Multimodal Design Patterns for Inclusion & Accessibility

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INTRODUCTIONS
What is the Inclusive Design Research Centre?

- Located at OCAD University in Toronto, directed by Jutta Treviranus
- Does design research both in web accessibility and on the broader area of designing inclusively
- Among the things our work is rooted in...
  - Social model of disability / disability as mismatch
  - Involvement in standards development such as WCAG and ARIA
  - Open movements (FOSS, open education, Creative Commons)
  - Practice-based and practice-led research
What is the Fluid Project?

- An open source software community
- Focused on web accessibility and inclusive design
- [http://fluidproject.org/](http://fluidproject.org/)
Who Am I?

- Work at OCAD University’s Inclusive Design Research Centre
- Inclusive software developer and researcher
- Former public librarian & library software developer
Who Are You?

- You can be more than one of these...
  - Developers
  - Designers
  - Managers
  - Assessors / Testers
  - Consultants
  - Something I didn’t categorize (sorry!)
WHAT IS MULTIMODAL DESIGN?
“...one intended to accommodate different patterns of input and output...”

- A modality is “a particular mode in which something exists or is experienced or expressed”
- Designing and building with an explicit aim towards multiple modalities of experience, either discretely or separately
- For input and output we might substitute terms such as...
  - interaction and perception
  - operability and perceivability
Philosophy

- Design to accommodate different patterns of input and output
- Make implementations flexible to support future adaptability
- Avoid thinking in terms of “normal” and “alternative”
- Consider how to use different modes of presentation or interaction, separately or in combination
Practically

- As accessibility practitioners, you already have an orientation towards this approach
- Consider screens vs. screen readers, mouse input vs. keyboard input...
- Further out, we can think about less explored scenarios
  - Can we render complex data as sound ("sonification") in the same way we can "visualize" data as charts and graphs?
  - Can we reimagine what’s possible with input devices like head trackers and switches?
  - How do we build systems that can be adapted more easily to new modalities?
EXAMPLES FROM OUR WORK
What Does a Pie Chart Sound Like?

http://build.fluidproject.org/chartAuthoring/demos/
How Can We Make Music Together?
How Do We Create Inclusive Science Experiments?
How Do We Create Inclusive Simulations?

TOOLS AND PATTERNS FOR IMPLEMENTATION
Separation of Concerns

- Foundational principle of software architecture
- Found in web development in the different roles of HTML, CSS, and Javascript, front-end and back-end, etc
- Systems should have easily identifiable components pieces that can be separated, swapped, remixed...
Open Systems, Oriented to Transformation

- Not necessarily open source (though we are fans of that), but a principle that content and data should be easily externalized and transformed
- Contrastingly, opaque, entangled, monolithic systems are tough on accessibility! (I am sure many of you live this on a daily basis)
- Personally, I’m excited by increasing awareness of the value of APIs in areas like CMS and other enterprise systems - not because this is the end goal, but because of the progress and direction
Tools We Work With on the Fluid Project

- **Infusion** ([http://docs.fluidproject.org/infusion/development/](http://docs.fluidproject.org/infusion/development/))
  - A transformation-oriented, loosely-coupled Javascript framework.
- **The Nexus** ([https://wiki.gpii.net/w/Nexus_API](https://wiki.gpii.net/w/Nexus_API))
  - A general-purpose communication technology for transforming inputs and outputs of arbitrary devices or software.
  - Living documentation of our inclusive design thinking as it evolves and deepens
BROADER IMPLICATIONS AND THOUGHTS
Our Thinking Matters

- How we conceptualize our work in accessibility matters a great deal for how the work gets done and how we communicate about it.
- I would encourage you to think of yourself and your work through a critical lens of multimodal design...
- An insistence that no mode of sensory experience or means of input is “primary” or “normal”, with the others as “alternatives”
Our Language Matters

- The language of "accommodation" and "alternative presentation" places a certain perspective upon disability
- These are obviously important concepts from a regulatory standpoint, and we cannot ignore them in our work
- However, as with our thinking, I encourage you to look at language through a critical lens and consider how it may shape and circumscribe our work
Accessibility and the Multimodal World

- We are sometimes frustrated by the remedial nature of accessibility work, and we ask ourselves why these considerations don’t happen sooner in the build process, when they are easier to remedy.
- I would argue that one reason this happens is because our design and development practices give primacy to certain modalities, that of the so-called “normal” user.
- Inflexible implementations encode these primacies; accessibility work then becomes alternatives, accommodations, remedies and workarounds.
- I would encourage you to think widely about how designs might be experienced from the very beginning, and to advocate as best you can for flexible systems.
QUESTIONS?
Links and Resources

Videos

● “A Musical Introduction to the Nexus”: https://www.youtube.com/watch?v=7R_pz2Fz4qE
● “Nexus Inclusive Science Lab”: https://www.youtube.com/watch?v=NNwcOVYRhUU

Fluid Project and Related Projects

● Main Site: http://fluidproject.org/
● Wiki: https://wiki.fluidproject.org/
● Global Public Inclusive Infrastructure: http://gpii.net/
● Flexible Learning for Open Education: http://floeproject.org/
● Inclusive Design Guide: https://guide.inclusivedesign.ca/