Automating Assistive Tech with Standards

Web Engines Hackfest, 2025-06-02

Hello!

Bocoup, a worker-owned tech consultancy

 Mike Pennisi (he/him), a worker-owner

Outline

1. Active automation efforts
2. The AT Driver standard and the ARIA-AT Community Group
3. Future work

Speaker notes

When it comes to creating equitable experience for folks with disabilities, it often feels like this work should have been done decades ago. Be that as it may, it's happening now!

Active automation efforts

Craig Morten's GuidePup - subscribe to a stream of speech being read by screen readers

Speaker notes

- GuidePup
  - available today
  - empowers developers to understand how their work is presented to screen reader users
  - limited to one type of AT: screen readers
  - not currently on a standards track
- WebDriver
  - available today
  - weakness: limited scope
- AOM + WebDriver
  - being designed as we speak
  - clear deployment path (extension to an existing standard)
- Acacia
  - enables automated testing of a novel surface: the accessibility API mapping
  - only accessible from the Web Platform Tests

AT Driver

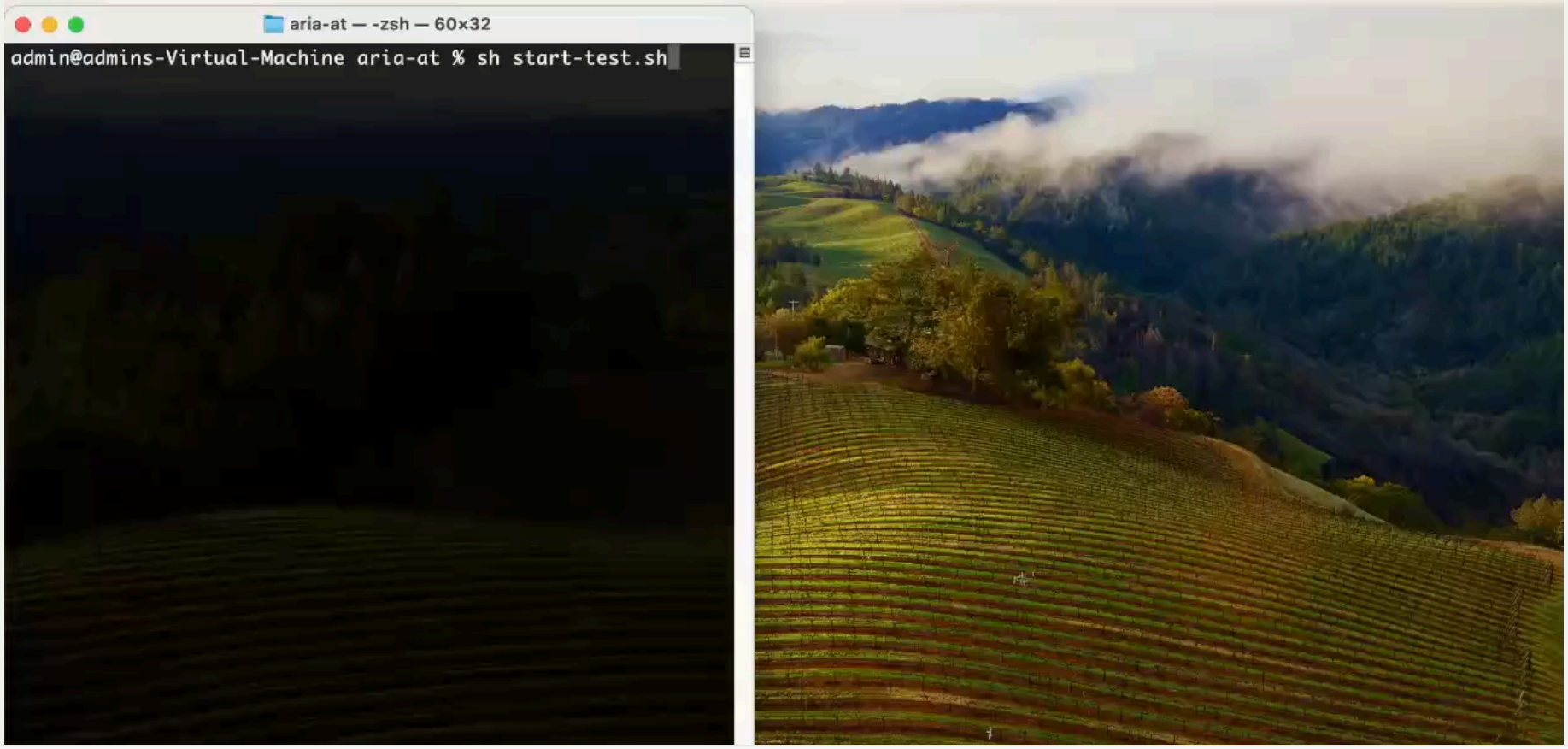
A standard protocol for introspection and remote control of assistive technology software, using a bidirectional communication channel.

https://github.com/w3c/at-driver

Speaker notes

We have initially limited our focus to screen readers because you have to start somewhere, but as the name implies, our scope includes all types of assistive technology.

AT Driver: in action



Speaker notes

Here, we see the AT Driver protocol being used to automatically observe the behavior of VoiceOver and Safari when rendering a radio group.

AT Driver: vitals

- Chartered under the W3C's Browser Testing and Tools Working Group
- Inspiration from WebDriver BiDi (JSON over WebSockets, "remote end"/"local end" abstractions, "command" and "event" patterns)
- Distinction: these user agents are not web browsers. There is no "browsing session," no "DOM", no "elements," etc.

Testing Surfaces

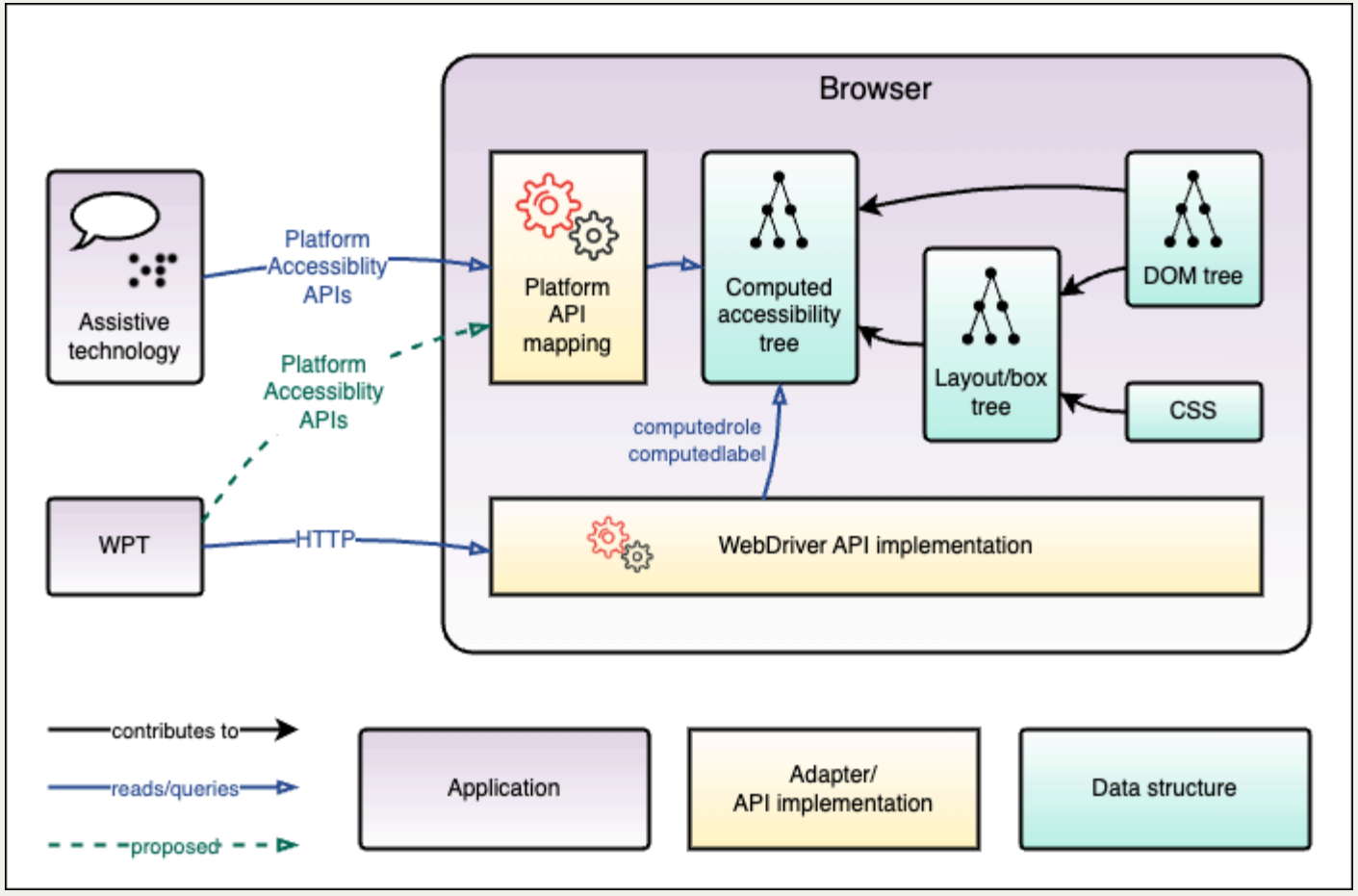


Image credit: Acacia (for ARIA WG), Igalia

Testing Surfaces

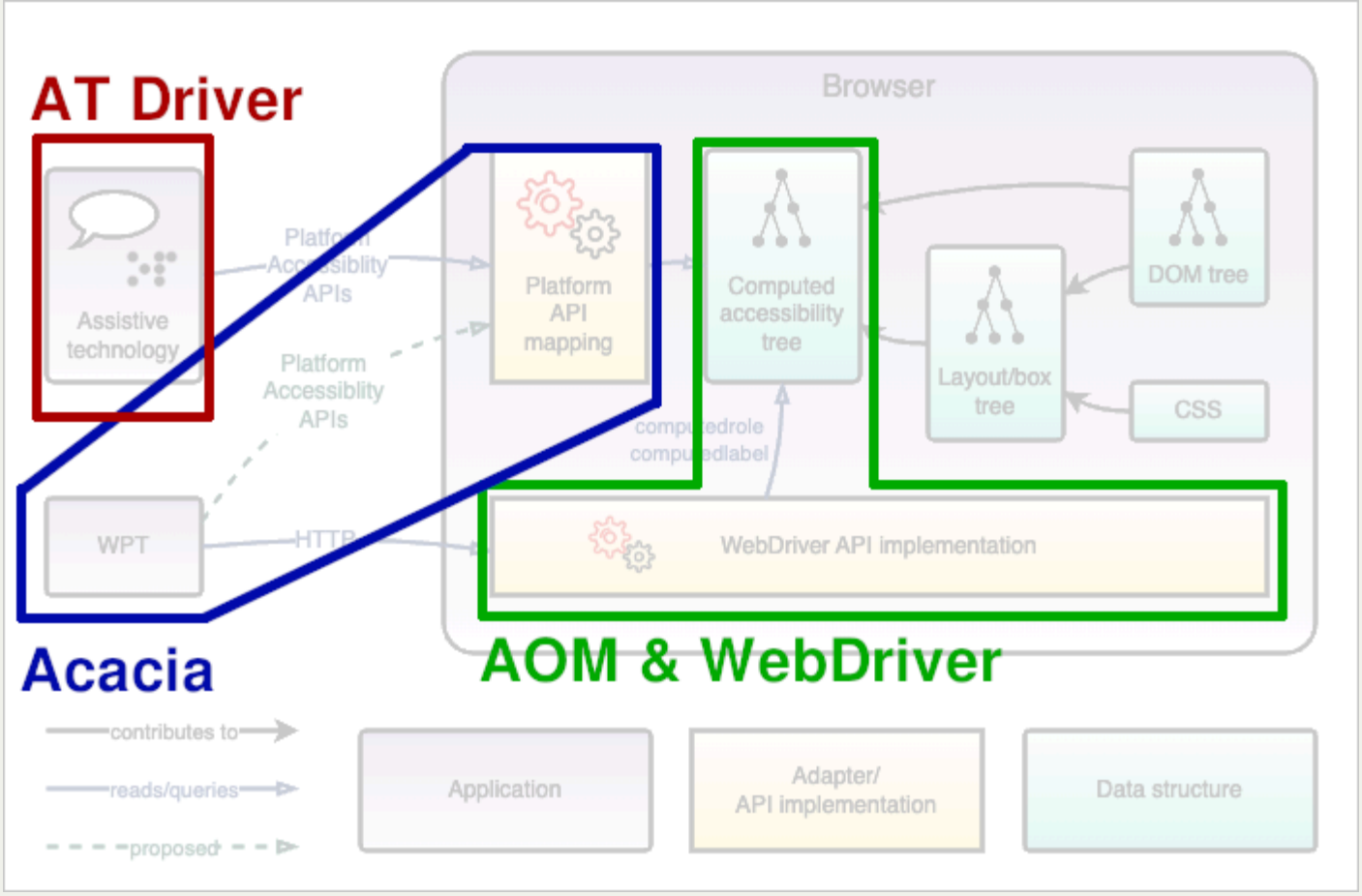
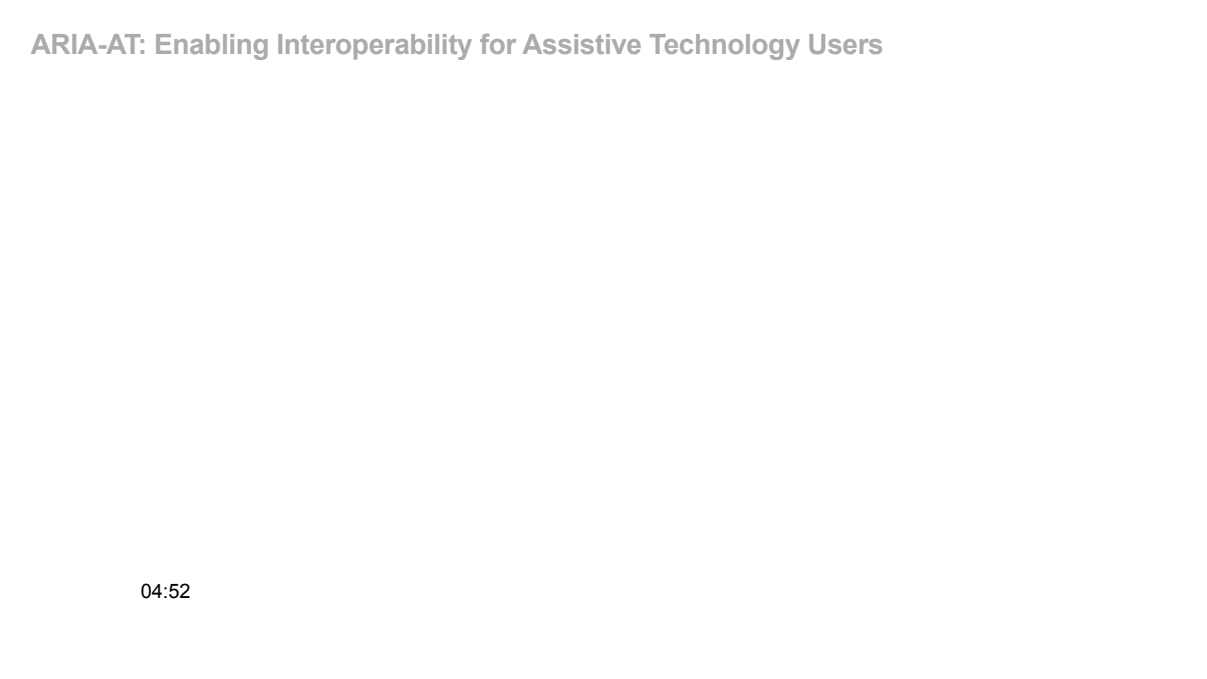


Image credit: Acacia (for ARIA WG), Igalia

Implementation status

name	maintainer	tech	status
Windows AT Driver Server	Bocoup	TTS voice & OS key press simulation	defunct
NVDA AT Driver Server	Prime Access Consulting & Bocoup	screen reader add-on	active
macOS AT Driver Server	Bocoup	TTS voice & OS key press simulation	active
JAWS AT Driver Server	Vispero	screen reader DLL	in development

Shoutout ARIA-AT



Speaker notes

The ARIA-AT Community Group is actively working to define expectations for the behavior of assistive technology and to promote implementation correctness. We've been developing AT Driver to support their work, but we anticipate the protocol's eventual use by web authors.

Future

- Define a collection of "intents" (first up: activate element)
- Implement for TalkBack on Android and VoiceOver on iOS
- Extend beyond screen readers
- Extend beyond the web platform?

Speaker notes

- Other user intents might include things like "move to next heading" or "move to previous form field"
- Other assistive technologies might include braille displays or magnifiers
- This protocol could be used to write automated tests for native applications, though it's unclear if the use of WebSockets would be a significant impediment to adoption.

Thanks!

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