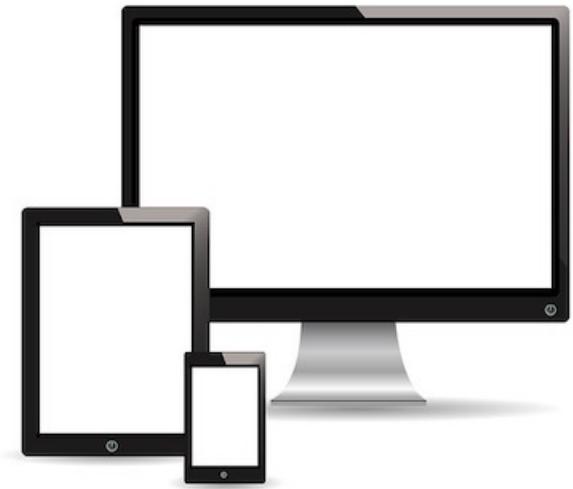


# Permissions UX in Multi-Screen Experiences

W3C Workshop on Permissions

5 Dec 2022

Anssi Kostiainen



# Multi-Screen Experiences? 🎭

[Deskreen demo](#)

[Sidecar demo](#)

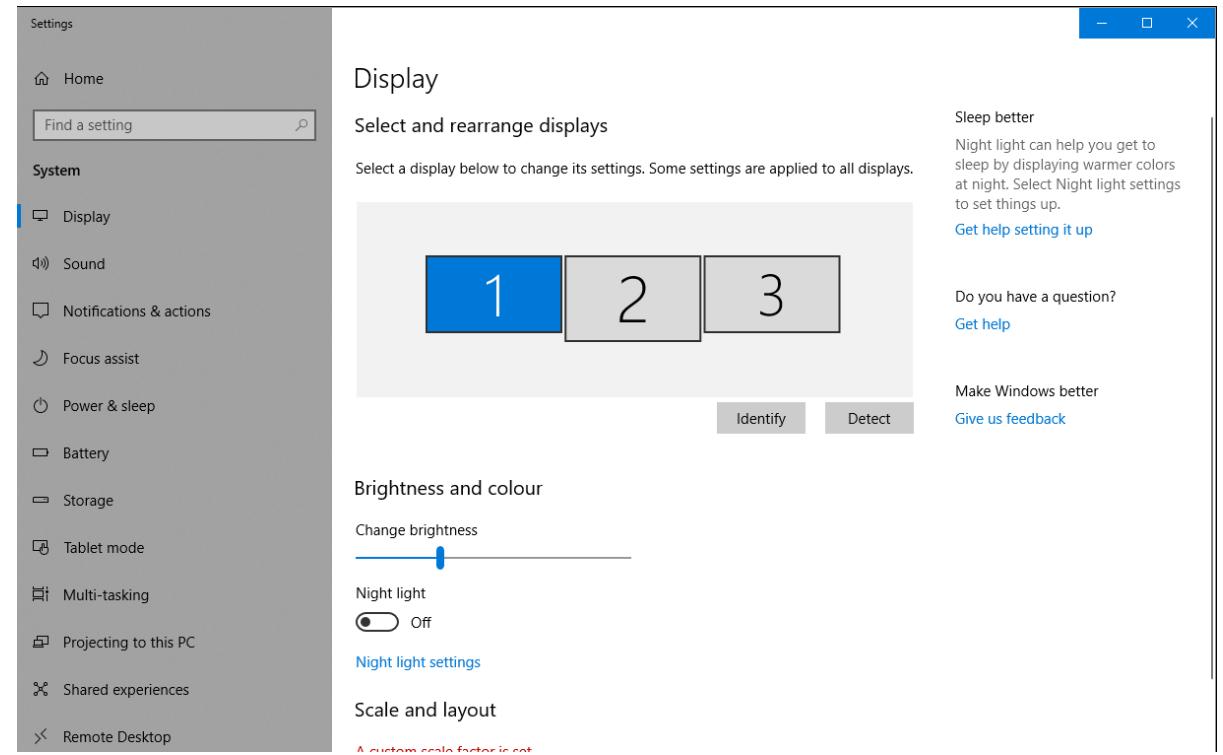
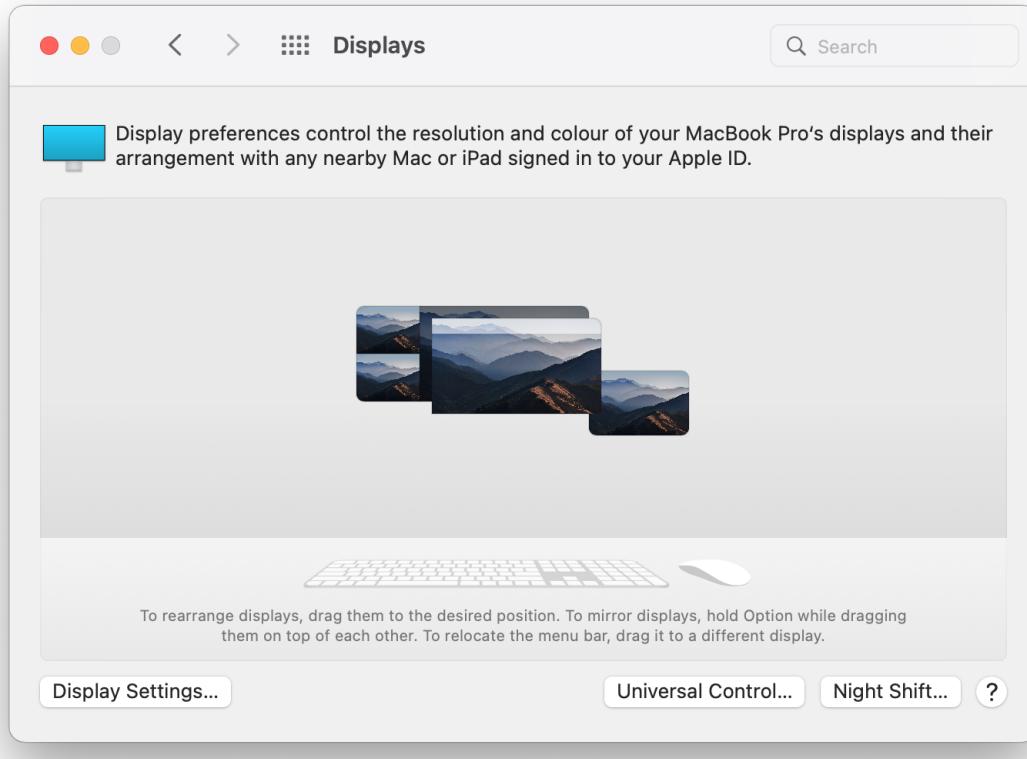
# What do you view as the single biggest shortcoming or challenge of the permission models deployed today?

- Many mainstream permissions UX patterns work the best on desktop browsers, since they were first invented in that era. Let's take Drag and Drop as the most obvious example. A DnD-based permissions UX should not be a normative requirement. There should be instead a higher-level permissions abstraction that enables different implementations (DnD, modal dialog, non-modal toast dialog ...).

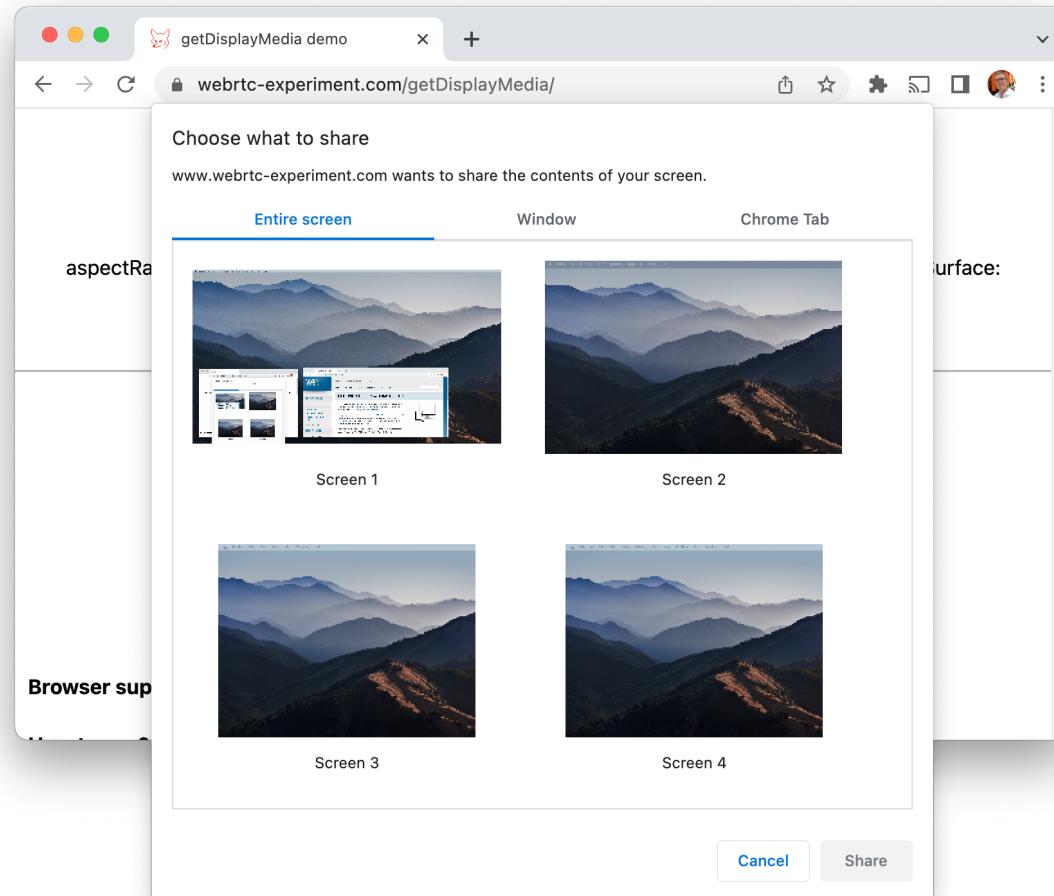
# Decomposing the Permissions UX in Multi-Screen Experiences *for the Web*

- 1 **Display Arrangement**
  - OS
- 2 **Display Source Picker**
  - `getDisplayMedia()`
  - `HTMLMediaElement.captureStream()` ?
- 3 **Virtual Display Creation**
  - OS
- 4 **Window Placement**
  - OS
  - [Multi-Screen Window Placement API?](#)
    - (Virtual workspaces/desktops a [non-goal](#) currently)

# 1 Display Arrangement

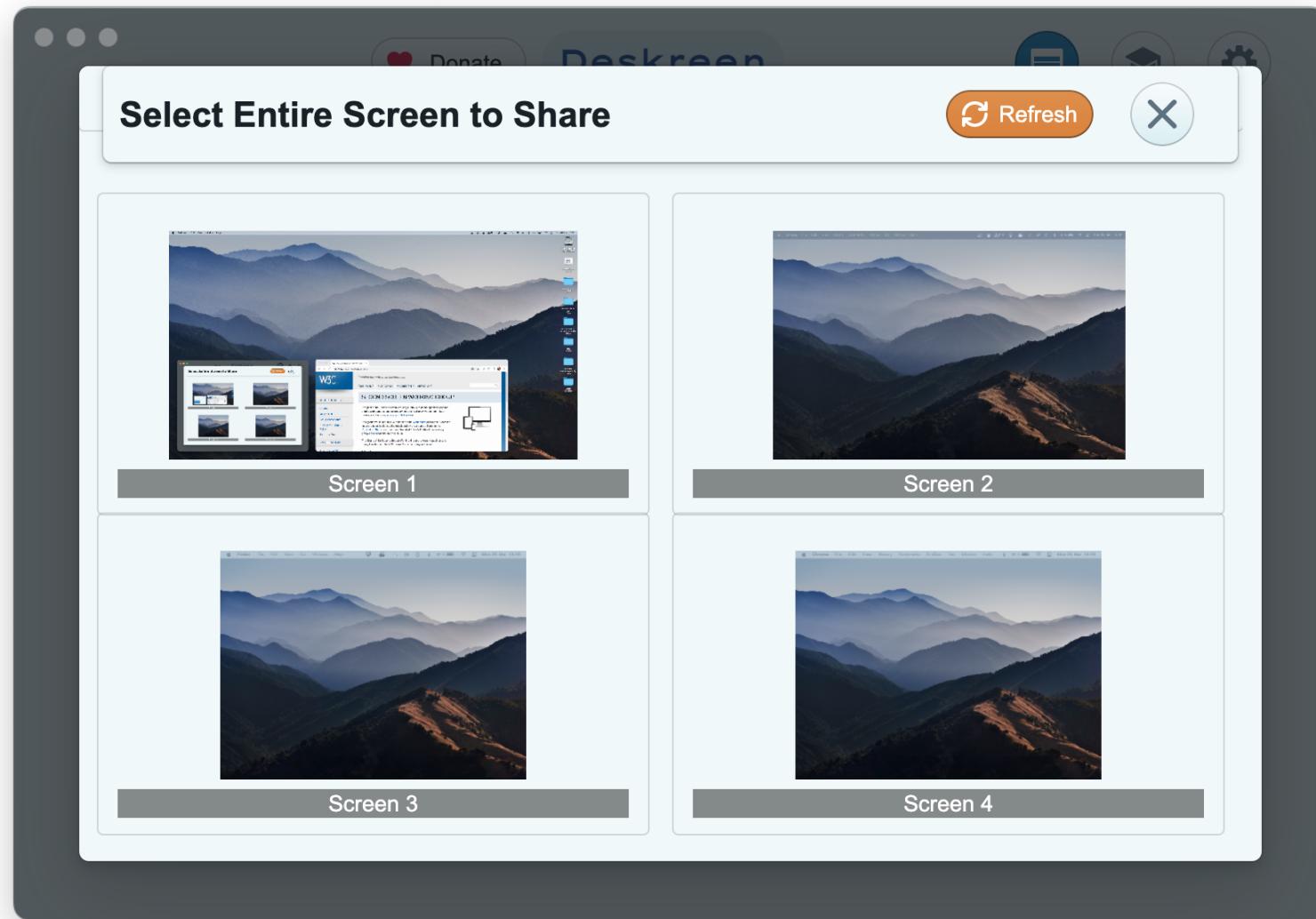


## 2 Display Source Picker



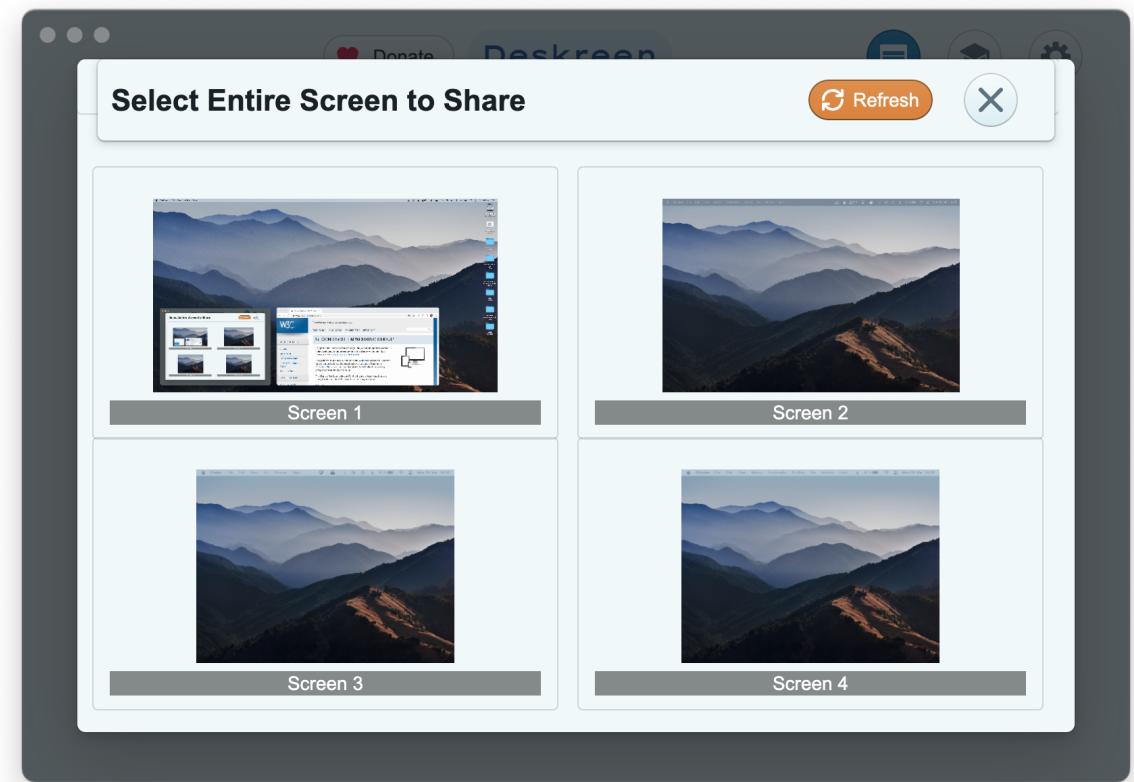
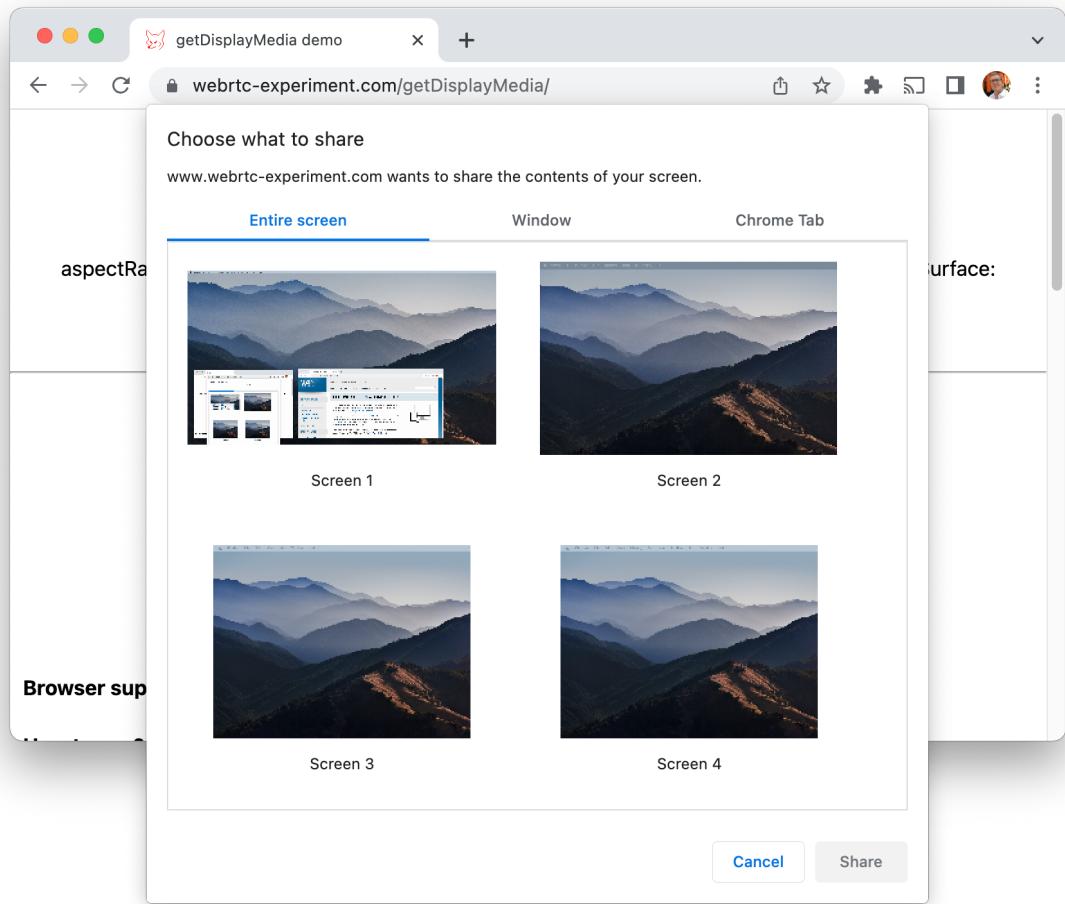
(Chrome display source picker UI, <https://www.webrtc-experiment.com/getDisplayMedia/>)

## 3 Virtual Display Creation



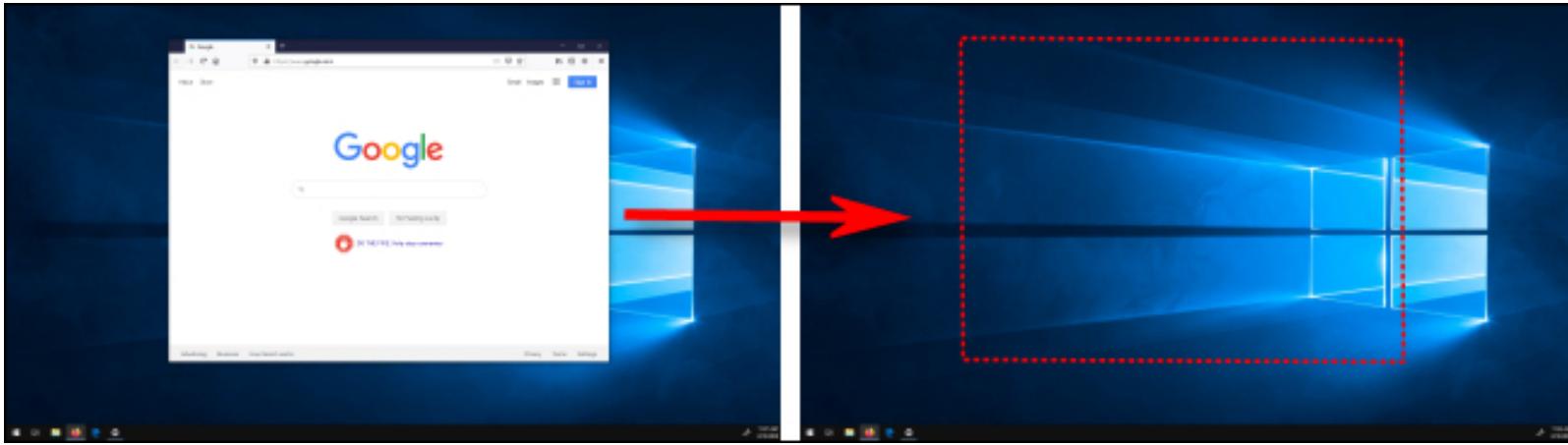
**W3C**(Deskreen Virtual Display Picker UI, <https://deskreen.com/>)  
Workshop on Permissions

**2** `getDisplayMedia` UI vs **3** Deskreen Virtual Display UI



## 4 Window Placement

## Implicit consent example: drag and drop



## OSes have a variety of implicit consenting mechanisms

- **Keyboard shortcuts in Windows:** "Windows logo key + Shift + Left arrow or Right arrow to move an app or window in the desktop from one monitor to another."
- **Drag and drop evolved in macOS:** "Drag the app window you want to move to the edge of the screen [or] enter Mission Control, then drag the window up to the space you want to use."

Could such implicit permission grants work for web app window placement?

## **The traditional Web API approach: user's consent via browser prompt**

A screenshot of a web browser window showing the W3C Second Screen Working Group page. The page has a blue header with the W3C logo and the tagline "Leading the web to its full potential". Below the header is a navigation menu with links to Standards, Participate, Membership, and About W3C. A search bar is also present. The main content area features a large heading "SECOND SCREEN WORKING GROUP". To the left, a sidebar titled "GROUP DETAILS" lists links to Charter, Mailing List, Group Participants, Royalty-Free Patent Policy, and a "Work Mode" document. The main content area contains two paragraphs describing the group's goals and work mode.

W3C Second Screen Working Group

w3.org/2014/secondscreen/

Leading the web to its full potential

STANDARDS PARTICIPATE MEMBERSHIP ABOUT W3C

SEARCH

# SECOND SCREEN WORKING GROUP

**GROUP DETAILS**

[Charter](#)

[Mailing List](#)

[Group Participants](#)

[Royalty-Free Patent Policy](#)

The goal of the Second Screen Working Group is to define specifications that enable web pages to use secondary screens to display web content. Learn more about the [goals, scope, and deliverables](#).

This group works in public, with details in the [Work Mode](#) document. A detailed list of the specifications being developed by the group are listed in the [Publication Status](#) document and the latest Editor's Drafts of the working group's specifications are on GitHub.

The screenshot shows a web browser window with the title "W3C Second Screen Working Group". The URL in the address bar is "w3.org/2014/secondscreen/". A permission dialog box is overlaid on the page, asking "www.w3.org wants to" and listing the action: "Use info about your screens to open and place windows". There are two buttons at the bottom of the dialog: "Block" and "Allow". In the background, the main content of the page is visible, featuring the W3C logo, a search bar, and navigation links for "MEMBERSHIP" and "ABOUT W3C".

www.w3.org wants to

- Use info about your screens to open and place windows

Block Allow

potential

MEMBERSHIP ABOUT W3C

SEARCH

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**OS-level: controls built into window manager**

A screenshot of a web browser window displaying the W3C Second Screen Working Group page. The browser interface includes standard controls like minimize, maximize, and close buttons at the top left, and a tab bar with the title "W3C Second Screen Working Group". Below the tab bar is the address bar showing the URL "w3.org/2014/secondscreen/". To the right of the address bar are various browser icons. The main content area features the W3C logo and tagline "Leading the web to its full potential". A navigation menu with tabs for "STANDARDS", "PARTICIPATE", "MEMBERSHIP", and "ABOUT W3C" is visible. A search bar is located on the right side of the menu. The central part of the page has a large heading "SECOND SCREEN WORKING GROUP". On the left, a sidebar titled "GROUP DETAILS" lists links for "Charter", "Mailing List", "Group Participants", "Royalty-Free Patent Policy", and "Work Mode". The main content area contains two paragraphs of text describing the group's goals and work mode.

W3C Second Screen Working Group

w3.org/2014/secondscreen/

STANDARDS PARTICIPATE MEMBERSHIP ABOUT W3C

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W3C Second Screen Working Group

Enter Full Screen  
Tile Window to Left of Screen  
Tile Window to Right of Screen  
Move to Built-in Retina Display

the web to its full potential

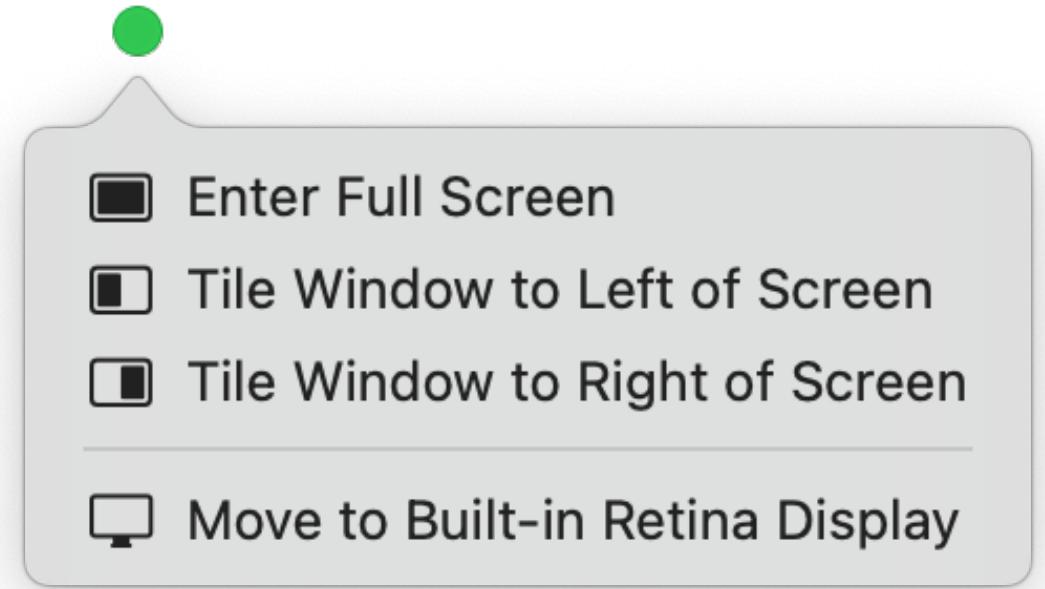
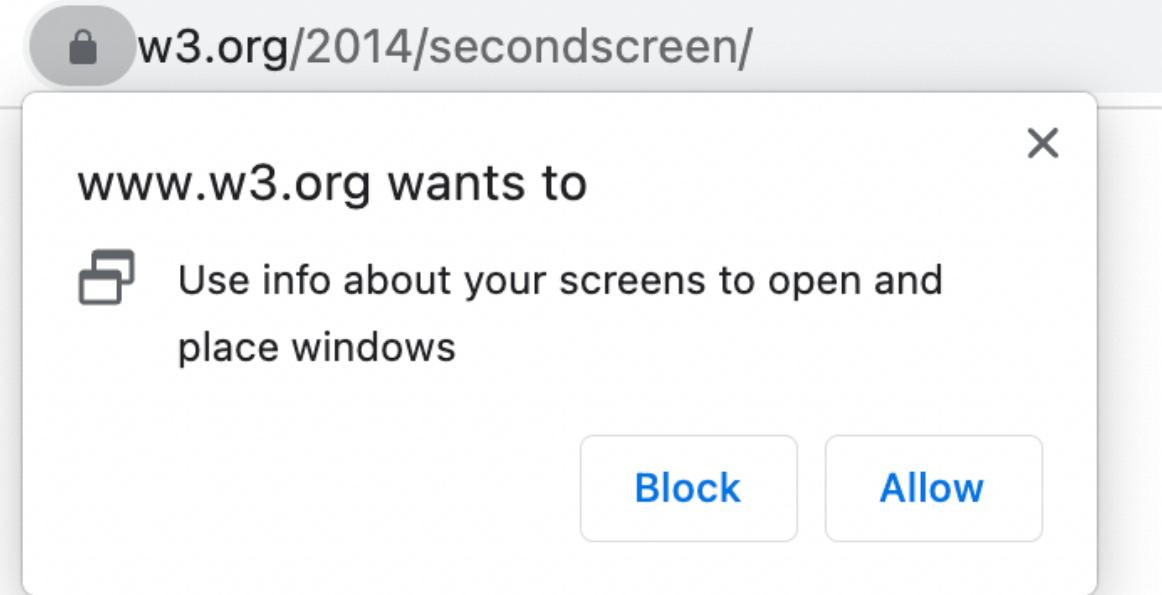
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# Browser prompt vs OS controls



# Permissions challenge?

- Enable permissions UX innovation  and protect the user's privacy 
  -  in a future-proof manner
  -  also on non-desktop-browser contexts
- Things to do to get there
  -  Does the permissions UX adapt to non-desktop-browser contexts? XR context? On a watch? TV with a remote? With voice control using a home assistant?
  -  Define permissions abstractions that enable context-sensitive implementations and leave room for Quality of Implementation differentiation and UX innovation
  -  Your idea goes here



## Discussion

