Brought to you

by the D.I.S.C.O.

Sensory
Access Needs

What is included in sensory access needs? [1]

This pamphlet discusses:

- Visual disabilities, including:
  - blindness,
  - low vision, and
  - color blindness
- Auditory disabilities, including:
  - d/Deafness,
  - hard of hearing, and
  - central auditory processing disorder
- DeafBlindness
- Tactile/Nerve Sensory Sensitivities

Persona Highlights include:

- P2: Parsley (Color-Blindness)
- P3: Halea Silver (Blindness)
- P6: Bry-Ann-Dee (Sensory Sensitivities)

Persona highlight - Bry-Ann-Dee

Place PH6 Sensory bookmark here!

✦ DISCO Do's [what to add]:

- Careful clothing material choice and mindfulness of potentially irritating seams in the clothing, to minimize discomfort from skin sensitivity
- For heat intolerance: air conditioning, portable fans, cooling vests, and wearable ice packs
- For cold intolerance: Thermal clothing/layers, heated blankets, warm compresses

✦ DISCO Don'ts [barriers to avoid]:

- Avoid sudden changes in temperature (like immediately going from chilly indoors with the AC cranked to sunny and warm outdoors), as that can shock the system
- Avoid scratchy materials and bulky/itchy seams when designing uniforms
- Lack of temperature-controlled environments

✦ DISCO Don'ts [barriers to avoid]:

- Lack of printed braille
- Lack of digital text alternatives for audio and visual materials
- Lack of tactile sign language/Protactile interpretation

Disabled-led Accounts & Sources:

- Haben Girma, "Guide dogs don't lead blind people, we wander as one"
- John Lee Clark, especially the Against Access essay detailing the subjective nature of Protactile interpretation

Tactile/Nerve Sensory Sensitivities
Definition:

Sensory sensitivity to temperature (heat or cold intolerance), touch, and pressure can be caused by a variety of conditions, including allodynia[7] and dysautonomia[8]. These stimuli can cause discomfort, and individuals may need environmental/external adaptations to help regulate temperature and avoid pain.

[7] *Cleveland Clinic resource on Allodynia*
[8] *Dysautonomia Support Network's page on thermoregulation (This section along with recommendations comes from both of these resources and co-design session conversations.)*

Each section has some basic information around conditions, then some **DISCO-Do's** (accessibility practices that will help make an environment more inclusive to folks with a given condition) and **DISCO-Don'ts** (common barriers that exist on Earth that we don't repeat in our spaceships). Each section ends with a couple social media accounts, projects, or books that center perspectives of disability community members that share one or more of the conditions in that section. Where information is relevant to a crew member in the crew persona deck, there may be a **persona highlight** added with information about a species, particularly relevant adaptive designs that would fit their bodies, etc.

Facilitators are welcome to share this information to help guide participants in researching adaptive design to inform their spaceships, especially the disabled-authored sources. **We strongly encourage you to share at least the persona highlights with your participants.**

[1] *The outline of conditions and barriers/adaptations to consider largely stems from the **Certified Professional in Accessibility Core Competencies (CPACC) certification exam's Body of Knowledge**, written by the International Association of Accessibility Professionals (IAAP).*

We have chosen to cluster some categories together, summarizing considerations to a list of highlights (unless directly quoted), and have added in disabled centered sources/information in attempts to keep holistic accessibility at the forefront, rather than checklist/compliance based accessibility.

If any information is sourced from outside of the CPACC Body of Knowledge, there is a direct link to that source.

The most important thing to stress during the research-about-access-needs phase is that **some things pitched as solutions are not actually desired by a disabled person**. Technology can also function imperfectly compared to how it is advertised. **Look for disabled-centered articles when considering real-world research.** What do disabled people seem to prefer? What flaws do they point out with current tech, and can you use that to iterate or improve your designs?

Visual Disabilities

Blindness

Blindness is a spectrum! Contrary to popular belief, blind people do not always have complete loss of vision. It can range from some vision loss, to nearly complete vision loss, to complete vision loss.

The legal definition of blindness does not actually tell you what someone functionally can or cannot still see, below legal numeric thresholds around distance of sight and field of vision. Some folks can see light versus dark, or have a pinhole of vision, or general shapes but not details.

DeafBlindness

Definition:

"Deaf-Blindness is a sensory disability that **includes both deafness and blindness. Most people who are Deaf-Blind are not completely deaf nor completely blind** and retain some hearing and sight capability." (CPACC BoK p. 14) Still, the **primary mode of communication becomes touch**. (Refer to sources below on the emerging language of Protactile!)

✦ DISCO Do's [what to add]:

- Printed braille
- Digital text alternative (which can be read with a refreshable braille display)
- Protactile/Tactile sign language interpretation
- Haptic alerts / feedback
- Should be safe for service/guide animals wherever possible in cause the individual has a service animal for mobility (others may opt for a cane to get tactile feedback of environment)

[Refer to footnote for image details/license of guide dog photo[6]]

✦ DISCO Don'ts [barriers to avoid]:

- Soft speech
- Large spaces with no microphones/assisted listening devices
- No sign language interpreters present and/or lack of live captions
- Noisy background environments or poor lighting (which can interfere with lip-reading)
- Tech requiring voice interaction or listening to interface

Disabled-led Accounts & Sources:

- Courage Bacchus, "I'm Proud to Call Myself Tkaronto-Guyanese" (discusses complexities around ASL being her first language, but not the sign language for her)
- Matt Maxey, @deafinitelydope on Instagram, and
- Otis Jones, @slntwrlddd on Instagram, (who performed together in ASL at the 2025 Super Bowl Halftime show)
- USA Deaf Soccer Association

[5] *Information on DeafSpace: Vox Video on DeafSpace & Curbed Article on DeafSpace*

[6] *Image details: Guide dog in the picture is named Opas Eevi, and photo is taken by Sini Merikallio. Image published under CC BY-SA 2.0 licensing.*

Persona highlight - Halea Silver

Place PH3 Sensory bookmark here!

Low Vision

"Low vision is uncorrectable vision loss that interferes with daily activities. It is better defined in terms of function, rather than numerical test results." (CPACC BoK, p. 19, referencing the American Federation for the Blind). Folks with low visions often **use magnification** with screens or print materials. Low vision can also involve **low contrast sensitivity**, meaning they will need higher contrast levels (to distinguish things like text from background, for example).

Other types of visual impairments can cause **photosensitivity that needs contrast but with a dark mode option**, so less light from the screen travels into the eyes resulting in pain. **Not all people will be able to use or prefer dark mode**,[2] as some need dark on light background, or light mode, to make text more legible.

Consider your specific users, and if you find areas where your crew members' needs conflict, **consider ways to offer choice and customization for each crew member.**
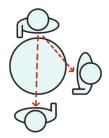
Color Blindness

Someone with color blindness has difficulty distinguishing specific color combinations (depending on their type of color blindness) especially when those colors are at the same saturation level. Adding better contrast or pattern redundancy helps keep colors distinguishable.
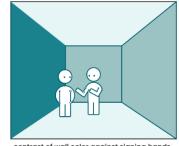
Central Auditory Processing Disorder

Auditory processing disorder (APD) involves no measurable hearing loss, but instead affects the brain's ability to interpret, organize, or analyze what's heard due to processing pathways being disrupted.

✦ DISCO Do's [what to add]:

- Multisensory alerting devices/alarms (visual alerts like flashing lights, or haptic feedback)
- Captions and transcripts for audio content
- Sign language interpretation (Remote video interpretation exists– Present day versions have a lot of issues. Encourage participants to learn about them!)
- Quiet work environments / noise canceling environments
- Environments with quality acoustics and lighting, and/or with assisted listening systems
- Text-to-speech (TTS) software / TTY phones
- DeafSpace principles[5]! (Refer to graphics below and footnote sources)

rounded seating arrangments

contrast of wall color against signing hands

Auditory Disabilities

Deafness

Deafness is also a spectrum of very minimal functional hearing to complete lack of hearing. The medical condition alone is often referred to with a lowercase "d," whereas being culturally Deaf (being medically deaf and engaging in the language, ways of interacting, and spaces) is referred to with an uppercase "D."

Many culturally Deaf folks view themselves as a linguistic minority rather than as having a disability, or align with disability from a political and accessibility advocacy standpoint. The argument is that with properly tailored environments (like those built on DeafSpace principles) and surrounded by folks who communicate similarly, Deaf people are not disabled, but rather occupy a linguistic/cultural niche. They push back against the term "hearing loss" with the reframe of **"Deaf gain."**

Hard of Hearing (HoH)

"Hard of hearing (HOH) refers to people with hearing loss ranging from mild to severe who still have some useful hearing. People who are hard of hearing may communicate through sign language and/or spoken language, with or without amplification. Most HOH people can use the phone and use hearing aids." (CPACC BoK, p. 12)

Persona highlight – Parsley

Place PH2-SCH1 Sensory bookmark here!

[2] *Ashley Firth discusses light and dark mode options for visual disabilities in his book, Practical Web Accessibility. [Source: Firth, Ashley. Practical Web Accessibility: A Comprehensive Guide to Digital Inclusion. First, Apress, 2019, learna11y.com.]*

✦ DISCO Do's [what to add]:

- Tactile navigation cues! Tactile signage and controls!
- Clear pathways (both removing low hanging objects and things on the floor)
- Should be safe for service/guide animals wherever possible in cause the individual has a service animal for mobility (others may opt for a cane to get tactile feedback of environment)
- Text alternatives and/or audio descriptions for non-text information
- Design should allow for magnification or have large print option
- Allow for customization of color contrast, filters, and themes
- High contrast
- Do not rely on color alone to convey meaning (add in patterns! icons! contrast!)
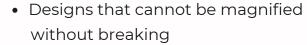- Apps that provide audio navigation instructions or audio descriptions

[Refer to footnote for image details/license of tactile navigation map[3] and pavement photos[4]]

✦ DISCO Don'ts [barriers to avoid]:

- Materials that are print-only with small text
- Vague descriptions of navigation or visuals
- Poor lighting
- Environments that are too noisy to hear informative sounds (like the crosswalks announcing when it is safe to cross)
- Designs that cannot be magnified without breaking
- Low color contrast or not allowing custom color combinations
- Websites that malfunction when user tries to navigate with assistive tech like screen readers

Disabled-led Accounts & Sources:

- Paul Castle and Mr. Maple @paulcastlestudio on Instagram
- Molly Burke and Elton John @mollyburkeofficial on Instagram
- Alt Text as Poetry by Bojana Coklyat and Finnegan Shannon

[3] *Photo of 3D printed Touch Mapper map in use is by Samuli Kärkkäinen, the creator of Touch Mapper. Photo file uploaded to Wikimedia is licensed under the Creative Commons Attribution 3.0 Unported license.*
[4] *Photo of tactile pavement in Japan is by Midnightcomm, uploaded to Wikimedia and licensed under the Creative Commons Attribution 4.0 International license.*