

# WoT and Accessibility

17<sup>th</sup> January 2018



**Graeme Coleman**

Senior Accessibility Engineer, The Paciello Group



# Today's discussion

- Background (The Paciello Group, me...)
- Potential relationship between WoT/IoT and accessibility
- Where potential challenges arise
- Example use cases
- Future work and my input
- Resources

# Background

- The Paciello Group is an accessibility consultancy, and is part of the VFO Group
- We have participated in W3C activities (mostly Web-related) for many years, such as:
  - HTML5 specification
  - CSS Accessibility Task Force
  - SVGs
  - ARIA in HTML

# Potential relationship between WoT/IoT and accessibility

- Supporting independent living:
  - Providing support for physical, “off-Web”, tasks to people who would otherwise not be able to complete such tasks
- Potential within healthcare / smart home industries
- Help people with disabilities to navigate independently within public spaces
- The Web is more or less “accessibility supported” (reasonably trivial to create an accessible UI); what can we learn from it for the physical world?

# Potential challenges

- Accessibility support at the API level (equivalent to role, state, name, relationships...on the Web)
  - Ensuring information is exposed to UIs and assistive technologies (ATs) (either standardised “built-in” AT or a user’s external AT) in an accessible manner
  - Platform accessibility support: even the smallest IoT devices will need accessibility support + some way of exposing this info to AT (equivalent to browser?)
- Supporting accessible alternatives (e.g. non-text content)
- Supporting personalization
- The key: Avoiding the equivalent of “standard vs. text-only” situations on the Web
  - The more we can do at Thing Description level to avoid this, the better?

# Use Case examples

- Equivalent alternatives
- Personalization
- Importance of state

# Use Case examples

- Equivalent alternatives:
  - A thermostat UI displays temporal data in a line chart. The thermostat app on a mobile device also provides this line chart. However, the content/structure of this data is exposed in a way that a developer can choose to render this information in other modes; such as a text description, sound or haptic, and a user can choose to switch between these modes. The user experience for each mode is more or less equivalent. Limited extra effort at UI level is required by the developer to support different modes, assuming the thing supports them.

# Use Case examples

- Personalization:
  - “I have a visual impairment, so I want to be able to resize the UI text and/or change the font style across all my things from one interface rather than resize them all individually. The UI text on any new thing I install will automatically resize based on my previous choice.”



# Use Case examples

- State:
  - An IoT lamp can be on or off. A user can query at any time the lamp's current state. The state can be displayed in text or rendered as speech.

# Future work

- Continuing involvement in the main WoT WebConf
- Developing more structured use cases
- Potential for working together on practical demos for/at events such as Plugfest
- Anything else you think we should be involved in?

# References

- Accessibility Platform Architectures WG Web of Thing page  
[https://www.w3.org/WAI/APA/wiki/Web\\_of\\_Things](https://www.w3.org/WAI/APA/wiki/Web_of_Things)
- Abou-Zahra, S., Brewer, J. and Cooper, M. (2017) Web Standards to Enable an Accessible and Inclusive Internet of Things (IoT). MIT Open Access article, <https://dspace.mit.edu/handle/1721.1/107831>
- Cooper, M. and Paciello, M. (2016) WOT Ecosystems: Designing Human-Centric Sensory Modalities.  
[https://www.w3.org/2016/Talks/0414\\_WWW-WoT\\_MC/#\(1\)](https://www.w3.org/2016/Talks/0414_WWW-WoT_MC/#(1))

Thank you

Graeme Coleman

[gcoleman@paciellogroup.com](mailto:gcoleman@paciellogroup.com)

Twitter: @graemecoleman