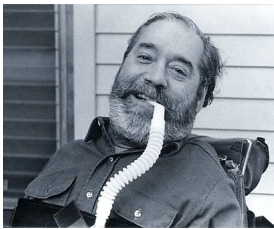


OVERVIEW

In this assignment you will use the brainstorming method you learned in class to begin to develop your team project idea. You should conduct at least two one-hour brainstorming sessions with your team members (you will start in class today). You will report the complete list of ideas that your team generated, and then report the final project idea. Note that you will have time in class on 24 September (TODAY) to start the brainstorming. We expect you to meet outside of class as well to complete the assignment. You also need to setup a weekly, in-person team meeting time outside of class.



HISTORY

In 1962 Ed Roberts, arrived as a new student at UC Berkeley. Ed was also the first student with severe disabilities to attend UC Berkeley and through his leadership as an activist he pioneered the disability rights movement which paved the way for the creation of the Americans with Disabilities Act.

THEME

You will develop a mobile smartphone application for the Android platform scoped within the theme of **ACCESS+ABILITY**. This should be interpreted broadly. You may, but are not required, to frame your design around the interpretation of accessibility as Ed Roberts describes above. We invite you to channel Ed's passions and activism around accessibility and how we can envision and create a more just and inclusive future for all through the design and development of creative technologies — more specifically a mobile smartphone application.

DISCUSSION AND DETAILS

The framing of this project is to get you to focus on people with disabilities—physical, cognitive and sensory—that expand their ability to lead independent lives and engage more fully in the world. In this design brief we are calling on your team to engage with accessibility in its broadest sense, involving all communities in thinking about how design can empower users. This is your chance to develop a user-driven focus on enhancing what people can do when given the opportunity and hopefully further the dialogue about inclusive design along the way. While your brainstorm will likely touch on issues of disabilities and impairments we encourage you to look for opportunities to bring **ACCESS+ABILITY** into the focus.

Think broadly about the framing of “disability”. A disability is an impairment that may be cognitive, developmental, intellectual, mental, physical, sensory, or some combination of these. The impairment may refer a loss or abnormality of physiological, psychological, or anatomical structure or function,

whether permanent or temporary. Such an impairment substantially affects a person's life activities and may be present from birth or occur during a person's lifetime. Disabilities is an umbrella term, covering *impairments*, *activity limitations*, and *participation restrictions*. An impairment is a problem in body function or structure; an activity limitation is a difficulty encountered by an individual in executing a task or action; while a participation restriction is a problem experienced by an individual in involvement in life situations. Disability is thus not just a health problem. It is a complex phenomenon, reflecting the interaction between features of a person's body and features of the society in which she or he lives. Disability is a contested concept, with different meanings in different communities. It may be used to refer to physical or mental attributes that some institutions, particularly medicine, view as needing to be fixed (the medical model). It may refer to limitations imposed on people by the constraints of an discriminatory or socially prejudice society (the social model) towards individuals with disabilities. Or the term may serve to refer to the identity of disabled people. Physiological functional capacity gauges one's ability to perform the physical tasks of daily life and the ease with which these tasks are performed. Physiological functional capacity declines with advancing age often resulting in frailty, cognitive disorders or physical disorders, all of which may lead to labeling individuals as disabled. To help guide your initial brainstorm consider the following as a starting point:

- vision impairment
- deaf or hard of hearing
- mental health conditions
- intellectual disability
- acquired brain injury
- autism spectrum disorder
- physical disability

The concept of accessibility focuses on enabling access for people with particular disabilities, or special needs, or enabling access through the use of assistive technology. However, **the development of accessibility brings benefits to everyone!**

Accessibility is strongly related to universal design which is the process of creating products (i.e Apps) that are usable by people with the widest possible range of abilities, operating within the widest possible range of situations. This is about making things accessible to all people (whether they have a disability or not). This means that if your design broadens participation or access by individuals or communities not currently included it promotes accessibility. For example, your design could be an app that guides pedestrians who are blind to bus stops using community crowdsourced clues, or an app that engages youth on the autism spectrum to learn digital tools and collaborate through technology. It could be an app that enables crowdsourced reporting of wheelchair accessible building access that then drives a new mapping and routing tool for individuals with physical mobility limitations. Often the designs benefits many stakeholders. For example, the “building accessible” app benefits individuals with permanent mobility disabilities, people in wheelchairs healing from a leg injury, architects, urban planners, first responders, etc. It also generates an awareness and invitation to participate by many other people. Another idea might be a mobile app that integrates with the smartphone camera to assist individuals suffering from prosopagnosia — a neurological disorder characterized by the inability to

recognize faces. A different approach may be to design an app that enables individuals to log their emotional health throughout the day such that it could be used for later reflection and analysis perhaps to suggest improvements or coping strategies when confronting challenges around maintaining focus or social anxiety. Your idea may be to develop an app used by caregivers, family, or medical professionals to improve understanding or awareness of an individual's disability diagnosis or daily status. This should get you started on your successful brainstorm.

One issue to keep in mind — Accessibility is not to be confused with usability, which is the extent to which a product (such as a device, service, or environment) can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use.

This is a very open-ended theme and should give you plenty of room to come up with a specific project that is personally exciting to your team. **Please use this freedom with caution.** In addition to having a technology component, you should also select a concrete, well-defined target user group and task you want to support. The more concrete and specific, the better. You will be required to reach out to your selected community and conduct initial interviews to inform your design (similar to DESIGN 01). You will take your prototype designs back to this or a similar community to get feedback as you iterate on your final project as it evolves over the rest of the semester.

Try to think out of the box — Don't think in a device-centered way, and don't think only of things that a smartphone can do. Instead focus on the things that people do everyday *while* they have a mobile device with them. That will also give you a good handle on the set of target users. How can a smartphone complement or enable new methods of interactions and experiences? You got an initial feeling for this in the DESIGN 01 assignment. You should start with a set of target users and think of their needs and context of activities and how such a smartphone design might improve their lives. Talk to potential users and observe them in their place of work (i.e. contextual inquiry) to figure out their needs and the design opportunities. Be sensitive during this process.

Sensors — We are still in the early phase of smartphone development. As such there is a wealth of applications within this **ACCESS+ABILITY** theme to explore, and you should have no problem brainstorming how existing smartphones can be programmed with new experiences. That said, this nascent period often means that many of the sensing and expressive behaviors you may desire may not be capable using today's hardware. We want to allow you to open your brainstorm up, if you feel the need, to applications requiring hardware not currently on smartphones. To be clear, you will ultimately need to design and program your user experience on an Android smartphone for the final assignment. However, we will allow you to mock up a limited number of interactions around such sensing that are not provided by the hardware. For example, if your compelling application requires sensing via a pulse oximeter (a medical device that indirectly monitors the oxygen saturation of a patient's blood), you would still design all of the interactive touch points of your user experience and “mock up” the feeling of the experience around how the pulse oximeter sensor would be incorporated into the design. What you cannot do —

you cannot add so many sensor that the entire Android smartphone design is radically changed (i.e. it senses stress, skin, hair growth, radiation, plankton detection, oh and it has a hologram projector and a karaoke pop up, and...well you get the idea). Also, any sensing you choose must be near term and realistic (i.e. you cannot embed a ghost or extraterrestrial sensor or teleportation mode, etc). While we want you to feel open to including novel sensing in your brainstorming of ideas, adding sensors (or actuators) is not required to find a compelling and interesting application. Also, if you do decide to add some new sensors, you must check with us after you hand in this assignment as to the viability of the design and novel sensor selections.

Be ambitious, but realistic — You have limited time to work on the project and the goal of the course is to iterate, test and improve users' experience of your design, not to produce the most elaborate experience. Some of the most successful apps have been conceptually simple. Make sure you're realistic about what can be done in a semester. This is an exercise in prototyping apps that could really be built, not in science fiction.

WRITEUP

You should [check bCourses for for the full details on what its required](#) for this assignment (Due Next Mon, 1 Oct before class). To get you started we highlight what you need to focus on today.

Team — Who is on your team? Get to know them and their interests and skills. How will you all stay in touch after today? Make a plan. How will responsibilities be shared?

Brainstorm — A list of at least 50 numbered ideas (aim for more) that you came up with during your brainstorming session. Each idea has to be described in one full sentence (don't just list an abstract title like "Cooking App". Better would be, "Vegan Cookery: an application for vegan home cooks that helps them prepare recipes by using voice commands to step through recipe steps." You should be visual during your brainstorm - include photos of sketches (but also describe in text).

Later (not today) — Check bCourses for full details and move toward Selecting the top 3 ideas your team wants to work on and a short explanation of why the team picked it from amongst all the possibilities in your list. This idea may develop and change later. It's your best 3 ideas *at this time*. It is normal to still have 5–7 contenders in the mix but identify 3 top idea right now. Also, realize that this almost always changes.

Brainstorm!

Give every idea a chance, no matter how strange at first!

Happy innovating!