany) tell me that it shouldn't be used as an emergency service.
- Getting tracker into full shape
 - Make sure community contributors are comfortable setting milestones
 - Any general feedback on how we can improve our process & tracking?
 - Milestone numbers should be the same across Edge & Chrome
 - Some cases where OTs are run separately
 - Al(jsbell): See if we can flag the OT milestones more clearly as Chrome-specific?
 - Filed <https://github.com/GoogleChromeLabs/fugu-tracker/issues/27>
- Intel: Conference focused on Innovation and target audience is developers - thinking of talking PWAs + TWAs and standards / scale session
 - Intel ON
 - Wed, Oct 27 - Thurs, Oct 28
 - Venue: Fort Mason, San Francisco
 - Format: Hybrid, mix of in-person, digital live and on-demand
 - Topics: background fetch, notifications,
 - Could be chromebook or PWA session header -
 - APIs to potentially recommend:
 - Diego: windows controls overlay - URL Handlers + [Protocol Handlers](#)
 - Chase:
 - [Declarative Link Capture](#) (in OT as of ChromeOS - 91)
 - [File Handling](#) (in OT as of 92)
 - File System Access (not PWA-specific)
 - [Multi-Screen Window Placement API](#) (in OT)
 - [Compute Pressure](#) (in OT, not PWA-specific)
 - [Idle Detection](#) (in OT, not PWA-specific)
 - Thomas: +1 to compute pressure - Google working with Intel on gathering V2 needs - could be an interesting forum for gathering more of this
 -
 - Alex: Richard: perhaps a session that walks people through the processes to show how it works? I'm guessing folks haven't seen it
 - How to use tools like PWA builder

- Thomas: emphasize impact of partners asking for new features and advocating for cross browser adoption of APIs
- Another session on bringing value of standards to the APIs - W3C + fugu activity - could want some help on a slide about Google's + Microsoft collaboration
 -
-

June 21, 2021 [EMEA]

- Upcoming Google Holidays/No Meetings Weeks: July 5-16
 - Intel: OOO most of July
- (riju /Intel) : PoC for FaceDetection [April 26 notes] ready. Windows PoC ongoing, will engage with the community after July (holidays).
 - PoC on CrOS, next Windows
 - Will share with performance numbers after holidays, comparing w/ media pipe, WASM
- Compute Pressure: Kenneth (spec co-editor) has engaged with Intel telemetry experts while harvesting use-cases and requirements.
 - Spec text being written
 - Note: google eng OOO for next couple of months
 - Intel starting PoC of ideas, getting connected to partners
 - CLs for Windows / Mac are up for (early?) review
- [Elad, % Thomas] Some screen capturing proposals that are kinda stuck from lack of external support - who's interested?
 - [Get-Current-Tab](#) (Previously a method called `getCurrentBrowsingContextMedia`, now a dictionary member called **`preferCurrentTab`**.)
 - Allow sites to suggest current tab as default sharing option
 - Can be used for screenshot as well
 - Don't need to guide users through browser-specific path for selecting current tab
 - Use cases:
 - Share from the e.g. doc itself
 - TAG confusion?
 - There is another proposal, working through standards process (w/ Moz), but requires cross-site isolation and expecting to take years to move forward.
 - [Capture Handle](#) ([explainer](#)) Bootstrapping communication between captured/capturing apps.
 - If you know what you're sharing, you can do interesting things
 - E.g. if slides, can send next/previous slide commands, w/o forcing user to switch tabs
 - E.g. prevent streaming of current tab (prevent inception effect)
 - Why not allow arbitrary messaging? Don't want to leak scope.
 - Want this to be opt-in.
 - Specifically wanting asking for interest from non-Googleers to move this into WICG
 - WebRTC? Lack of interest to move forward there.
 - Faced for other things in webRTC, e.g. imagecapture
 -
- [Josh] Follow up from last time on BCD/MDN updates, % foolip@
 - BCD updates roll into MDN without manual work needed on the part of the BCD contributor. Here's the flow:
 - There's a BCD release every Thursday or Friday, managed by [Daniel Beck](#)
 - That rolls into mdn/yari with [pull requests like this](#).
 - Updates to Yari roll out in ~24 hours
 - Note however that updates to BCD themselves aren't automatic, even though <https://mdn-bcd-collector.appspot.com/> may have generated tests for an API, a human needs to run scripts to add it to BCD, and another human needs to review it to ensure it makes sense.

- [Diego (MS)]: PWA Summit info
 - 6 & 7 October - online event
 - [Pwasummit.org](https://pwasummit.org)
 - Currently accepting proposals for talks
 - Wanting success/tragedy stories around PWA development
 - Want help getting the word out (retweets, etc)
 - Cross company - microsoft, samsung, intel, google, netlify, ...
 - But mostly want to highlight the developer side of things
 - Laura:
 - Community event - want it to be recurring
 - Opportunity to highlight partner work
 - Offering mentorship opportunities, e.g. to create proposals and presentations; for completing CFP, help delivering online talk e.g. professional recording
 - Preliminary stats? ~20 submitted, another round of promotions this week. Want really diverse set of speakers, and breadth of what people are doing w/ PWAs.
 - Hoping to get content covering use of service workers and case studies. But really wanting most diverse set of uses.
 - 9 presentations, also a browser panel, e.g. what is coming to PWAs/browsers

June 7, 2021 [APAC]

- Upcoming Google Holidays/No Meetings Weeks: July 5-16
- [Chase] PWA stuff in 91/92/93
 - <https://goo.gle/fugu-api-tracker>
 - Legend
 - DT = Dev Trial
 - OT = Origin Trial
 - Run on OS Login ship to stable + Session Restore updates - 91
 - [Declarative Link Capture](#) OT on ChromeOS - 91
 - [File Handling](#) OT - 92
 - [Protocol Handlers](#) DT & OT - 92
 - [Window Controls Overlay](#)
 - DT - 92
 - OT - 93
 - [URL Handlers](#)
 - DT - 92
 - OT - 93
- (jsbell → all) Content Creation/Editing App needs
 - Now that we've unblocked creating powerful editors w/r/t OS integration needs (file system access / file type handling, etc), what requests are bubbling up? Especially w/ Canvas-based editing surfaces.
 - [EditContext](#) - in progress % Microsoft
 - [Spellcheck](#) - feature request
 - IME
 - Accessibility
 - [Clipboard](#) (in the Fugu family)
 - more....?
 - Historically, most outside of Fugu... but we care!
 - Jason: Clipboard, definitely
 - Barbara: Intel is into Accessibility - working in W3C, progress on specs. Our lead is Francis Storr <francis.storr@intel.com>. Works closely with Kenneth and others.

- (pwnall) Compute Pressure API in 92
 - Thanks to Kenneth for co-editing the spec!
 - Demo!
 - chrome://compute-pressure-internals coming soon - see internal data
 - <https://pwnall.github.io/compute-pressure-test> - see thresholded data
 - OT in 92
- (jsbell → ???) Additional camera controls?
 - Partner requests for: camera resolution, exposure, white balance
 - Any other implementers interested?
 - Barbara: Intel is interested, follow up w/ Riju
- (jsbell) FYI: Can start sharing Q3 plans next meeting.
- Microsoft:
 - Question: Do collaborators update the MDN compatibility version/browser data? [GitHub link](#) & MDN example for [background_color](#). Wondering if there's a process already or if this is completely community driven.
- ByteDance:
 - Goal - introduce Fugu progress (by Fangzhen's team, and other companies) to TikTok team, and act as a bridge; haven't gotten any real requirements from them. May not understand enough about Fugu project. Plan is to summarize progress on capabilities (e.g. CPU, Camera), share this with them, find requirements.
- Games - ramping up. - Barbara (Intel)
 - Engage with community?
 - Vince: [W3C group for gaming](#); challenging meeting timing for Pacific Timezone
 - Already doing/exploring things - installation & "appiness", headphone detection,
 - Background on a developer survey
Gamedev.js Survey 2021 report
 Current state of the HTML5 Game Development in 2021
<https://gamedevjs.com/survey/2021/>
Development
 8. What operating system are you mainly using to develop your games?
 9. Which browser are you using as a main development one?
 10. What editor are you using to code (the most)?
 11. What build tools are you using (the most)?
 12. How do you test your code?
 13. What language are you using to write code?
 14. What technologies / APIs are you using?
 15. Which frameworks / engines are you using?
- Ajay (Google)
 - helping drive Multi-Screen Window Placement
 - Mozilla <https://mozilla.github.io/standards-positions/>
 - WebKit <https://tess.oconnor.cx/2020/11/WebKit#proposal> (couldn't find a better link)
 - Will connect w/ Mike Jackston to hear re: Edge
- Fugu sync
 - [Mar 15](#) we raised the topic of brainstorming if/what would be helpful in a fugu summit
 - ByteDance (Ke He): Active project summary
 - Intel (Barbara) - Was helpful to align with TPAC, get leads together
 - Microsoft (Jason) - Sync with Diego?
 - Google (Adriana) - PWA syncup being planned.
 - Josh: Big Fugu focus last 12 months has been PWA-centric, maybe that's sufficient? Roll this into PWA syncup?
 - Intel (Barbara) - Mixing two topics: outreach to developers; getting architects together on next gen of APIs

- Questions:
 - PWA progress on TV platforms?
 - Samsung, LG, ...?
 - Invite more Android folks to these syncs?

May 24, 2021 [EMEA] - Cancelled

May 10, 2021 [APAC] - Cancelled - see you at BlinkOn!

April 26, 2021 [EMEA]

- (jsbell → all) What's on track for M91/M92?
 - Run on OS Login (Ship 91)
 - DLC (OT 91-)
 - URL Link Handlers (DT 91, OT 92-)
 - URL Protocol Handlers (DT 91, OT 92-)
 - Window Controls Overlay (DT 92, OT 92-)
 - File Handling (OT 91?-)
 - Compute Pressure API (OT 91?-) [Explainer](#)
 - WebCodecs (will follow up)
- (riju /Intel) : Face detection for WebRTC calls ? Some thoughts here [\[Link\]](#) .
 - TL;DR: many current/upcoming platforms will be providing detection, this is about exposing it for P&P wins (vs. passing each frame to SD API)
 - Camera stack usually doing this already for autofocus, white balance
 - Please leave comments in the linked doc
 - QR code scanner using Shape Detection API (BarcodeDetector) with insertable streams for MediaStreamTracks: <https://mediastreamtrack.glitch.me/>
- (nattestad) : [BlinkOn 14](#) \o/
 - FYI Thomas Nattestad submitted "Fugu for non-fishies" proposal
 - Any other submissions?
 - Any requests for submissions?
 - Jason idea he is taking back: lessons from contributing to Chromium
 - Alex: we'd even like just general interest
 - [Sign up to host here](#)
- [Microsoft]
 - Experimental docs page launched with info on URL Protocol Handler, Link Handler, Window Controls Overlay : <https://docs.microsoft.com/en-us/microsoft-edge/progressive-web-apps-chromium/experimental-features/>
- FYI - Chrome team No Meetings Week May 3-7
 - Many Googlers taking vacation, so expect review latency to go up

April 12, 2021 [APAC] - Cancelled

Mar 29, 2021 [EMEA] - Cancelled

Mar 15, 2021 [APAC]

- [PJ McLachlan] Interest in [Digital Goods API](#) adoption

- Jason (MS): have not analyzed whether it matches MS store needs exactly, but maybe next Q
 - Laszlo (Samsung): interested, need to check out latest changes
- [PJ McLachlan] How should the ecosystem should be thinking about building an Edge PWA w/Fugu APIs vs using [webview2](#)?
 - Jason (MS):
 - webview2 “closer to the metal”, exploit capabilities not (yet) exposed to web
 - can use webview2 that updates w/ edge or take a dependency on a specific version and update w/ app
 - E.g. authentication APIs that are unlikely to be exposed to web (e.g. seamless, using existing windows user)
 - E.g. upgrading old app using IMSHTML2
- [Chase] For Microsoft, Intel, ChartIQ, and others: updates on your project priorities?
 - Google wants to make sure we've aligned our resources to match any of your changes over the last few months.
 - Call out: larger-than-expected Eng support needed (for reviews); UX reviews; trust&safety (security/privacy/...) reviews
- Microsoft Edge
 - Priorities for next quarter, in (rough) priority order; if no target mstone it's “up next”
 - Protocol handling - ?OriginTrial? targeting 91
 - May need app picker UI (bigger than small amount of work)
 - URL handling - OriginTrial targeting 92
 - May need same app picker UI as protocol handling
 - Window Controls Overlay - OriginTrial target 91 (may slip)
 - Desktop PWA restore work - Ship target 92
 - Intricate eng work
 - Support for navigator.share on Mac OS desktop apps
 - Design UX needed
 - Support for share target on Windows desktop - under development
 - Windows OS issues found, probably needs OS updates before MS can make progress on this FR/API
 - Web app install
 - Related, possibly complementary effort to the Web Install API effort
 - Whole new URL scheme here?
 - <https://github.com/PEConn/web-install-explainer/>
 - Install time permissions
 - Declare what permissions are needed in the manifest and at install time collect/handle getting permission from user at once
 - Reviews and ratings for store fronts
 - Support for dynamic shortcuts (jumplists) via the manifest
 -
 - Working on Experiments node of our MS documentation for an early access landing page for developers to learn about and test upcoming features
 - Signal what's being worked on next
 - Would then graduate to web.dev
 - Discussion:
 - Platform requirements to ship features and enter to chromium: e.g. older versions of Windows, etc.
 - Alex Russell : Some flexibility, need a plan to follow through and expand support.
- Samsung
 - Store + Installation on Android

- Fold API
- Privacy and Privacy-related innovation
- Chrome Q2 Fugu Work:
 - [File Type Handling](#) OT 91
 - [Multi-Screen Window Placement API](#) OT 92
 - [Local Font Access](#) DT 90
 - [Multi-Apps](#) DT 92
 - [Link Capturing](#) OT 91
 - [Compute Pressure](#) OT 91
 - [Idle Detection](#) continues
 - Device related:
 - Bluetooth incremental polish/developer request work, e.g. improved bandwidth with MTU negotiation, notifications upon connect being dropped, etc. -- [Help wanted!](#) Contact scheib@google.com reillyg@google.com or just public [web-bluetooth](#)
 - [Serial over Bluetooth](#)
 - Headphone Detection (within Web Audio)
 - Incremental File System Access API additions / “Storage Foundation API” alignment
- [jsbell] Future Fugu Sync-Up Topics Brainstorm
 - Revisiting Fugu’s Axioms
 - E.g. exposing primitives is a challenge % permissions
 - Stores as trust signals
 - What apps are still using web-alternatives (Electron, etc) and why?
 - What categories of apps are still not on the web, and why?
 - Jason (MS) - revisit the above two perpetually
 - Penny (google) - cross-screen apps which should leverage the web (e.g. news, media, ...) but don’t. desktop=productivity, mobile=consumption, how to disrupt that.
 - What hardware capabilities (on desktop, mobile) are still not web-exposed?
 - Fingerprinting and Privacy Budget
 - Jason (MS) - Interested in discussion (outside this mtg)
 - Alex (Google) - Follow up next month
 - Laszlo (Samsung) - interested!
 - Sessions targeted for Business Dev & Developer Relations working on solutions for app developers. Goal: Deep dive education on what Fugu has enabled now and Q&A for BD/DevRel. Also, hear back from BD/DevRel on concerns, etc. (viability may be limited if BD/DevRel don’t feel they can engage effectively in a public meeting vs private)

Mar 1, 2021 [EMEA] - Cancelled (no agenda topics)

Feb 15, 2021 [APAC] - Cancelled (US Holiday)

Feb 1, 2021 [EMEA]

- Non-Google contributions to web.dev
 - How is Microsoft thinking about organizing the Fugu API documentation (Background here: Microsoft-built features like Run on Start-up.)
 - Link for contributors: <https://github.com/GoogleChrome/web.dev/blob/main/CONTRIBUTING.md>
 - Question: What about Apple?
 - Realistically Apple keeps to themselves

- Bringing up stylus support and documentation discrepancies that Intel may be able to contribute to
- There was some discussion in the past that we may want to re-kick
- Jason to share email: reezali@microsoft.com is our Doc guru. Please include him on doc strategy discussions.
- Microsoft Updates
 - Electron 2021 Fugu plans (John Kleinschmidt)
 - John:
 - Want to encourage developers to use the right tools for right job
 - Wanting to support the continuum from website to PWA to Electron app without unnecessary hardships
 - Also going in other direction of Electron app that can become PWAs
 - Could be that the web never implements something so could be ongoing need for Electron
 - The intention for Electron this year is making sure Electron is compatible with Fugu APIs
 - Recently implemented serial API and badging
 - Main effort this year: focus on compatibility
 - If something comes up as Electron API if it could be Fugu API bring it to this forum
 - E.g. clipboard - rely on web API rather than design a new one
 - Make sure Electron is the right tool, and supports e.g. developers easily updating
 - Alex: any features in Electron that don't seem like they have parity?
 - John: nothing huge in particular but wondering on the topic of a install package
 - Similar to requests we've had for the download installer + double click to go through install mode
 - We hear these requests a lot as either 1) first run offline experience; 2) higher friction install step similar to native installers
 - Josh: would love to see any roadmap in future meeting, especially on the compatibility things like WebSerial
 - John: no particular roadmap right now - WebSerial and Badging were added because people asked for them
 - Thomas: is this just making web APIs available or is there some idea of unifying it?
 - Specifically exposing the web API and giving developers the option to switch off
- Intel Updates
 - Gravity Sensor implementation, Customer(Unity) ask ([Link](#)) .
 - Sounds like code landing this week
 - Use case for Unity isn't super clear
 - Reilly was talking directly with Unity about the use case
 - Open question of whether to pursue OT or just ship
 - Similar to accelerometer
 - Thomas to follow up with Reilly to make sure we're set on privacy and launch process side
 - Alex: would like Kenneth help on [explainer](#) to cover topics like off thread and power draw
- New tracker site: <https://fugu-tracker.web.app/>
 - New tracker by Sam Richard pulls from crbug but also Chrome Status
 - Feedback
 - Looks like Wake lock got renamed to standby API
 - PTZ says Android and it shouldn't
 - <https://github.com/GoogleChromeLabs/fugu-tracker/issues>
 - Self service update mechanism is to go update the crbug appropriately and/or chromestatus entry

- if that doesn't work, may be a bug in the merging/reporting heuristics. File a bug!
- Site updates every 24 hours
- Google:
 - Serial, HID, NFC - all shipping in 89
 - Fonts, Window Placement - second OTs in 90/91-ish
 - PWA-centric API work - come to PWA Dev Sync (Tue 4pm Pacific)
 - <https://goo.gle/pwa-dev-sync>
 - Email cmp@google.com for an invite
-

2020

Dec 7, 2020 [EMEA]

- Any discussion on 2021 goals / plans?
 - FYI [Josh sent out Google 2021 plans in email](#) - happy to answer questions :)
 - Intel plans for H1 2021
 - Riju shared some slides - [Link](#)
 - Universal Stylus: [for Google ChromeOS](#)
 - Topics to maybe follow up on:
 - PTZ: Meet in rooms will be adopting. Curious about MSFT Teams - Jason takes AI to ask Teams about it
 - Background concealment: FYI that Meet is currently using wasm SIMD for this
 - This new version will use a hardware chip for this.
 - Screen and form factor: Window Segment & Window placement - FYI we had a chat between the two to understand overlap, happy to summarize and share externally or have more discussion
 - There was another Second Screen Working Group sync-up about this around TPAC 2020 as well to understand how various specs in play work together.
 - Universal stylus - make sure they are connected to Google's stylus team - connection has happened :D
 - We can also connect you to our Google Ink team - Alexis is interested in getting connected
 - Alexis is interested in chatting more with MSFT folks interested in this - Jason McConnel takes AI to follow up
 - Audio - in the WebRTC stack, with WebAudio, or ...? WebAudio TL is hongchan@
 - Getting some partner questions on AEC
- [Peter @ Google] Web Install API
 - Did talk of Web Install API at TPAC and BlinkOn
 - There are clear spam and fingerprinting issues being worked through, as well as fraud
 - Any general comments and thoughts?
 - Joe Medley: What is the install path?
 - Shows in slides
 - Peter: please go have a look at the explainer and file comments!
 - Any general interest from non-Google folk?:
 - Jason: We are very interested in understanding how we treat our installs. Thought of a protocol approach and interested. Jason has put it into their plans for store integration and kicking off PWA install on desktop.
 - Alex: Would love to understand more with Jason how a site can build reputation.
 - Jason: no discrete thoughts.
- Microsoft 2021
 - WebID - coalescing authentication across entities
 - FYI CrOS team tracking this: crbug.com/1132865 - not too related but might solve a lot of the same spaces. We are currently tracking this for enterprise managed devices only.
 - PWA registers as URL handler
 - PWA file handling
 - Protocol handling
 - Window Controls Overlay
 - Run on OS startup
 - Better notification integration

- Store integration
- Measurement - data, data, data
 - Barb: It would be great to get data on how APIs are used. Thomas: we have a lot of this data but legalese prevent us from easily sharing, but it is an explicit goal for us.
 - Alex: For OTs, you should be able to get summaries from the OT team. If you aren't getting this, definitely ping Google friends :)
 - Barb: How are OTs going to work in Edge?
 - Jason: published OT on June / July of this year - so should be way to sign up for this and MSFT do track this.
 - [Origin Trials - Microsoft Edge Developer](#)
- Navigator.share on desktop PWAs
 - Thomas: is this encompassing sharing file handles at all?
 - Jason: no, this isn't currently part of this and isn't being considered
- Install non-PWA websites as an installed site
 - Question from Joe: have we thought of any way for developers to get metrics on this install rate?
- Focus on remote work
 - Microphone improvements & low bandwidth connections

Nov 23, 2020 [APAC] - Canceled

Nov 9, 2020 [EMEA] - Canceled

Oct 25, 2020 [APAC] - Canceled

Oct 12, 2020 [EMEA]

- BlinkOn!
 - Google: we'd love to see as many detailed API discussions to share with those interested
 - [Lightning talks](#) signup
- Start thinking on about what you might be able to share about 2021 plans
 - Google, MSFT, and Intel ready to share in 4 weeks (EMEA meeting)
- TPAC organization
 - Break out session? <https://www.w3.org/wiki/TPAC/2020/SessionIdeas>
 - More premeetings the better
 - Barb: WebCodecs is being discussed
 - Fast moving parts of WebGPU - which is critical for everyone
- [Josh] Q4 OKR sharing from Chrome
 - Chrome's Bay Area Capabilities Team:
 - Increased dPWA testing coverage
 - Push to OT for File Type Handling (by Q1?)
 - Multi-screen Window Placement API - continue OT, incorporate feedback
 - Continue supporting/unblocking:
 - Run on OS Login
 - Window Controls Overlay
 - URL Protocol Handlers
 - URL Handlers
 - Design Link Capturing solution
 - File System Access API: permission persistence, post-MVP partner needs
 - Continue experimenting with:
 - Storage Buckets API
 - Local Fonts Access API

- Pointer lock unadjustedMovement - launch in M88
 - Idle Detection - launch in M89
 - Serial API - launch in M89
 - WebHID - continue OT
 - Bluetooth Persistent Permissions: getDevices() & watchAdvertisements()
 - (not covered: WebCodecs, WebTransport, other stuff outside this team)
- [Chase] FYI that we are increasing the requirements for installability
 - Specifically making sure that the fetch handler returns something for an offline page
 - We will be making this show up as an warning in M87(or M88) and 6 months after that it will be an error preventing install
 - This will impact whether the install icon shows up (when it becomes a requirement in 6 months) and in lighthouse / application panel of devtools
 - John Jansen: How will developers know what the problem is?
 - Chase: They have to go to application panel in devtools
 - Chase: How do we make sure to connect with PWA developers when there are breaking changes
 - Richard Winterton: Seems like inconsistent whether it shows up and you can also go into three dot -> install.
 - Three dot -> create shortcut becomes "install" if it meets PWA checks
 - Jason McConnell: We also have [PWA builder](#)
 - ~~Al(Chase): Follow up with Pete LePage @ Google to connect with Jason @ MS~~
- Intel

PTZ is now shipping on Chrome 87 for all platforms except Android and Webview.

 - We asked the Meet team here in Stockholm to have a look, if folks behind Teams in MSFT are interested we are happy to help.
 - [Landed support](#) for WakeLockSentinel.released (with accompanying spec and test updates) for M87.
- For MSFT update see last meeting
- Fun / exciting news
 - Luna launches as a PWA
 - [Nvidia's GeForce gaming service available on CrOS](#)

(Unknown meeting, this got pasted into the page footer by mistake - probably October 2020?)

- Q3 OKR Sharing
 - Google [jsbell] - July August September
 - Idle Detection Origin Trial
 - Serial API stable
 - Web HID Origin Trial
 - Web Bluetooth persistent permissions and advertisement data access
 - Supporting API work by Intel (PTZ, NFC)
 - File Handling Origin Trial
 - Screen Enumeration/Window Placement Origin Trial
 - New PWA Capabilities
 - Multi-icon support (design)
 - High-trust mode (design)
 - Display Option Manifest (prototype)
 - Client hints for display mode (impl + spec)

- Improve/Maintain WebAppProvider platform (BMO, etc)
- Support PWA work by Microsoft (Run on login, window control overlay, link capture)
- Audit and address terminology in code and specs
- Microsoft - mostly in July - September but not necessarily (OT in Edge 87)
 - Continuation of ongoing work:
 - URL Handlers (handle_links, scope_extensions, support for launch_h
 -
 -
 - andler
 - Open links in PWA - explainer revisions, building prototype
 - URL protocol handling - discussions around declarative link handling and cases where disambiguation needs to occur
 - Window controls overlay - setup WICG for discussion, addressing feedback around the CSS env variables
 - PWAs as a Windows share target - most code complete but blocked on testing until hosted app work is ready
 - Activation via file type association - mostly code complete
 - Jumplist work submitted upstream
 - Hosted app model discussion for submission upstream
 - (see below for non-OKR notes)
- Intel
 - NFC: We are working on the OT review comments. Milestone m87 (holidays in EU). List of OT feedback is documented [here](#).
 - PTZ: From an implementation POV, we still have one CL [\[Link\]](#): and we have to update the spec [\[Link\]](#) as well. We still have privacy and security reviews ongoing. Next are tests, UX reviews. M86 shipping still looks good. The change we're making lately is that [PTZ will be available only to visible pages](#). Should send a PSA soon, even though zoom usage has

Sept 28, 2020 [APAC]

Microsoft

- Web share (navigator.share)
 - Should be merged in this week though likely won't make 87
- Window Controls Overlay
 - Blocked on display_override progress
 - Hoping to make 88
- Launch a PWA with file type association
 - (Windows 10) Looking to start Edge origin trial next week
 - NEWS: [Edge has Origin Trials!](#)
 - Any other interested parties looking to test?
- Launch a PWA via URL handling
 - Security review completed
 - Working to implement on Mac before starting O/T
- Identity for Windows based PWAs - dogfooding now and increasing test to 100% of canary/dev channels this week.

Google

- Launches
 - File System - stable in 86
 - Cookie Store (Fugu Adjacent) - stable in 86
 - Window Placement - OT in 86
 - HID - OT in 86
 - Bluetooth watchAdvertisements slips slightly, will go directly to ship - 87(ish)

-
- Idle - OT extended, new permission approach
- Serial - OT extended
- File Handling - OT has slipped out
- Font Enumeration (discussion)
 - Permissions vs. Pickers
 - Feedback from developers: pickers take away from site's ability to provide experience, e.g. profile selection
 - Download experience (i.e. download bar) / view downloads
- Other news
 - FYI - some Chrome UX changes coming around install experience

Discussion

- Run on OS Login?
- BlinkOn (Nov 18, 19)
 - For dPWA brainstorming on this topic, see [Brainstorming dPWA topics for BlinkOn! email thread](#)
 - Window Controls Overlay
 - Run on OS Login
 - Fugu Summit?
 - "Why is BlinkOn not enough?"
 - Pro (for separate): Can pick a 3-5 hour block w/o competing talks
 - Con: One more thing to schedule
 - Con: Getting attention
 - Pro: "next 12 months"-type discussions
 - Pro: sharing stakeholders, agreeing on use cases and problems to solve
- 2021 plans?
 - Google: Q4 and 2021 planning now
- Biweekly DPWA dev syncs?
 - Well attended, notes are taken/shared, deep dives into technical topics, e.g. BMO postmortem
-

Sept 14th - Cancelled

~~August 31, 2020 [APAC]~~ Cancelled

August 17, 2020 [EMEA]

- Recapping what's shipped - let's look at the tracker
 - WebOTP very well received - especially by emerging markets
 - Window controls overlay well on it's way
- Join the Chromium slack if you haven't
- Any new people joining the call?
 - No!
- Attendance at APAC
 - Not as much last week
 - Josh and Thomas to send out call for agenda and cancel if we don't have topics

August 3, 2020 [APAC]

- (at 15 min mark) [PJ, 10 mins] Update on the PWA Developer Brand discussion [[notes](#)] that took place on July 22nd, and propose we create two streams of collaboration for interested parties:
 - Browser UI affordances for PWAs such as strings, icons, app management (promotion/install/uninstall/update) journeys that will help users gain familiarity with using PWAs across browsers.
 - User familiarity with/awareness of security issues associated with a standalone webapp
 - Interested parties:
 - Sohum Chatterjee
 - PJ McLachlan
 - Joshua Bell
 - Jason McConnell
 - Chase Phillips
 - Victor Costan
 - Promote more highly from browser if app is in store?
 - Promotion of PWAs as a pattern to web developers : for example, x-browser panels or other developer events about PWAs
 - Interested parties :
 - Jason McConnell
 - Chase Phillips
 - Victor Costan
 - Joshua Bell
- [cmp] FYI: 3 new PWA bug components will be created soon:
 - Platform>WebAppProvider
 - UI>Browser>WebAppInstalls>Badging
 - UI>Browser>WebAppInstalls>FileHandling
-
- Google
 - Native FileSystem - ship in 86
 - Cookie Store - 87
 - Async Clipboard Improvements - 86
 - Fonts - OT in 86/87
 - Serial - 86
 - File Handling - OT aiming for 86
 - Possibility of starting OT just on CrOS
 - Have it working on Mac; some issues missing on Windows
 - Currently working through OT launch process (security, privacy, etc)
 - Multi-Screen Window Placement - OT in 86
 - WebShortcuts on Android, just started to ship to stable, been on in beta for months

- Notification Triggers - OT ended, pausing on shipping; interested in hearing about further partners/use cases
- Microsoft
 - See July 20 notes for August features under development
 - Posting PWAs as Edge hosted apps to Chromium.org doc: Update 8/4/2020 - here is the Chromium.org accessible doc: [PWAs as Edge Hosted Apps on Windows 10 - Google Docs](#)
 - Working on getting dev design doc for same cleaned up and shared too
- [cmp] Link Capturing / SW Launch Event
 - 2 efforts - PWAs as URL handlers and declarative link capture
 - Want to make sure PWAs as URL handlers isn't blocked ...?
 - Will discuss tomorrow, right attendees will be there.
- Good PWAs?
 - <https://www.ultimate-guitar.com/>
 -
- Low attendance at APAC mtg - wind it down?
 - Al(jsbell): Call for agenda items a few days prior, cancel if none
- .

July 20, 2020 [EMEA]

Attendees:

- Moving this meeting an hour earlier -
 - Moved 2 hours earlier!
- Next Fugu Community summit
 - Planning structure
 - Should we host this as a large event over a few days or spread out over weeks?
 - 3 vote for condense
 - What kind of content would people like to see?
 - Time Planning
 - What dates work well?
 - Maybe we should avoid TPAC timeframe?
 - 2 vote for right before tpac
 - 1 week before is too short
 -
- been pretty low. In ImageCapture, we're adding [a toJSON\(\)](#) so that web developers will be able to simply call `JSON.stringify(myTrack.getCapabilities())` for logging
 - Timers
 - Wants to determine which is a PWA vs. in-a-tab
 - Chrome privacy team said it can identify a PWA but has to put into categories
 - Can get information on how much people keep things open. Looking at changing timers based on that information.
- Other topics
 - Google
 - Declaring intended permissions in the manifest for general use with specific enterprise admin permission granting in mind
 - Interest from the install time permissions or install from store perspective?
 - Maybe we ask PWA builder / Aaron
 - From windows, there has been debate on whether PWAs are apps or browser features
 - Came up in host and hosted app model
 - Has there been related requests from MS enterprise?

- There has been a request from device partner to disable install of PWA but only require admins to install PWAs
 - No request for additional controls
- Exposing really *really* scary APIs
 - We have some things which are either really scary or which break the web model that we want to expose in a standardized and portable way
 - Examples: completely borderless; native sockets
 - How does this generally sound to folk?
 - Any capabilities you've wanted to bring that you couldn't?
 - MS had the approach of allowing WinRT APIs when acquired from store. Any learnings from this?
 - Previously solved using the store because knowing who it is is useful
 - Can work through light-weight wrapping with some manifest information acquired from manifest
 - Web dev has to do certificate and such
 - Did things like signing and packaging actually help? Was that important?
 - Any look at WebPackaging? No
 - Is Edge running into similar issues exposing things?
 - Riju: thoughts on Apple's / Mozilla anti-capability stance and Alex's blog post
 - High trust mode only likely to increase the pitchforks for Alex
 - Is the Chrome privacy team looking at this? No, not really
 - Recommendation from MS is to wrap webview in C#
- Microsoft
 - Jumplist
 - turned on in M85 by default
 - Twitter implemented and shipped
 - Jungkee - interested in discussion about site settings API
 - MS waiting on input around site settings API
 - Reilly to take next step here and planning to tackle in Q3
 - Vince: seems like a good design and idea here but unclear whether there is bandwidth necessary to reasonably unblock MS
 - Chase: had conversations with Reilly; Reilly is interested in having someone else take this idea and make an explainer. Explicitly want to not block MS on this work. We should come up with a plan for how to do run-on-OS login - would only be Chromium based simpler UI. Another meeting scheduled for Wednesday where we should have more time to discuss
 - Is the cost of not doing site settings and then switching prohibitive: Would like to discuss simple upstream Chromium UI. Wants to listen to the Chrome team's ideas.
- - Intel
 - ...
- NFC! Nice job Riju and Francois!

June 22, 2020 [EMEA]

Attendees: nattestad@google.com, jsbell@google.com, cmp@google.com, <add yourself>

- Logistics: considering cancelling July 6 (APAC) meeting due to Chrome No Meetings Weeks - objections?
- Reminder: Sharing OKRs next meetings
 - MS planning to also share - wording to be checked
- Google

- M85 branching this week
 -
 - Tracking “post-v1 features” thoughts
 - Separate crbug; helps us maintain partner→feature mapping
 - Summary: <API name>: <feature>
 - E.g. Window Placement API: minimize and maximize windows to/from tray
 - E.g. Async Clipboard: Add HTML support
 - Label: Proj-Fugu
 - Per release communications on PWA & Fugu
 - X-Browser panel for PWA developers
 - Ping pjmlachlan@google.com
 - Interest from Aaron G
 - PWA developer/consumer brand
 - If you’re interested in developer and user branding of PWA, email pjmlachlan@google.com
 - Anything that might be out in M85
 - Email jmedley@google.com
 - Microsoft
 - Under development
 - Register PWAs as protocol handlers - target OT 86
 - Register PWAs to open links - target OT 87
 - Window controls overlay - target OT 86
 - Register to be a share target - OT 86
 - Register PWAs to be file handlers - target 86
 - Jumplist support - upstream 85
 - [Shortcuts](#) V2- please share around and amplify
 - Bringing Windows identity to installed PWAs - target 87
 - Some CLs are waiting for the BMO work to stabilize
 - Some work waiting on the 85 fork as well
 - Run on OS login
 - Work continues
 - Suggestion to use site settings concept - discussion with Chrome team
 - Could influence some future proposals and current features
 - Proposals are force to use something like permission or permission dialog
 - Intel
 - **PTZ** - <https://chromestatus.com/feature/5570717087170560>
 - getUserMedia PTZ constraints to be applied: <https://chromium-review.googlesource.com/c/chromium/src/+2254280>
 - Explainer to be updated with TAG review feedback: <https://github.com/w3c/mediacapture-image/labels/PTZ>
 - Hardware support CLs in progress: [https://chromium-review.googlesource.com/q/hashtag:%22ptz%22+\(status:open%20OR%20status:merged\)](https://chromium-review.googlesource.com/q/hashtag:%22ptz%22+(status:open%20OR%20status:merged)) (Android, ChromeOS, macOS, Linux are implemented - Windows left)
 - New UI with merged Camera and PTZ permissions is in Canary
 - Chrome security, privacy, UX, and test internal reviews are still needed
- Aiming for M86 modulo feature launch reviews. OT/Ship ?
- Discussion
 - Get feedback from developers in preparation for blink owners reviews.

- **WebCodecs:**

Here's our latest draft - <https://rju.github.io/web-codecs/>

Some of the issues we raised are listed [here](#)

- **NFC**

We got a sanitized OT request list, so working on them (spec + WIP patches).

[webnfc] Remove ignoreRead from NDEFWriteOptions. ([CL](#))

[webnfc] Remove filtering ([CL](#)).

- **Sensors**

Landed some cleanup patches to the Linux sensors backend last month. This is groundwork for <https://crbug.com/938953>, which should help fix some wrong sensor values that are being reported in ChromeOS (no ETA for that though).

Also fixed some web test flakiness last month with a series of commits. Currently blocked on <https://crbug.com/1084976> and lack of time and Mac expertise (and hardware).

Next steps: Ambient Light Sensor (ALS) shipping.

Discussion:

- Desire to keep permissions granular:
 - Yes, from permissions API point of view this is specific to ALS.
 - User Interface has bundling with Camera.
- [jsbell] Anointed <https://crbug.com/606766> as Proj=Fugu bug for Ambient Light Sensor (**FYI Intel**)

- [jsbell] Question for **Intel** - customer requests for [Pin to Dock](#)?
- [Richard Winterton] Changing system timers when on DC power.
 - Have recently moved system timers from 4ms to 8ms when on DC power for pages, how should PWAs be handled?
 - What impacts are there if changing to 8ms or lower for PWAs
 - (working with Bruce Dawson, Shubi Panicker)
 - Want to support all 3 detection schemes: background, minimized, occluded
 - Occlusion is trickier to do than background or minimized
 - Will affects be similar across Windows, MacOS, etc?
 - Things like audio are already in spec for high frequency timers
 - Slowing down A/V can save ~300 mW of power usage, requires finesse since audio and video must be kept in sync
 - 3 different types of audio: Chrome muted, system muted, non-muted; eg. is this system muted or is it just the browser that's muted?
 - Expect a bug from Richard with a repro, otherwise feel free to reach out to Richard and Bruce directly with questions/comments
- [Appreciation] Samsung :D
- [happy news]
 - Hulu built web party watching
 - Outlook going PWA
 - Bing.com COVID tracker is a PWA: <https://bing.com/covid>
 - <https://joreteg.com/blog/project-fugu-a-new-hope>
 - Duo is a PWA
 - PWAs made some good news at our Microsoft BUILD developer event mid May. Session here; https://www.youtube.com/watch?v=y4p_QHZtMKM

- OpenBSD - has a pufferfish mascot nicknamed "Puffy"
 - <https://twitter.com/rijubrata/status/1271006193897672706>
- AI(all): Suggest and vote on names for our Fugu mascot

June 8, 2020 [APAC]

Attendees: John Jansen, Carlos Frias, Austin Orion, Steve Becker,

Google: Joshua Bell, PJ McLachlan, Chase Phillips, Alex Russell, Victor Costan, Vincent Scheib

- Google
 - [jsbell] Pushed updated <https://goo.gle/fugu-api-tracker> live
 - Please update issue milestones (e.g. *status: Started, label: DevTrial-MM*)
 - For non-Googlers, for everything that's Started....
 - What is your next milestone?
 - DevTrial-MM for "behind a flag"
 - Platforms - Win/Mac/Linux/CrOS/Android or a subset?
 - [jsbell] Microsoft provide a list of API -> platform development (what platforms do you expect to be developing support for each API).
 - [chase] I2S for Shortcuts on Android sent to blink-dev
 - [pwnall] Status of Explainer Review process
 - Reviewed all Fugu / PWA-related explainers in [the MSEdge repository](#)
 - Statements out for everything except the following
 - Install Time Permissions Prompt
 - ImageResource Color Scheme
 - Virtual Keyboard API / Control
 - Please email pwnall@chromium.org if we're missing anything
- Microsoft
 - Things that rely on identity will have additional crbug issues created once they've been scoped / unblocked with Google conversations.
- Meeting cadence and agenda?
 - Should AMER west coast folks attend every meeting?
 - Not intended to repeat between EMEA/APAC, just not all attendees can meet every mtg
 - DPWA Dev sync - defers strategic discussions to this meeting
- Quarterly Planning
 - Discussing sharing OKRs as possible.
 - +john.jansen@microsoft.com consider if this would be supported by leadership.
- Run at start up
 - Has been some press noticing source code changes
 - PJ wondering if there's a target milestone and platform support?
 - SB: No target milestone yet. Still incorporating feedback and planning what to implement and ship. UX and Privacy reviews are large uncertainties.
 - PJ: Is team developing UX Mocks yet?
 - SB: Still deliberating design.
 - ... noting that option to have different UX between browsers.
 - ... Permission UX has feedback from Reilly, PJ can help direct this.

May 25, 2020 [EMEA] - CANCELLED DUE TO US HOLIDAY

May 11, 2020 [APAC]

- [pjmlachlan] PWA consumer brand - discussion kickoff
 -
- [jsbell] FYI - branch for M84 is Thursday
- [pwnall] Explainer review status update
 - Googlers are reviewing MSEdge (and other contributors) explainers
 - Expect comments on the explainers
 - Maybe a month from being done with the backlog
 - Ping if you want more eyes on anything!
- File System / File Type Handling updates?
 - John Jansen: FTH may be dependent on Identity, need a follow-up discussion
- [slightlyoff] Seem unblocked for WebOTP
 - Both WebOTP and Local Font Access have persistent identification risk; get this on your privacy teams' radar early
 - Same for FileSystem
 -

April 27, 2020 [EMEA]

- Intel
 - Image Capture [Pan Tilt Zoom (PTZ)] :
We look good to finish implementation by Q2, with some support from the Privacy Team.
Wrote [PTZ explainer](#) for TAG review.
We made sure that pan/tilt/zoom capabilities/constraints/settings are available only if PTZ permission is granted to the website.
Windows CLs are under review, should land this week.
Linux works. CrOS - Google's CrOS team would add the advanced camera controls on the HAL backend soon.
Also added UMA for ImageCapture constraints.
 - NFC : Awaiting OT data. Planning for next steps [NFC TNEP].
 - Ambient Light Sensor (ALS): good discussion with various stakeholders on how to expose ALS info which best suits user needs. Since most use-cases are camera related, clubbing with camera permission is one path apart from the normal sensors (e.g motion sensors) way.
 - Misc: Intel had a kickoff meeting with the WebCodecs team in Google for collaboration.
- Microsoft
 - Standalone mode (Desktop) - now that minimal UI is shipping, we'll be removing the back button for standalone mode
 - Protocol handler work in progress
 - Open Links in PWA - explainer now open for public feedback
 - Window controls overlay - getting our security team to go through initial pass. Will arrange joint security review with Google post that
 - Jumplist - intent to prototype went out
 - Run on OS login - working on Spec and will be updating the explainer
- Google
 - Tree is open for refactors again

- WebOTP - slipping out a milestone
- DPWAs - Tabbed Mode is behind a flag for CrOS - interested in feedback/partner interest.
 - Will be pushing on spec issues around manifest: <https://github.com/w3c/manifest/issues/856>
 - Implementation [tracking bug w/ video](#)
- FYI: DPWA uninstall issue; we're reverting a change in 81/83. [Bug](#).
- FYI: CrOS team talking a bit to MS office folk
- [tomac; if time at the end] Can we shift this meeting to an actually EMEA friendly time? It's happening at 8PM DE time at the moment.
 - Three "fines"
 - Two "could be good to move"
- Good news time:
 - Gravit launched a PWA \o/
 - Protocol handlers and jumplist collaboration is going well
 - Twitter manifest changed to remove mobile specific
 - App.vysor.io - WebUSB android screen remoting.
 - <https://porsche-doodle.web.app/> - paint your own Porsche

April 13, 2020 [APAC]

- Meta
 - Updated goo.gle/fugu-api-tracker to highlight M-81/83/84.
 - Reminder about [chromium committer responsibilities](#) and especially the subtle point about keeping CLs small, which really helps reviewers.
 - Guidance: [still avoiding substantial refactors that would make merges difficult](#).
- Google
 - ... not a full project update, small progress continues
 - Font access APIs landed initial bits in canary on macOS.
- Update on tab mode for PWA? [John Jansen]
 - Target date getting out of a flag?
 - jsbell: from memory: Functional on chromeos behind a flag, soliciting developer feedback.
 - Not on fugu tracker?
 - Yes it is, on ~line 36 [897314](#) - currently listed as behind a flag in M83.
- PWA - Developer Sync setup to happen April 14
 - [pwa-dev@ announcement](#)
 - "Upcoming PWA dev sync -- Tue Apr 14 @ 4-5PM Pacific"
- "How to ensure Google Champion is allocated to projects so that they can make progress"
 - process: <https://goo.gle/fugu-browser-change-process>
 - Can also be discussed on PWA dev sync?
 - How does Google detect and take action to assign champions to topics?
 - Monitoring repositories
 - Can raise atte
 - ntion in other venues, e.g. this venue.
 - Indicating prioritization here is welcome.
 - Are there specific criteria? No.
 - [Mike Jackson] e.g. Title bar customization doesn't have one yet..

March 30, 2020 [EMEA]

- Google
 - Trialing a more rigorous process to review explainers from other chromium contributors

- Work on APIs proceeding behind flags, aiming to keep master stable and merges easy.
- Chrome Q2 Fugu Objectives (draft)
 - Ship WebOTP API
 - Ship Web Serial API
 - Ship Barcode Detection API
 - Ship unadjustedMovement for Pointer Lock
 - Ship App Icon Badging
 - Continue Native FileSystem Origin Trial
 - Continue Notification Triggers Origin Trial
 - Continue Content Indexing Origin Trial
 - Window Placement API to Origin Trial
 - Screen Enumeration API to Origin Trial
 - File Type Handling for DPWAs to Origin Trial
 - Local Font Access API to Dev Trial
 - Clipboard Access API in Dev Trial
 - WebHID API to Dev Trial
 - Continue work on: Web Codecs, QuicTransport,
- Budgeting time to assist with:
 - Web NFC
 - App Icon Shortcut Menu
 - Run on OS login
 - Screen WakeLock API
 - Camera Pan / Tilt / Zoom
- Recent partner interest in:
 - “Customize Title Bar” a.k.a. Extend Client Area
- [Rayan]: Content Indexing API
 - Adopting the spec by the WICG
 - Public support needed on the Discourse thread: <https://discourse.wicg.io/t/proposal-content-indexing-api/4308>
- Intel
 - Camera PTZ : [PR](#) is now merged. We have a [WIP CL](#) to implement the new permissions and UX changes in a [WIP CL](#) to update getUserMedia.
 - NFC : Awaiting OT feedback. We implemented some [security patches](#) as well as well as customer requests which came to Github and general code improvements. BlockList for YubiKeys - [CLs](#) and [spec PR](#).
 - ALS : Reached out to external early adopters and Intel BUs to comment on concerns and use cases. Sent mail to Reilly and Privacy Team as a precursor to Intent to Ship. Awaiting comments.
 - Devices and Sensors Working Group Charter [update](#). Wakelock is now split into 2 separate specs -Screen WakeLock and System Wakelock.
 - Fold angle [Explainer](#) (with Samsung).
- Microsoft
 - [Title bar customization](#)
 - Would love feedback
 - 2 more people to start coding this week
 - Likely rename explainer to “Extend Client Area” (clarify/avoid confusion)
 - Chrome & Edge have their own security and privacy team - desire to have them overlap as much as possible (recognizing that it won’t be 100%) - John has AI to think a bit about this
 - Data analytics -
 - Gets aggregated on the client
 - Can’t attribute to specific PWA effectively

- UMA & UKM is Google's system - happy to talk about it more
- App icon menu shortcut
 - Working with Victor Costan who have taken over the Chrome part. Working w/ chris mumford specifically.
- Run on OS Login
 - Assigned chris mumford as champion; getting help setting up process.
 - UX review on string; will be updating CL w/ proposed string
- Open discussion
 - Question from François Beaufort to Microsoft - how to work together on web.dev articles?
 - nattedstad@ to schedule meeting with Jason

March 16, 2020 [APAC]

- AI(all@): - If you've taken on bugs for part of a project and haven't updated them recently, consider giving a status update on the bug (indicating expected time frame to work on it, unassign from yourself, etc). Now more than ever, overcommunicate.
- Google - updates (no real deltas since March 2nd update)
 - Native FS - Origin Trial 2 coming soon
 - A few other slips - <https://goo.gle/fugu-api-tracker> is updated
-

March 2nd, 2020 [EMEA]

- Intel - updates
 - **Web NFC**
 - web.dev/nfc is now launched, as should serve the app developers as a single source of truth. We intend to keep this as a living document.
 - We added support for Smart Posters. I guess now in our conferences posters or badges / Kiosks or posters on bus stand, etc we can really use Web NFC :)
 - We fixed a [crash](#) on some Android devices regarding ActivityNotFoundException.
 - We are also working on blocking YubiKeys devices based on historical bytes. Web NFC as of now only allows NDEF messages but YubiKey has a NDEF compatibility mode. NDEF support in YubiKey is only intended to compliment an existing password, and thus add additional security. We have been analysis the situation in [GH issue#543](#)
 - We are working with Reilly to actually enable OT by merging 3 CLs to beta branch today.
- **WakeLock**
- We are going to split Wake Lock to a separate document into 2 separate specs - "screen wake lock" and "system wake lock"
- Update from Google: Looked at OT feedback and we see sufficient value to launch (for screen wake lock)
 - Devrel twitter shout-out:

<https://twitter.com/ChromiumDev/status/1215343114166185985>
- **Media Capture** Pan/Tilt:
- We have our PoCs ready for implementing ImageCapture on MF backend and also adding the Pan/Tilt functionality on DirectShow backend, but the enumerateDevices for getUserMedia on DirectShow backend is broken. We put up a patch but it looks like we need to fix some underlying threading model. I was spinning up a custom thread, but we need to use task scheduler/ thread pool correctly.
- Question: what's the rough OS split. 40 / 60% for Direct Show / media foundation.

- **Ambient Light Sensor?**
 - May need another security review?
 - Reviewed along with **Magnetometer**
 - Chris Palmer (at the time) said could be done w/o permission
 - Plan: reach out to palmer again to see if anything has changed
 -
- Google - updates
 - Alignment of PWA devrel / documentation
 - Jason: it's pretty much me (Jason)
 - Mozilla also reached out
 - Question: What is the consumer friendly way to position these
 - Some interesting research on iconography
 - To follow up with PJ
 - SMS Receiver is now [Web OTP](#) - hooked off navigator.credentials; ship 82 or 83
 - Native FS chugging along; revised permission UI coming soon (still in OT)
 - WebHID Origin Trial delayed to at least 83.
 - Working through Window Placement/Screen Enumeration permission model (in Canary)
 - Font Enumeration/Table Access API getting reworked; should appear in Canary soon
 - Explainers and specs should be getting updated soon
- Microsoft
 - File handler api input
 - Checked in some stuff into codebase for other platforms
 - Protocol handler
 - Launching PWA on protocol
 - Posted standards doc and dev working on design review
 - Customizable title bar
 - Adding another person
 - Getting feedback on public docs
 - Initial explainer likely split into different efforts
 - Looking to standardize the draggable area thing
 - "Identity" for PWAs (demonstrated at PWA Summit)
 - Coming in "vibranium" release of Windows
 - Install path - will create identity for PWA
 - Internal dogfooding
 - Application icon (jumplist)
 - Address most comments in CL
 - Run on os login
 - Address most comments in CL
 - Waiting for follow up comments on merging CLs
 - Question was received about UX on review - question of where to go
 - Answer: ping nattestad@google.com
 - Graceful app closing
 - Decided to discontinue the work on explainer and design because actual scenario is not really helped by dialog. Peter Beverloo suggested background sync etc.
 - getInstalledRelatedApps
 - Thread ongoing - should be unblocked
- Samsung - Laszlo
 - Nothing to share yet
- Doc issues

- Update - everyone can read, chromium should be able to edit, but if you need edit access just ping nattestad@google.com
- Tokyo Fugu Meetup Videos - on [YouTube BlinkOn Channel](#)
- BlinkOn (April 7/8, London) Update
 - Looks more and more likely Coronavirus may impact this
 - If you have not booked travel, likely best to hold off
 - Update to be sent to blink-dev
- Barb sharing excellent exciting data
 - Slash data called out PWAs and that size of market is 7.2 million developers \o/ :D \o/ :D \o/ :D \o/ :D \o/ :D
 - Also mentioned huge growth in enterprise app space
- If you're not on the s

Feb 3rd, 2020

- Lots of new Microsoft people joining - WELCOME! :D
(add contact info above, please)

1	Summary	Who	Crbug	Where			2020		
2	Last updated: January 30, 2020 2:51:21 PM PST				78	79 (stable)	80 (beta)	81 (canary)	82
10	✓ Web Share Target "V2" for WebAPKs master bug	G	885313		←🐛				
11	✓ Enable custom enter key on virtual keyboards	G	634330		←🐛				
12	Contact Picker API	G	860467				🐛		
13	Implement Periodic Background Sync	G	925297				🐛		
14	WakeLock API - Screen Lock	I	257511		←🐛				🐛
15	SMS Receiver API	G	670299		←🐛			🐛	
16	Native File System API	G	853326		←🐛				
17	User Idle Detection API	G	878979		←🐛				

- [Tracker Update](#)
 - ←🐛 or ←🚩 for launches/trials before the first milestone
 - stable/beta/canary milestones are highlighted
 - G M I indicators are added based on the owner's domain (*more pls!*)
 - ✓ in front of name for shipped features
 - Please use **DevTrial-MM** and **OriginTrial-MM** labels in bugs
- Google
 - Web Codecs
 - effort progressing, initial focus on [decode](#), with [encode](#) to follow
 - Initial work "behind a flag" by EOQ1
 - "Good First Fugu Features" unstaffed things on the backlog
 - [Keyboard Map: layoutchange event](#)
 -
- Google - questions for **Microsoft**
 - Heard that project catnip was turned down and article mentioned lack of capabilities (<https://www.windowscentral.com/microsoft-kills-project-catnip-pwa-project-windows-insiders>)
Just curious if there was any more background on what was missing?
 - Started back on old MS PWA platform
 - With the shift they abandoned effort - not as much to do with missing capabilities
 - [aarongu@microsoft] *"looks like it was a PR mistake; PWA limitations were NOT a problem"*
 - Followup on window placement & second screen API
 - Any further thoughts on how we should make sure the window placement & second screen (foldable) APIs fit nicely together?
 - Should one be built on top of the other or entirely separate implementations
 - We are happy to set up further chats on this, though Google's primary eng on this is on leave for a few weeks

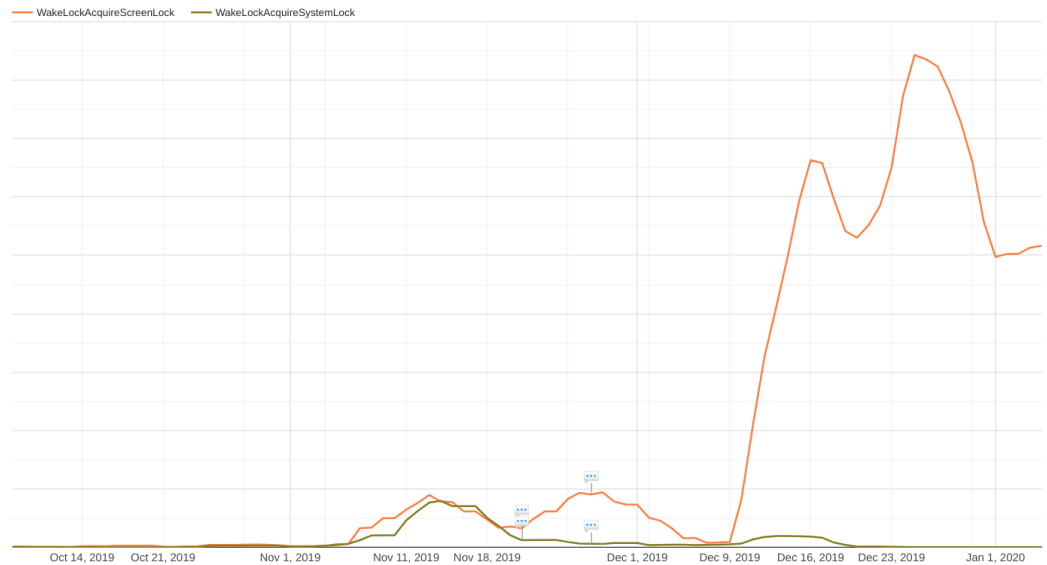
- Microsoft API is windows segment API
 - nattestad@google to reach out to windows segment API people directly
- Sufficient feedback on Edge's [Explainers](#)?
 - Blocked on anything?
 - Question on what best way to share explainers to get eyes:
 - Share internally
 - Share to WICG Discourse
 - Once enough WICG Discourse github repo can move to WICG
 - Intent to prototype once far enough along
 - Engage with customers
 - W3C TAG Review - but be clear that it's more of an FYI since TAG is overloaded
- Google - questions for Intel
 - Status on Ambient Light Sensor?
 - [riju] There was an issue after rounding sensor values to 50 lux, that initial sensors readings were not available, but now the initialization code was fixed and merged upstream.
 - Next steps: OT ?
 - Discuss - permissions needed ? Last discussion, was that with all the mitigations explicit permission was not required.
 - Status on Pan/Tilt/Zoom ?
 - [riju] We want to ship on both Windows and CrOS/ Linux. We are working on the Windows platform code. We put up a CL for the DirectX backend, not merged yet.
 - Media Foundation backend does not have ImageCapture impl, so we are working on that.
 - The API/permission part is also in WIP. We have a draft but not spec language yet, hopefully by Feb, spec will be updated.
 - How is Screen Wake Lock origin trial going?
 - [riju] No ARs for Intel as of now. Google to share OT data (even if masked or less detailed).
 - [Tom Steiner] Spread the [twitter news](#)
 - How is prep for NFC origin trial going?
 - [riju] NFC Origin Trial is ON: [Intent to experiment: Web NFC](#)
Maybe later on it would be great to get some visibility about usage and feedback. Reilly raised an issue on Missing browser-process permission checks for WebNFC .. we are working on that.
 - [Francois] We're also working on the Web NFC blog post that will be shared around Chrome Beta 81.
 - Intel calendaring issue is ongoing. Need to keep sending email announcing it.
 - Intel - interest in dual screen / second screen APIs (segmentation)
 - internally prototyping
 - did extensive UX study; happy to share details from studies
 - WebCodecs
 - Strong interest here too.
 - Where would this be entering the W3C, e.g. media working group?
 - Google owners here on Media team, Riju & Richard are in touch
- Microsoft
 - [Run PWA on startup](#) (Carlos Frias)
 - [Intent to Prototype posted](#) a few weeks ago. :D \o/
 - First prototype CL put up for review last week
 - First UX: checkbox in PWA install dialog
 - Explainer has had feedback activity.

- API: will be plugged into install-time permission prompt; separate explainer for that is WIP, to be published soon
- Question: is a UX review/approval needed during prototype stage?
 - [nattestad] Google review process evolving a bit. Intent to prototype should enqueue privacy team review.
- [App Icon shortcuts menu](#) (Rahul Singh)
 - Getting feedback on explainer, CLs
 - Implementation close to ready, behind a feature flag
 - No blockers, just e.g. questions about implementation details
 - Support from Google on Mac/Linux impl would be appreciated
 - [beverloo] M82 branch point? Because Android is ready...(Feature Freeze is Feb 28, Branch is March 12)
 - Seems feasible on Windows.
 - Open question: do we do OT or not (can be discussed offline)
- [Badging API from Service Worker via Push](#) (Steve Becker)
 - CL landed extending impl to show a badge in combination with a toast.
 - Future explainer can discuss badging without a toast.
 - [beverloo] There are some concerns about using the push code in current form (running JS) without showing the user a toast.
 - [Jungkee] will file a crbug to track this.
- [Graceful App Closing](#) (Austin Orion)
 - Austin, Jungkee working to come up with solutions to handle closing details.
 - Could have an API developers set state. e.g. email client with text to be saved. webapp can set state that there is dirty data. Allow closing app to have limited time, e.g. 500ms, to process. If exceeded, UX to show user a 'force close'.
 - Planning to coordinate with app lifecycle folks.
 - This was fixed w/ Background Sync in [Issue 949486](#), which landed in M75, where we allowed the sync to complete even though the browser was shutting down.
- Best practice for launching explainers to get the most visibility
 - (discussed above)
- Progress on [File handling](#) origin trial?
 - [jsbell@google] project being handed off w/in Google, likely M82 OT. Follow up w/ me offline if interested in contributing/more details.
- [Title Bar Customization](#) explainer now public
 - Any update on webkit-app-region from last month?
 - Did have an internal thread on this ping at least Jason McConnell
 -
- Q: [getInstalledRelatedApps\(\)](#) for Windows update?
 - Windows 10 CL [here](#) Equivalent APIs don't exist on Win7
 - Shoutout to MS people here for great collaboration :D

Jan 6, 2020

- Update on Web APIs:
 - Intel
 - [Web NFC](#)
 - Chrome launch bug: crbug.com/1035048
 - OT still planned for M81, intent to experiment ready to be sent
 - Spec polished
 - Security review approved - privacy review, test, and accessibility reviews ongoing - UX review almost ready
 - TAG review requested, some early feedback was received and addressed.

- All UX permissions CL landed
 - In pipeline (embedded records, support local types, small fixes)
- Update on: Ability to control connected camera pan / tilt / zoom
- Google
 - File System API
 - New OT planned for 81 (w/ persistence, etc); current OT extending
 - Shipping in 80:
 - `getInstalledRelatedApps`
 - Periodic Background Sync
 - Contact Picker
 - Font APIs - aiming for Canary (behind flag) by mid-January
 - Serial ongoing
 - WebHID on course for OT 81 (likely but not certain)
 - WakeLock OT update
 - There are origins using it, strong increase when OT launched.



- Unfortunately can't share the raw feedback
 - Will summarize dev feedback and share high level
- Microsoft
 - Customization of the title bar
 - Internal discussion continues. Concern around using WebKit prefixed draggable region. `-webkit-app-region` drag and no-drag
 - Discussion internal to MS around CSS property
 - Some kind of app draggable? Region
 - Some concern from MS CSS group
 - Question from Google: any thoughts on malicious use case prevention
 - Having a small (min, max, close) and other small drag region
 - Action item for Google: reach out to Chrome Apps team and see if we have learnings from using this `-webkit-app-region`
 - Enabling new identity work for apps - setup and installation changes over the holidays. Working with Greg Thompson on details
 - Identity install (association, launch) handled by proxy app rather than requiring install changes in browser (Edge or Chrome)
 - Application Icon shortcut menu
 - Landed a CL to add shortcuts member to the manifest
 - Working on follow-up CLs to enable the behavior
 - Plan to publish a design doc this week
 - Run on OS login
 - Plan to publish an explainer this week

- Good discussion on declaring desire for Run on Startup in Manifest
 - Thomas to Start a thread with permission team regarding broader manifest related permission plans
- Custom dialog on close
 - Another week to publish an explainer
- Q for MS: scheib@ would like to confirm “Badging via push notifications via SW” still assigned & planned for Q1 (as of Dec 9 notes), have a potentially interested contributor.
 - MS to verify and get back in case they don’t have people who are tackling (current understanding is that work will start (which is great))
- Notifying DevRel of shipping features (jmedley)
 - Request to email jmedly@google.com at feature freeze if there is even a chance that it will ship

2019

Dec 9, 2019

- Welcome new attendees - (please add yourself / introduce yourself)
 - John Kleinschmidt - Electron/MS
 - Laszlo Gombos - Samsung
 - Rayan Kanso - Google
- Increase Slack channel activity/availability?
 - Should we encourage developers to be more available on [#fugu](#)? Is email sufficient?
 - Google is using a lot of internal chat but we could move to Slack
 - Curious if people are eager for more Slacking?
 - It's a good idea but might be hard for organizational reasons.
 - Some folks not already using Slack have a hurdle to using yet-another chat application to keep in touch.
 - email notifications can help draw folks attention as needed. Can also use @channel to notify all.
 - fugu-dev@chromium.org may be better --- everyone using email and simpler solution.
 - Result: Let's keep communication as public as possible. More use of **fugu-dev@** at a minimum is preferred. Tepid response for getting more folks into slack.
- Effective way to manage this calendar invite?
 - Would email be ok?
 - Other mechanisms?
- Updates on new APIs?
 - Intel
 - Web NFC: OT M81
 - TODO(intel): polish explainer + Security Questionnaire
 - Some UX permission CLs are in the pipeline (needs extra tests)
 - Plan to close all the Origin Trial labelled open issues.
 - Contributions from Samsung dev
 - [jsbell] Added milestones to tracking bug
 - Wakelock
 - Wakelock is in OT, would be good to get some usage data (ReillyG holiday)
 - Fixed some inconsistencies in the Page Visibility API (<https://bugs.chromium.org/p/chromium/issues/detail?id=1003741>)
 - Implement `set_permission()` in `testdriver-vendor.js` (with this content_shell also works and we can start using it and moving more tests to WPT.) Details : <https://bugs.chromium.org/p/chromium/issues/detail?id=1030663>
 - Dual Screen
 - Discussion at BlinkOn on using CSS to handle virtual keyboard showing up on either side on dual screen displays
 - MS really would like to see both screens as one viewport as it makes it really easy to adapt existing content
 - Resizing viewport will result in viewport resize on both screens even if keyboard is only shown on one - suggestion was to create a JS API
 - Intel suggested to use CSS `env()` variables or similar and has made a prototype to show that it works
 - <https://kenchris-dual-screen-demos.glitch.me/>
 - <https://github.com/kenchris/dual-screen-demos>
 - <https://www.youtube.com/watch?v=EPo3Do9R03w>
 - Microsoft

- “Identity” (PWA hosting)
 - moving code from Edge into Chromium
 - Docs coming soon
- Web App shortcut menus
 - Assigned the Crbug issue to Rahul Singh
 - Made a CL to add “shortcut” member to web app manifest
 - Had feedback from Ryan and Dominick and working on follow-up patches
- Run on Startup
 - Assigned the Crbug issue to Carlos Frias
 - Privacy / security exploration
 - Explainer coming soon
 - UI explorations, e.g. Checkbox during install/first run
 - Clarification: this is for when device starts (and/or login) for PWA windows to be restored. This is not the background Chrome service. Also not “relaunch PWAs when Chrome starts”
- Custom dialog on closing
 - Created a Crbug and assigned it to Austin Orion
 - Makes sense for installed PWA, not in-browser
- Badging via push notifications via SW
 - Engineer assigned, will start working on it in Q1
- Google
 - M80 Ship
 - Contact Picker API
 - Currently implemented for Android. Looking at exploring at other platforms.
 - We saw good usage for the API.
 - Getting feedback on “Select All”
 - getInstalledRelatedApps (*tentative*)
 - Thank you MS for looking at implementing in Windows :)
 - There are some implications on privacy and security. We are following up to make sure mitigation is in place.
 - Thank you Peter and Rayan for quick response on the feedback! :)
 - Periodic Background Sync
 - There are some objections on this API. We are addressing through mitigation and will ship in M80.
 - Compression codecs
 - [CompressionStream](#) (gzip and deflate)
 - Zoom support in the Photo Picker
 - Support in video selection coming up in M81.
 - M80 OT
 - Content Index API
 - See crbug.com/973844
 - Contact Picker Address & Photo API
 - M80 DevTrial
 - ChromeOS: Allow webpages to consume alt+click
 - Wandering through launch process, missing 80?
 - Font Enumeration API & Font Table Access API
 - On hold
 - ~~Al(jsbell): Update milestones in bugs~~
 - Raw Clipboard Access API
 - Should be out soon, targeting M81.

- Note TAG discussion; will improve docs around security mitigations, incorporate feedback into API e.g. including pickling as option
- Window Placement API
 - Should be in canary.
- Web Shortcuts - Desktop implementation? [Rayan]
 - Launch in M81 for Android
 - MS to discuss timelines
 - [crbug](#)
- Electron is here \o/ - what should we be working more closely on together?
 - Identified desire at last summit to collab :D \o/
 - Making sure we don't do duplicate work
 - If there are incoming requests that could be suited for Fugu
 - Not totally sure what collaboration looks like yet but Electron wants to be involved :D
 - There is an [Electron channel on Chromium slack](#)
 - When questions pop up, please feel free to discuss topics there!
 -
- Samsung is here \o/ - what should we be working more closely on together?
 - Looking at few directions
 - Primarily mobile and Android
 - Excited about dual screen API :D
 - Web Shortcut interest
 -
- Opens / Questions
 - Status of User Idle Detection
 - Available "behind a flag"
 - Lead is OOO for a bit, plan is to launch (ship or OT?) in Q1
 - Outstanding privacy issue needs solving
 - Partners identified.
- ~~APAC friendly meeting on Dec 23~~ - cancelling!
-

Chat at BlinkOn Nov 14th

- bit.ly/fugu-sync
- Microsoft started working on some items
 - Some requests from partners
 - Run on startup
 - Third party PWA native apps
 - Running apps without running browser
 - Build into web app manifest
 - Interest from Duo and Chat
 - Application Icon shortcut menu
 - Prototype working
 - Updates in 2-3 weeks
 - Spec change already landed in app manifest
 - Providing customizable dialog scenarios on window close
 - Customize based on closing context
 - Able to do some async operation based on user choice
 - Pull in avi@ as someone who will have good input on modal dialog
 - Native file System
 - MS happy to take on this work
 - File change event
 - File meta data

- Also happy to help on any Windows specific things
- Customization of title draft
- File handling but protocol based
 - Mailto: etc...
 - “We should talk more”
- Theme for next year
 - Enterprise app management
 - Settings across the browser and windows
 - How can we reconcile or sync these
 - Bring more windows like features to Chromium
 - Hosts
- Google
 - Moving some of the DPWA work to MTV / SF
 - Will engage on items we won’t be able to staff
 - Still motivated by Chrome OS / Electron / Chrome apps API migration
- Intel
 - Wanting to make partners more public
 - Sensors - almost done
 - NFC - almost done
 - Next year
 - Athena
 - Ultrabooks
 - Some specific features
 - Dual screen support
 - There are teams working at native level and we’d like to get that working on the web as well
 - Media
 - Also just keeping desktop relevant - web is huge
- Collaboration process
 - What intent to ship / implement looks like cross company
 - How can we still indicate Microsoft’s support for APIs
 - Mozilla has this “standards positions” where they state their level of support
 - Making partners more public
 - Agreed that we should ask partner whether they feel comfortable being shared
 - Should ChromeStatus surface the implementation status across other chromium based browsers?
- Electron - how MS sees it fit in
 - Some internal users they’ve talked to
 - Some APIs that just aren’t there and likely won’t be
- Specific APIs (currently unstaffed for 2020)
 - Some things Google cares about might not be able to staff
 - PWA windows restored on Chrome startup (matching CrOS)
 - There is a feature in Windows that could be used
 - MSI installs (Windows)
 - Badging from SW Push
 - MS interested :D
 - Web Shortcuts
 - MS working on already
 - Service Worker Launch Events
 - Memory Pressure Events
 - V8 tackling
-

- [nattestad] Getting public support for getInstalledRelatedApps
-

Oct 28, 2019 (APAC Friendly)

- [jsbell] Printing?
 - Google's Docs/Slides/Sheets has needs around native-calibre printing. Is Edge (etc) looking into any improvements? Might need a "task force" here?
- [dxie] Upcoming APIs
 - M80
 - WebSerial to OT
 - M81
 - Window Placement / Screen Enumeration to OT (?)
 - discussion in Second Screen WG
 - No milestones
 - [WebCodecs](#)
 - [WebTransport](#)
 - User Idle Detection ([878979](#))
- [jsbell] Question for Microsoft: Status of "control over title bar for PWAs" ? ([937121](#))
 - Lots of interest from Google folks re: security implications, OS consistency
 - JJ: Halfway through explainer, have internal security folks reviewing. Internal partner providing use cases, reviewing explainer.
- [jsbell] Status updates wanted for:
 - PWA should be able to be uninstalled the same way a "real app" can ([957043](#))
 - JJ: with identity work that's gone on, this is ready; with internal Edge builds, can right-click in start menu and uninstall or go to add/remove programs and uninstall. Just one click, no other dialogs.
 - Discussion: sharing state, and should state be cleared on uninstall
 - JJ: Today, state is still shared
 - Namrata: Thinking of clearing via three-dot menu, as option, when removing.
 - JJ: Similar thinking, haven't implemented yet. Not as the default, since web site can still be browsed to.
 - AI for JJ: Record video of demo, e.g. to align behavior/UX
 - App Icon Shortcut menu for PWAs ([955497](#)) - *can we mark as "Started" ?*
 - JJ: talked to raymes; have elementary version showing browsing history for that site; demonstrates jumplist specific to PWA's app ID, but nothing in manifest to customize it. Next person coming on board will pursue this. Hopefully this quarter, might slip into next.
 - .. Registered File Handlers ([829689](#)) - *OT in 80 or ... ?*

Oct 14, 2019 (EMEA Friendly)

- Mentioning the collaboration of Fugu at the Chrome Dev Summit
 - Can Chrome have permission to mention collaboration?
 - Yes from Intel :D :D :D :D :D :D
 - Yes from Microsoft :D :D :D :D :D :D
 - Will send slides and speaker notes specifically
- More information about Windows "hosts" system
 - Would this have PWAs show up in the task management screen as well?
 - Will show up in background process - can select and kill
 - Performance will not really be accurate

- Local storage and cache usage
- Any more information on rollout details?
 - Will first show up in windows insider build : next few weeks
- Any notion of when this is being announced?
 - Blog post to announce in the next week or so
- Some implications for Chrome setup
 - Microsoft happy to help
- BlinkOn discussion
 - AI nattedad: send fugu-dev@chromium.org on what we are doing for BlinkOn
- In flight APIs
 - (the ones we skipped last time)
 - Web NFC ([520391](#))
 - Added support for External Records
 - Next steps: working with Namrata with UX/Privacy. AI: nattedad to send out proposal as soon as we get it.
 - Camera P/T/Z ([934063](#))
 - Adding some text in the Spec to let camera know if it's possible
 - Only work on ChromeOS for now. Should work on Windows. No support for Android since there is no native API.
 - Will give estimate once privacy/ux is done.
 - AI nattedad: get Riju the mockups
 - Ambient Light Sensor ([642731](#))
 - CL has landed
 - Likely ready for OT next milestone
 - May not need OT
 - Wake Lock
 - Came up with new API
 - Working on implementation stuff
 - App Icon Shortcut menu for PWAs ([955497](#))
 - We have internal builds that have recent history (last 10) show up in the shortcut menu on desktop. At TPAC, the explainer got tacit approval. Planning on working on I2I now.
 - Q: Is there value in sharing the recent history code or wait for proper shortcut implementation?
 - Explainer started for Complete control of the title bar ([937121](#))
 - At MS: An internal draft is circulating for comment and review before making this public. Idea here is to have a caption control overlay supplied by the browser process but give the web content full real estate.

September 29, APAC-friendly

- Takeaways from Fugu Meetup and/or TPAC
 - [jsbell] Summarize Fugu mtg feedback
 - Thank you everyone for coming to Fugu meetup
 - More details in brainstorming sessions
 - :)
 - with # of attendees
 - Making connections
 - TPAC
 - tsteiner@ presented the state of union of fugu. Generally +ve. TAG happy with us following process.
 - ~-ve: shipping a lot of APIs
 - Did a lot of demos. Able to quickly convert native apps into PWA.

- Mozilla asks to slow down; Apple concerned with privacy.
 - Some privacy concerns on clipboard and font access. Working with internal teams to address those concerns.
- [jsbell] Working through getting Fugu mtg videos edited/public; no ETA
- APIs in Flight
 - *(ones with recent updates to dates or otherwise notable)*
 - Raw clipboard ([897289](#))
 - Dev Trial in 79, OT aiming for 80
 - Images already shipped; this is about raw access for interop with native apps
 - Talked about at TPAC w/ Editing TF; Apple and Mozilla raised security concerns; still brainstorming mitigations/API shape
 - Screen enumeration ([994889](#)) / Window Placement ([897300](#))
 - Talked about at TPAC w/ Second Screen group; generally positive on use cases, need to refine permission model
 - Dev Trial in 79, OT aiming for 80
 - Font Enumeration ([535764](#)) / Font Table Access ([982054](#))
 - Talked about at TPAC w/ CSS WG; skepticism from some about enumeration (fingerprinting? confusing permissions?), tables (forward compat)
 - Dev Trial in 79, OT aiming for 80
 - Ability for websites to be registered file handlers ([829689](#))
 - DevTrial in 78. OT aiming for 80.
 - App Icon Shortcut menu for PWAs ([955497](#))
 - AI: John to update status.
 - Raymes and team and can help with reviews.
 - Web NFC ([520391](#))
 - Quite a few folks contacted us on Github and LinkedIn for webNFC.
 - Security/Permissions for webNFC:
 -
 - Current situation is we do not have to ask for prompt, but we need to show notification and usage indicators. For example in chrome flags enable quiet notification flag, go to permission.site and click notifications, it will show some notification and go away, but there will be a usage indicator beside the clock. From chrome://flags, choose the enable quieter notifications permissions prompt -> Enabled heads-up notification and by default for NFC it will be Allowed, with options to Block / Manage
 - Exact UI mockups and strings will be finalized by Namrata.
 - For the scope of Origin Trial for webNFC with ndef messages this is a solution we all can live with.
 - If we later, decide to add support for cards(transit passes, hotel doors) which follow another protocol, we will revisit the privacy and security situation.
 - Intel wrote a test app for webNFC
<https://01org.github.io/web-test-suite/chromium/demos/web-nfc/sample.html>
 - Camera P/T/Z ([934063](#))
 - Intel is working on engineering work. Reilly assisting.
 - Working on refining permission model.
 - Ambient Light Sensor ([642731](#))
 - Blocked on Intel implementation work.
 - Target Q4.
- API tracker updated
 - now shows “behind a flag”
 - <https://goo.gle/fugu-api-tracker>
- Discussion of “available behind a flag”
 - most new APIs are available prior to Origin Trial for developers to experiment with locally

- either via a dedicated flag or “--enable-experimental-web-platform-features”
- Edge will have something similar (but not OTs, yet)
- For some APIs (e.g. Serial, HID) likely to be a better source of feedback than OTs
- May promote some of these via DevRel blog posts; specifics TBD to not overwhelm the blog posts

August 19, EMEA-friendly

- Logistics for Fugu Tokyo Sync
 - Agenda: <http://bit.ly/fugu-tok-2019>
 - Edit directly or email jsbell@google.com with feedback/additions/etc
- WakeLock - will look for OT in M78.
 - Riju: Couple of spec issues that need to be resolved, marked TPAC F2F
 - Think we can start OT, will send email this week
 - Alex: can take advantage of TAG + Fugu meetings being co-located in TOK
- WebNFC - partners identified?
 - Riju: Added WPTs, removed old code; great feedback from devrel; use of AbortController etc. Will move OT by at least one milestone due to amount of spec change
 - Francois Beaufort is writing an article for developers.google.com
 - Identifying partners - any Google internal (?); get attention on Twitter; Intel had identified some previously (common pattern of partners going dark)
 - Value of building end-to-end demos, interactions w/ physical environment (e.g. parking meters); Contact cards?
- API Tracker <https://goo.gle/fugu-api-tracker>
 - Expect visualization of “usable behind a flag” milestones soon
- Google updates
 - New Explainers (work being prototyped now)
 - [Font Enumeration](#)
 - [Font Table Access](#)
 - [Screen Enumeration](#)
 - [Window Placement](#)
 - Work kicking off around [Tabbed App Mode](#) for DPWAs
 - Looking for partners for [User Idle Detection](#) to give early feedback
- Intel updates
 - [Riju] Sensors: to mitigate privacy/security concerns for ambient light (ALS); changed WPTs; 78 still on track
 - Question - Tokyo Synch from Barbara/Intel
 - **PWAs on Desktop - Progress, Gaps, and Plans - Who / What? How can we help?**
 - E.g. discussion of performance vs. new features
 - E.g. learnings from shipping MVPs and iterating over multiple years
 - E.g. how we structure gathering feedback from developers
- Microsoft updates
 - File handler registration for Win7 assistance
 - John Jansen: Think we have solution for Win10 but not downlevel
 - Have been making progress working w/ Google
 - Back button CSS media query (working with Jay Harris, CSSWG)
 - E.g. Hide UI in app if shown in browser
 - Proposal up for discussion in WG
- *Anyone else?*
- *Other agenda items?*

August 5 - APAC-friendly

- API Tracker - <https://goo.gle/fugu-api-tracker>
 - Remember to update Target-XX (origin trial), M-XX (stable) predictions
 - We might change the nomenclature for dev trials. Let's use best targeted OT milestones for now.
- Google updates
 - Shipping for M77: (hopefully)
 - Barcode Detection (I2S thread on blink-dev)
 - OT targetted for M77 APIs:
 - Contact Picker API (I2E thread on blink-dev)
 - getInstalledRelatedApps (I2ExtendOT thread on blink-dev - M77-M79)
 - Periodic Background Sync (I2E thread on blink-dev)
 - Emphasize local experimenting in canary w/ flag
 - SMS Receiver, Web Serial, Web HID, Native Filesystem
 - Storage:
 - Chrome is exploring increasing storage access amount but want to also provide better management UI. Part of our hope is that for PWAs, they can get well integrated into app management screens on an OS level as well. Exploring this somewhat for CrOS. Wondering if Microsoft is interested in a similar idea for Windows.
 - Share fugu blog post
 - Follow up with namratakannan@chromium.org on UX feedback.
 - Adding [WICG Discourse](#) will help inform developers early for feedback.
 - Add links to discourse threads to summary in crbug (e.g. see "Public Discussion Thread" link in [this bug](#))
- Intel: [Intel Update](#)
 - Sensors: M78
 - Media capture: Adding user metrics
 - NFC:
 - Non web facing changes/bug fixes are landing now
 - Lots of spec fixes, but nothing blocking Origin Trial
 - Talk about how to get developer excitement around the feature
 - Wakelock: Got positive feedback from the G Slides team
- Microsoft:
 - Welcome Lindsay to the team
 - Native File System API? Permissions implemented? O.T. on track?
 - Service Worker launch event - looks like file registration now isn't dependent on this- correct?
 - Registered file handlers on Windows systems. Starting to help with this. App model changes would help enable features like this
 - Full control of the title bar (937121). Early stages of thinking about this problem for Windows.

July 22nd

- M77 is going to be a big one!
 - Planning to do articles for each API in beta blog post
 - Planning Chromium blog post talking about process and Intel + Microsoft collaboration
 - [jsbell] Many of the APIs we were hoping would be out as Origin Trials won't quite make it in 77; most will be available w/ flags in 77 Canaries ("Dev Trial")
 - Question: Making sure that feedback from the OT can be shared across community
 - Desire from Chrome to share what is possible
 - Some questions about
- Dashboard is now on chromium: <https://bit.ly/fugu-api-tracker>

- AI: Document/explore linking chromestatus and tracker
- Discussion of Fugu Summit & agenda
 - Agenda: <http://bit.ly/fugu-tok-2019>
- Intel Updates: <http://bit.ly/FuguIntel>
 - [jsbell] Screen Wake Lock date?
 - [riju] M78 (a little more testing is needed)
 - Next steps:
 - UX for NFC
 - UX contact: namratakannan@google
 - Permissions contact: engedy@google (balazs)
 - Permission question for pan/tilt - waiting on Chrome permissions team
- Next meeting logistic
 - Monday, August 5th at 4:30 pm (PST)
 - APAC meeting - Daniel Xie is the contact

- WakeLock likely ready for demo
- Microsoft
 - Settings within windows so that PWAs appear in Windows OS level like other apps
 - aarongu@ working w/ standards folks to get “jump list” entries added to manifest spec
 - aarongu@ also sharing some stuff on non-permanent permissions
 - Importance of permissions API as a needed substrate
- Updates from team & needed unblocks
 - Maybe some overview of OT feedback & partner input
- Logics
 - Struggle on getting Calendar notifications - ending

June 24th, 2019 (EMEA-friendly)

- FYI FOR EVERYONE:
 - First two weeks of July are “no meetings week” so expect some potential delays - lots of vacation for people
 - Next APAC sync is cancelled due to Chrome no meetings week
- Let's bring demos from different groups :D
 - Anyone welcome to bring some in for next time!
 - Al Thomas: send out any demo code
 - Let's put demo showing on the agenda for the fugu summit!

Dates for [Fugu summit](#)

- link here in notes:

<https://docs.google.com/document/d/1vTNAHK6kLgV74flobDahlTkZ5HZLzd1ciUAuCc13Jp8/edit#>
- Signup link: <https://forms.gle/b6gssntkoFKPt2Ee6>

Microsoft gave a demo of UWP vs. PWA experience, talk to what might be interesting to bring over?

- Had a great discussion a few days ago about API disparity between PWA & UWP - Thank you Microsoft!
 - Slides:

https://chromium.slack.com/files/UGJTVQWF4/FKRES4MU0/uwp_to_web.pptx
- Follow up on potential AIs:
 - Discussed [link handling](#)
 - Looks like some good discussion actively happening on bug - yay!
 - System Media transport controls
 - Heard MS is actively landing this - any help needed from Google side?
 - Also pushed up to Chromium proper !!!
 - Picture in picture
 - Any interest in being connected with Chrome media team on this?
 - Scott Low - Marion to connect Thomas with email, will follow up, CC richard.winterton@intel.com
 - Connection / alignment with the W3C Picture in Picture API spec?

<https://wicg.github.io/picture-in-picture/>
 - Discussion on time limit permission
 - Who on the Microsoft side should we connect to people on our side?
 - Aaron and Ali from MS - enthusiastic hand waving
 - Any other followup I forgot?
 - Pre-install
 - Android
 - Al Thomas: Follow up with PJ on Chrome
 - Desktop OS
 - Bundling them together

- Point about being sure to cover first run experience

We are looking for broad input from the community about what capabilities they need

- Potentially crazy idea: Should we use Microsoft's user voice tool?
 - Looks like this is a third party that Edge doesn't have a contract with
- Other sources we could be looking to gather this feedback from the developer community?
 - <https://www.uservoice.com/>
 - Aaron collaborating with some Chrome and Mozilla folk
 - WebWeWant.FYI <https://webwewant.fyi/>
 - Chris Wilson POC on Chrome side
- Making sure Google is aware of incoming Edge requests
 - Al John Jansen to share some OneNote things :D
- Question - Insights from usages? Mature like media or emerging like AI/ML?
 - Pretty open right now
 - Making sure to handle negative feedback, including what people don't want. No flame wars!

Richard Winterton

- Serialization of wasm (storing bytecode + machine code; eviction and re-fetching)
 - Ways to better share the content
 - Privacy issues - timing attack can reveal cross-origin usage
 - Conversation to be followed up, add name here if interested:
 - Al Thomas: start thread

Updates from each team on progress / what needs unblocking

- Intel:
 - WebNFC:
 - implementation going well - Reilly being super responsive
 - Github document <http://w3c.github.io/web-nfc/security-privacy.html>
 - Starting conversation with security AI: Riju
 - Timeline: implementation done by end of july (optimistic)
 - One month buffer time planned for UX
 - Hopefully OT starting in september + 1 milestone = 78 :D
 - [jsbell] Added Target-78 / M-81 to crbug
 - Pan/tilt:
 - Balazs gave some questions - decisions needed from Balazs
 - Al Thomas: go poke Balazs , Riju poked Balasz today :)
 - Screen Wake Lock:
 - Screen lock UI easy
 - System lock always denied
 - Still looking for System Wake Lock partners
 - Timeline : target M77, may spill to M78.
 - Device orientation API:
 - Intent to ship sent this week
 - Code under review, waiting Balazs
 - Al Thomas: Go poke Balazs
 - CL :
 - <https://chromium-review.googlesource.com/c/chromium/src/+1582501>
 - <https://chromium-review.googlesource.com/c/chromium/src/+1583809>
 - Demos incoming :D \o/
- Microsoft:
 - Stall on getting uninstalled, there was an OOO and it's moving \o/
 - Question on non-persistent permissions

Detailed Intel status:

■ Wake Lock

- Permission work is basically done (screen locks are always granted regardless of user activation, system locks are always denied, no UI involved)
- Pending CLs
<https://chromium-review.googlesource.com/c/chromium/src/+1652940> and <https://chromium-review.googlesource.com/c/chromium/src/+1651821> (minor tweaks remaining)
- Filed <https://github.com/w3c/wake-lock/issues/222> while implementing permissions in Blink
- Pending permissions spec work in <https://github.com/w3c/wake-lock/issues/184> in <https://github.com/w3c/permissions/issues/192> but marcos never responded
- Support for dedicated workers starts soon, I'd just like to finish landing all my pending permissions work first

■ *Device Orientation requestPermission() API

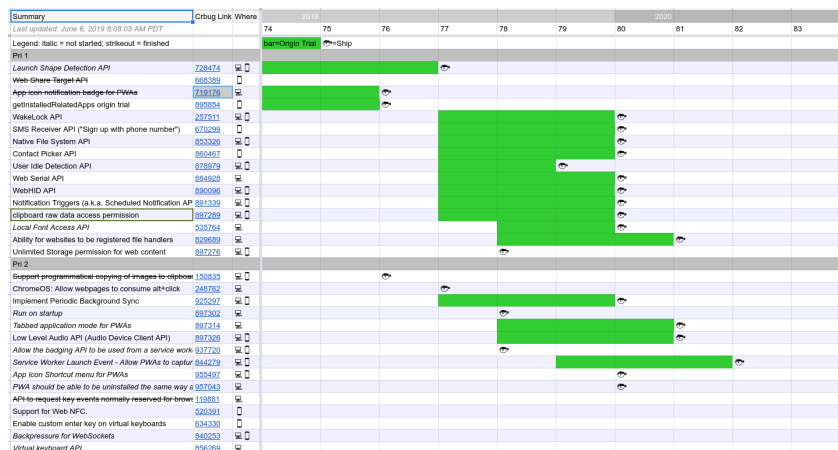
(<https://bugs.chromium.org/p/chromium/issues/detail?id=947112>)

- Will send an intent to implement and ship to blink-dev this week
- Landing depends on browser UI changes, the ball is on Google's court (<https://bugs.chromium.org/p/chromium/issues/detail?id=952824>)
- CLs: <https://chromium-review.googlesource.com/c/chromium/src/+1582501> and <https://chromium-review.googlesource.com/c/chromium/src/+1583809>

Overall, how is everyone doing? Are people happy with the time of these meetings and the ongoing collaboration? Any pain points we should address?

June 10th, 2019

- [Fugu F2F - Tokyo Sep 11-13](#)
 - signup/survey sent to fugu-dev@chromium.org
 - 25 responses so far, 4 non-GOOG. Room has ~70 capacity.
- Google quick updates
 - Internal tracking snapshot (just data from crbug)



- Uses Target-XXX for OT milestone, M-XXX for ship milestone; guestimates are great, helps UX/privacy/etc prioritize attention
- AI for all: estimated milestones
- Updates from each company
 - Google
 - Q3: Kicking off work on [Local Font Access](#)
 - Alex wrote explainer and ready for implementation
 - Q3: Kicking off work on [Screen Enumeration / Window Placement](#)

- Ping jsbell@ or fugu-dev@
- Memory Pressure API discussions at WebPerf F2F this week
 - No engineer identified
 - Discussion in progress
- Demo of FileSystem API
- Intel
 - AI: add estimation for WebNFC
- Microsoft
 - [Uninstall PWA](#) on Windows contribution
 - [Back button](#) on standalone contribution
 - In discussion w/ SYD team; have feedback about always showing back (rather than showing contextually), revisiting.
 - Initial [JumpList](#) suggestion - recently visited in jump list?
 - Should this be part of chromium?
 - Registering a PWA as [File Handler](#) on Windows (dependent on Launch API work)
 - ongoing discussion with windows platform team.
 - Feedback for both Launch API and Native File System docs
- Alex Russell: Should we set up a uservice to get more input? AI: Jason to further investigate this.
- Do you need a @chromium.org account to submit CLs? No.
- John Jansen will be in TPAC but not Fugu meetup.

Next sync - May 28th, 2019

- Google quick updates
 - Making more things public
 - Pre-TPAC Fugu meeting
 - Also a TAG meeting this week (10th, 11th, and 12th)
 - Suggestion to actually meet up with TAG group for overall get together
- Intel
 - Will be directing efforts on EMEA side - shifting things
 - Potential of doing only an EMEA friendly time
- Microsoft
 - Looking at File system access
 - Currently going through analysis
 - File extension handling
- Updates from each company on progress
 - Current in progress collaboration
 - File system access
 - Ongoing - meetings planned
 - System wake lock
 - Decision to split wake and system lock - should be easy enough
 - Some up-in-the-air questions about feature policy
 - Looks of discussion and things to consider but nothing stable
 - [Wake Lock issue](#)
 - [Feature Policy discussion](#) (covers splitting Feature Policy into 3 pieces)
 - Implementation going forward
 - Work on DeviceOrientation's requestPermission() API
 - Kick off a thread with nattestad@google.com
 - Looking at how wake lock works on windows, special wake lock for geolocation
 - <https://github.com/w3c/wake-lock/issues/170>

- Firefox had a geofencing specific wake lock
- Media capture
 - Ability to change focal length, depth
 - Users should be able to test on windows
 - Try out using runtime flag
(--disable-features=MediaFoundationVideoCapture)
 - Pan, tilt, zoom
 - Reviewed by TAG
 - Balazs connected to security team
 - Waiting for a decision
 - Working to enable WebGL extensions
- Web NFC
 - Almost finished with spec update
 - Updated design doc and worked with Reilly, CLs started to land
 - Good time to start privacy conversations, starter kit
<https://w3c.github.io/web-nfc/security-privacy.html>
- Sensors
 - Josh Bell put bug for [proximity sensor](#)
 - Also: ambient light sensor ?
 - Need customers & compelling use cases
 - Potential use case: reading boarding pass
- Any new APIs people would like to work on
 - Any renewed interest in any specific APIs?
- Opinions on which [P2s](#) we should start tackling next
 - Geofencing
 - Al Thomas: Connect with maps Go to see what they'd need for navigation
 - Memory Pressure
 - <https://bugs.chromium.org/p/chromium/issues/detail?id=937125>
 - Compression codecs?
 - Alex: idea is worklet-style pluggable codecs for compression and container formats
 - Riju: hardware codecs are 100x faster, but fingerprinting vector
- Moving this sync to be bi-weekly

April 29th

Attendees:

Thomas Nattestad (nattestad@google.com)
 aarongu@microsoft.com
 Alex Russell (slightlyoff@google.com)
 Barbara Hochgesang (barbara.hochgesang@intel.com)
 Daniel Xie (dxie@google.com)
 Dominick Ng (dominickn@google.com)
 doug.sommer@intel.com
john.jansen@microsoft.com
 Jason McConnell (jasonmcc@microsoft.com)
 Joshua Bell (jsbell@google.com)
 Raymes Khoury (raymes@google.com)
 Sam Goto (goto@google.com)

- Structure of this meeting going forward
 - Everything open - collaboration, notes, communication channels
 - [fugu-dev@chromium](#)

- Q&A
- Google:
 - Mentions of collaboration at Google I/O
 - This (internal) slide shows Intel, Microsoft, & Google logos when describing the Fugu process- are each respective company okay with this? It's not that important to us to show and understand completely if we can't, just wanted to check
 - Confirmed by Doug and John!
 - APIs that is coming in Q2. Add specific ones for discussion.
 - Slides from BlinkOn:
 - https://docs.google.com/presentation/d/1gasONgLCAt1cmOp1B6zdqjHuvpHeev6RBbLqHe7alKk/edit#slide=id.g56285c633e_6_0
 - Status on:
 - Clipboard
 - AI Josh: email fugu-dev [done]
 - File System
 - Some "available" APIs:
 - [splash screen API](#)
 - [Icon menus](#) (proposed by Microsoft)
 - AI Alex: follow up with Aaron & company
 - Everyone: drop in and bug alex to include you :D
 - [Raw Clipboard Access](#) (in progress, but parallelizing possible?)
 - Adding any data to clipboard
 - Reading from clipboard
 - [Detect available memory](#) (or [this one](#))
 - [Window placement / Screen enumeration](#)
- Intel:
 - [Update and slides from Barb](#)
 - WebNFC - about changing the implementation to comply with spec - should have update - things going smoothly
 - Service worker
 - Onion soup -
 - Code Health - 2 patches this month
 - Show SW in chromium task manager - implementation done
 - Development is going smoothly!
 - AI thomas: send thread with Alex and Richard Winterton on wasm cache thing
 - Wake Lock
 - Progress going well - going from spec to implementation
 - File system
 - To be followed
- MS:
 - Interested in File system access
 - File handling
 - Jump lists / shortcuts
 - Back button navigation
 - Have added back button to PWAs
 - Considering media query for indicating back button
 - Chrome team looking at display_mode minimal_ui in manifest as indicator
 - Two APIs of interest
 - [Launch external apps](#)
 - Drop link here Raymes: Explainer in progress
 - [Allow installed PWAs to handle links](#)
 - Microsoft letting users install all sites

- Hoping to converge websites and desktop apps together more
- Omnibox will still only show up for PWAs
- Thinking of hiding the install button more for non-PWAs
- Web Push
 - Gcm sender id is causing some compatibility issues
 - Hope to work together to deprecate old approach
 - Need to check if few old big sender or lots
 - AI Alex: gather some data (proxying Beverloo)
- File system update
 - Have been going through to break up tasks - will be showing up in bug tracker
 - WPT work
 - Looking for some spec sawy folk
 - Spec work - expanding on explainer to algorithms
 - Request to check with any internal partners who might be interested
 - Eng work:
 - Filing tasks (starter bugs) - look in crbug
 - Harden security by removing filesystem URL parsing/serialization
 - Implementing transferability of handles
 - Serialization for Indexed DB
 - Internal partners reviewing APIs
 - Follow up for storage/filesystem centric mtgs: fugu-dev@chromium
 - AI Josh: to send thread to [fugu-dev](mailto:fugu-dev@chromium) [done]
 - File Type Handling
 - Request for feedback on explainer
 - AI Raymes to send thread to fugu-dev@chromium
 -
-

Sync Apr 1, 2019 - EMEA-friendly

New attendee intros:

- Riju - working on chrome code, generic sensors, webnfc, media capture, work with miguel, reilly, and webrtc folks - media capture update
- Raphael - generic sensor update
- Ilkka - managing chrome/web standards team; capabilities, optimizations,

Fugu update from Intel

Serial API - updates handed to Reilly

Service Worker - going smoothly; waiting for UI related features to come back; team in PRC working on... ?

- Launch Event ???

Web NFC

- Spec updates are in place % Kenneth (pending changes around permissions)
- Riju and Donna working on plan, patches coming soon
- ReillyG will be reviewing

Native Filesystem

- Looking for angle on how to dive in
- Identifying from bottom to top - smaller issues
- Landed patch
- Need to understand security/privacy model

Wake Lock

- Got intensive spec update; should be more stable
- Permissions should be "done" from spec side
- Got feedback from many; which led to WebNFC changes
- Updating spec to better explain what Wake Lock
- Not stable enough to move to Origin Trial
- Kenneth reached out to Microsoft; had interest from Starbucks

Generic Sensors

- Specs since 2014, code since 2016, Raphael working on it in 2018
- M67 - motion sensors enabled
- environment sensors (magnetometer, ...) behind a flag
- working with Reilly, Balazs (privacy)
- reworks, refactors, getting CrOS support exposed (e.g. Ash code handles hw variations already)
- TPAC last year: sensors + webdriver; everything was originally blink layout tests; webdriver/mock instructions - spec + some work pending
- M75 - got sensors-in-use omnibox indicator in
- Spec PR merged % Apple re: permissions (counter tracking)
- Plans:
- Pending work to mitigate fingerprintability - asked balazs for design doc
- Enable other sensors by default - ambient light sensors, magnetometer, ... but privacy concerns re: fingerprinting, so see Balazs work

Image Capture API

- Request about pan and tilt (% Riju)
 - Landed focus distance etc to platform
 - Thomas reported issue w/ pan/tilt/zoom desire; Reilly passed it on
 - CL up for review; LGTM from reviewers
 - Need LGTMs from API OWNERS
 - Want TAG review; no call for wide review on spec
 - Asked for TAG review % Alex
 - Tangent: Media WG is being chartered within W3C; is capture included?
 - Follow up offline: deprecating private chrome extension (api?)
- Real-sense (depth) camera
 - initially join effort between device & sensors and webrtc; moved entirely to webrtc
 - Riju is taking over as editor
 - Updating w3c spec; calibration moving to app space
 - WebGL spec - adding new format for depth camera; working w/ kbr
 - avoid float/int conversion, 1.2ms to 0.2ms
 - Planning to add infrared stream in addition to depth stream
 - Have a list of demos working on Chrome (e.g. using tensorflow.js)

Fugu presentation at BlinkOn

- Intel will provide a POC to review

Four areas:

- Existing storage APIs
 - Native filesystem / writable files
 - Optane memory? More likely of interest to existing storage and low-level storage...
 - File handlers
 - Low level storage
-
- Kenneth: host bindings and WASI vs. Native FS ?

Other:

- Intel planning to give update on Alder Lake processor to CrOS team

Sync March 4

- Alternating meetings
 - AI Thomas send some times
- Potential capabilities for collaboration
 - [Connected camera controls](#)
 - [Proximity sensor](#)
- Updates
 - WakeLock
 - WebNFC
- New potential work items
 - Lifecycle APIs for service workers - AI for Alex to talk to Shubhi
 - Optane integration - AI for Intel to let us know some more background
 - [Camera controls](#) bug -
- Intel V8 team deep-ish dive (time permitting)

Feb 7th

- AI Chrome: setup regular sync
 - Monthly period
 - Standing agenda of ongoing work and updates
 - Standing agenda on what new capabilities Chrome would like help with
 - Before-hand set agenda on which deep dives we'd be interested in picking
- AI Chrome & Intel: circle around internally asking about deep dive topics
- AI Chrome: Invite to chromium slack channel
- AI Chrome: talk to wasm leads about colab, consider inviting to future iterations
- What are the specific gaps - what might make sense for intel to work on
- AI Intel: let chrome know the CrOS partners