

# Diverse Participation and Perspectives

In keeping with the edict “nothing about us without us”, this principle is about inviting a diversity of people with a broad range of needs, preferences, interests and skills into the design process, and in so doing, weakening the distinction between user and designer. Considering inclusion in all aspects and at all stages of the design process requires that our communication methods, group processes and daily interactions are inclusive. This helps to ensure that the products and services that are created will be more inclusive.

To support diverse participation and enable the design to be as closely linked as possible to the application, the design and development tools should be as accessible and usable as possible. Those new to the process must be provided with the information and resources to fully participate (e.g. by being given time to observe and become familiar with the community, culture, collective knowledge and processes). Communication methods should be transparent and multimodal, and design considerations for “alternative” modes of interaction should be given equal weight.

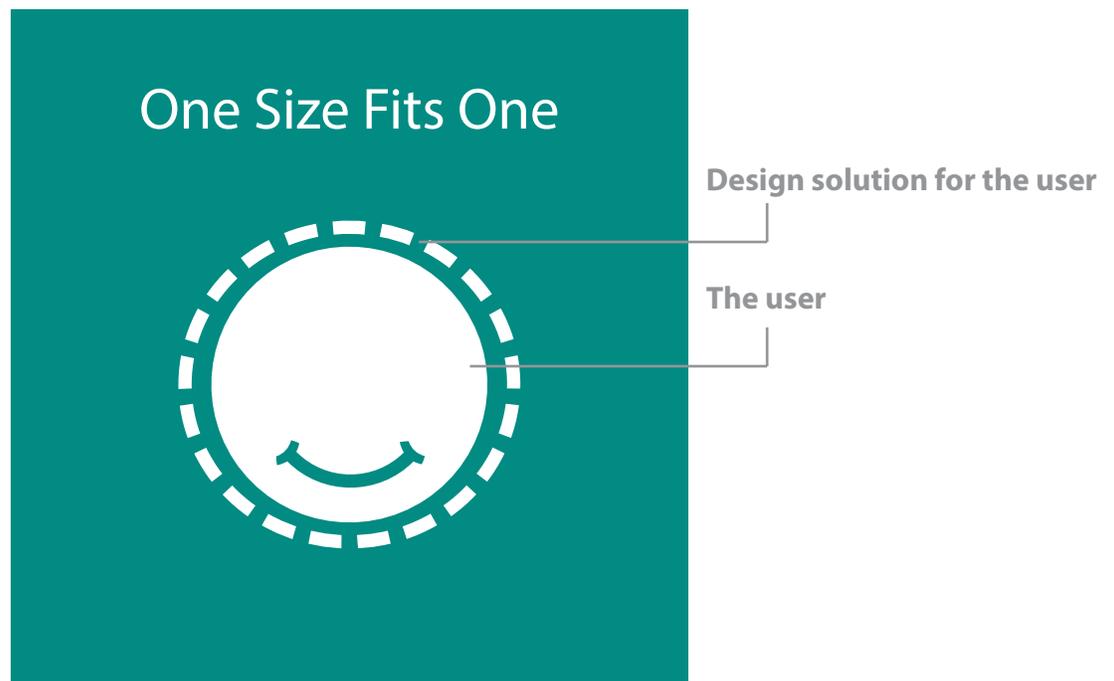


# One-Size-Fits-One

We all have diverse needs, and we all experience changes in our lives, in both the short-term and long-term, that affect our interests, goals and desires. As a result, designs that are flexible and allow for customization are more likely to meet our needs.

A one-size-fits-one approach avoids the often segregated and specialized design solutions that are intended to meet the needs of those “on the margins”. These solutions do not serve the individual or society in the long run. Adaptable designs that allow for personalization result in integrated systems that work better for everyone. In the digital world, we have the freedom to create a design system that can adapt, morph, or stretch to address each design need presented by each individual.

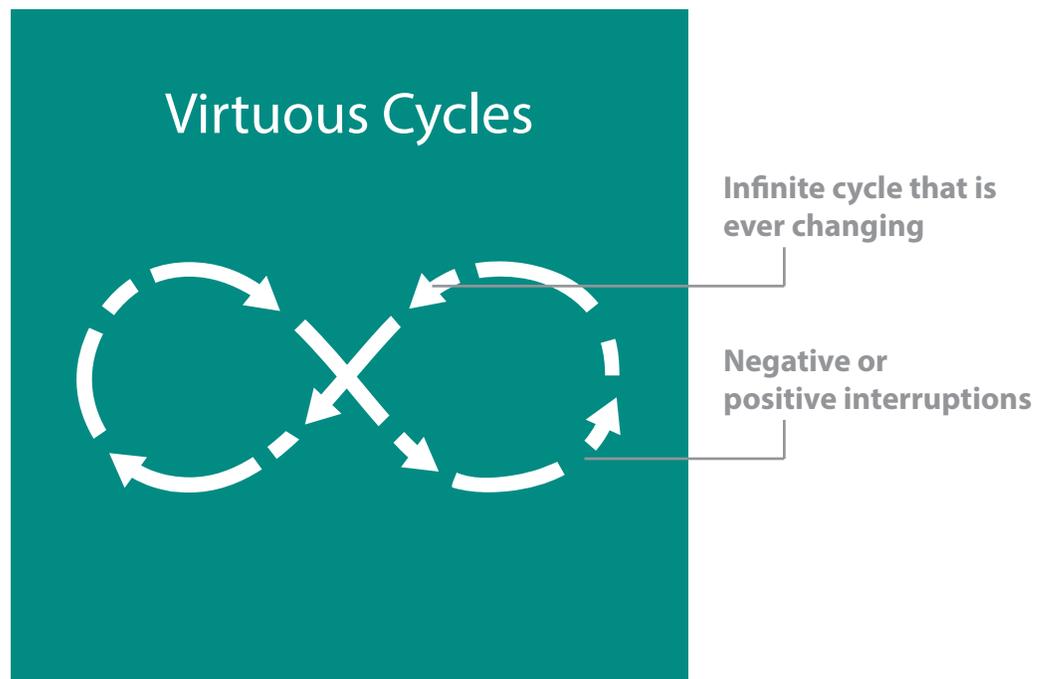
In addition, one-size-fits-one design solutions give us the power to discover and choose what works best for us in any given context. This puts more control into the hands of any one of us to create our own experience, and to modify this experience as needed.



# Virtuous Cycles

Altering any factor in a complex system can cause an amplified reaction in other systems (e.g. changing the education system in one country can impact the world economy). This reaction can be negative (vicious) or positive (virtuous). The dynamics of connected and entangled global networks means that emerging technical practices have the potential to introduce powerful virtuous cycles of digital inclusion.

Virtuous cycles of inclusion are triggered by insisting on diverse participation from the start. When diverse needs are met, individuals have greater access to participation (e.g. in a design process) and can thus communicate their diverse demands. This pushes so-called “outlier” solutions into the mainstream, making inclusively designed solutions more affordable. This in turn increases individual spending power and prosperity, further increasing access to participation.

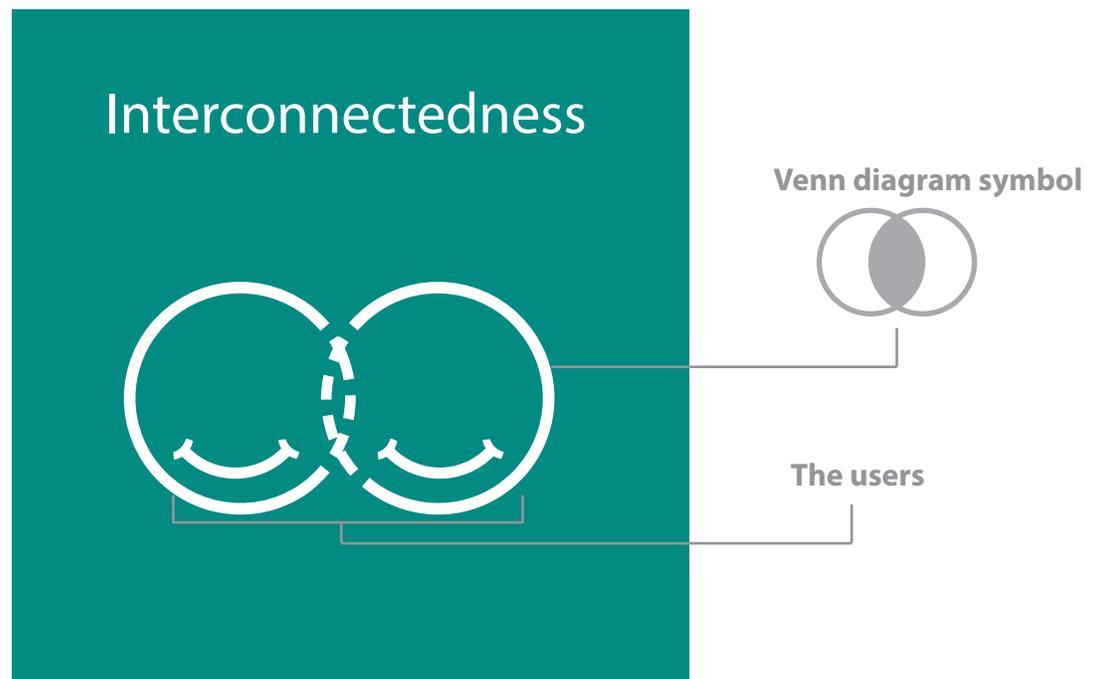


# Interconnectedness

Once we release a solution, it will become part of a larger system. Although we can determine specific functionalities for that solution and define a target user group, we cannot predict and control who will use our solution and how it will be used. Thus, design processes need to take into account the interactions of various systems with complex and unique humans, as well as the external social, cultural, economic and technological forces that exist for each of us.

It is not practical for a designer to meet the needs of every user and include every desired feature within a single product or service, nor to predict the infinite variety of creative, serendipitous, and unexpected uses that a product or service can be subjected to. By creating flexible and adaptable designs, the user can continue the design process by adapting, remixing and repurposing to better meet their needs.

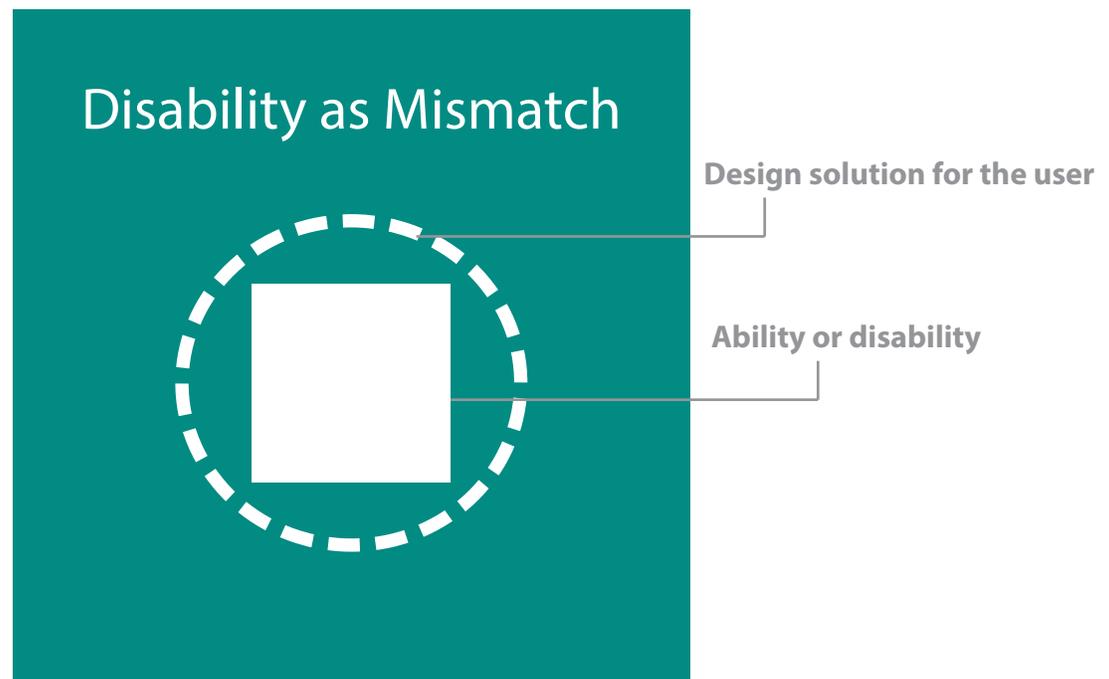
In other words, by understanding the interconnectedness of people and systems and their mutual influence, our designs can allow for the ever-emerging and evolving interactions between them. By incorporating an openness, flexibility and adaptability into our designs, we acknowledge and allow for this interconnection, thereby promoting the organic growth of our systems and increasing their reach.



# Disability as Mismatch

The medical model defines disability as a trait; something permanent and limiting. In contrast, an inclusive design approach is one that perceives disability as a mismatch between our needs and the design features of a product, built environment, system or service. This shifts the responsibility to the design, and to the designer, to correct the mismatch. It shifts our perspective such that we understand the mismatch to be solvable through design, which encourages innovation.

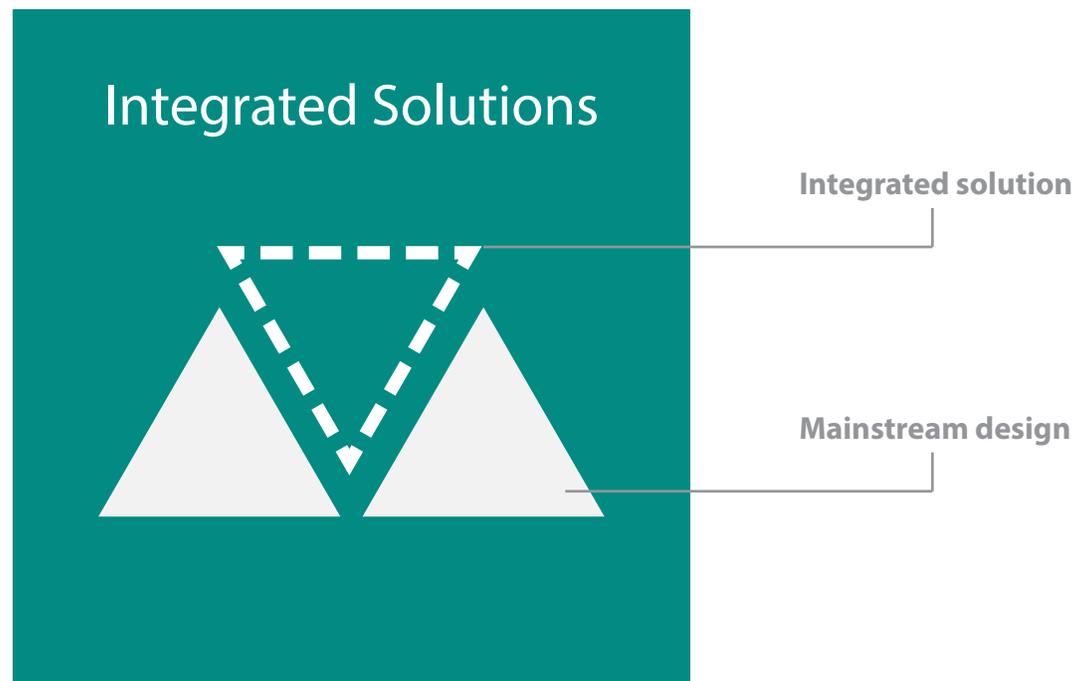
For example, a multi-story building without an elevator does not match the needs of someone in a wheelchair, or someone who is exhausted after a long day. A digital interface with poor contrast does not match the needs of someone standing in direct sunlight or someone with low vision. An app that relies on drag-and-drop interaction does not match the needs of a screen reader user or someone with a broken wrist.



# Integrated Solutions

Too often, design solutions that meet the needs of marginalized users, including users with disabilities, are segregated from the mainstream, resulting in unaffordable solutions and isolation of a particular population. For example, in the past, screen reader-accessible websites were created separately from the main site, often providing the user with a less engaging experience.

An inclusive design solution is one that is integrated into mainstream design, making the solution more affordable and more usable for all. For example, an accessible playground that is engaging and fun for all kids, including those with disabilities, allows them to play together rather than segregating some kids into a separate space.

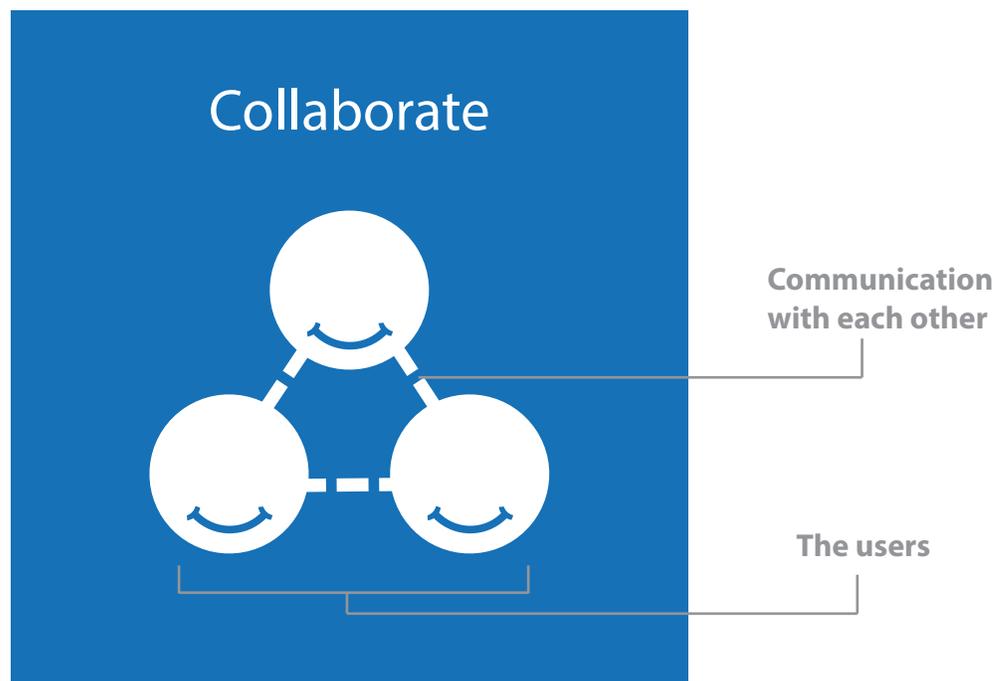


# Collaborate

Working together with others toward a shared goal is an important part of the inclusive design process. We all bring our unique experiences, skills and talents to the table; as a result, working collaboratively ensures more diverse perspectives and therefore a more inclusive design process.

By working with others rather than in isolation we learn from one another; we share the responsibility for an outcome, and in doing so we learn to trust one another and rely on each other's expertise.

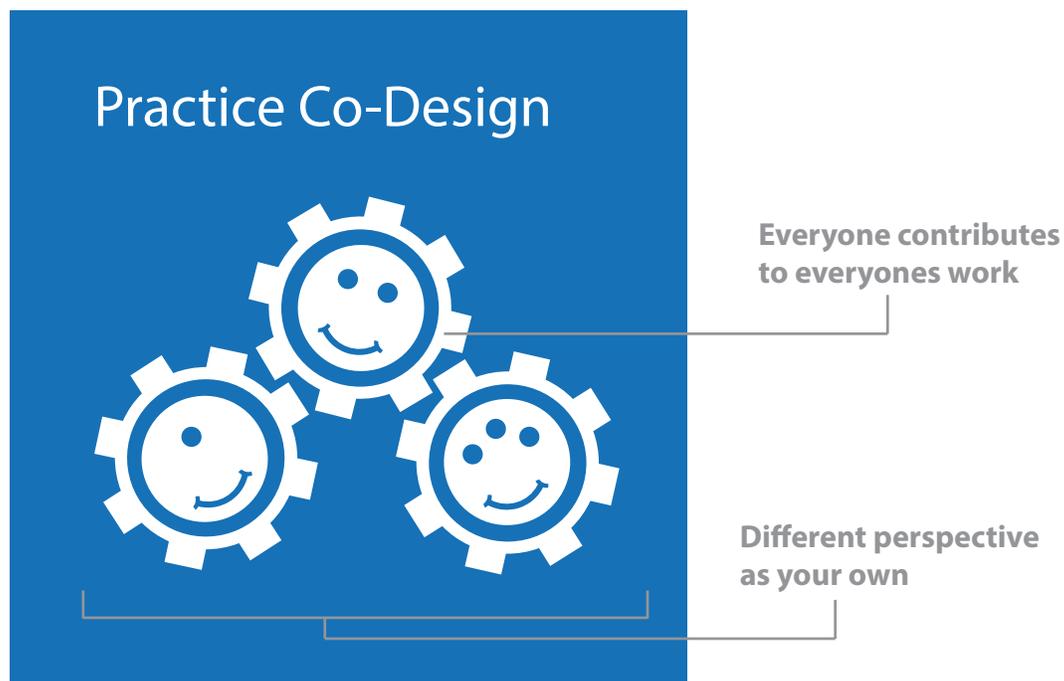
Learning to work collaboratively requires an adjustment in our approach. Gathering and incorporating ideas from a diverse group often takes more time and patience. Questions of ownership or credit sometimes arise. However, working collaboratively can give birth to new strategies of credit and ownership. For example, collaboration requires designing in the open, which can result in greater individual recognition by keeping a history of contributions to the work. The challenges of working collaboratively are far outweighed by the benefits, as the rich and diverse perspectives gained ultimately enhance the work.



# Practice Co-Design

The practice of co-design allows users to become active participants in the design process by facilitating their direct input into the creation of solutions that meet their needs, rather than limiting users to the role of research subjects or consultants. When a diverse group of users can participate in the design process, a broader range of needs can be considered throughout the process, from conception to completion. The entire team can participate in quick testing and feedback cycles, and design decisions can be made more quickly.

When users whose needs are typically considered to be “at the margins” are able to participate in the design process, the features that meet their needs can be more smoothly integrated into the final design. In this way, both the segregation of “special” solutions as well as expensive future retro-fitting can be minimized. Practicing co-design brings a more flexible and wider perspective to the design process, while incorporating insights from targeted communities.

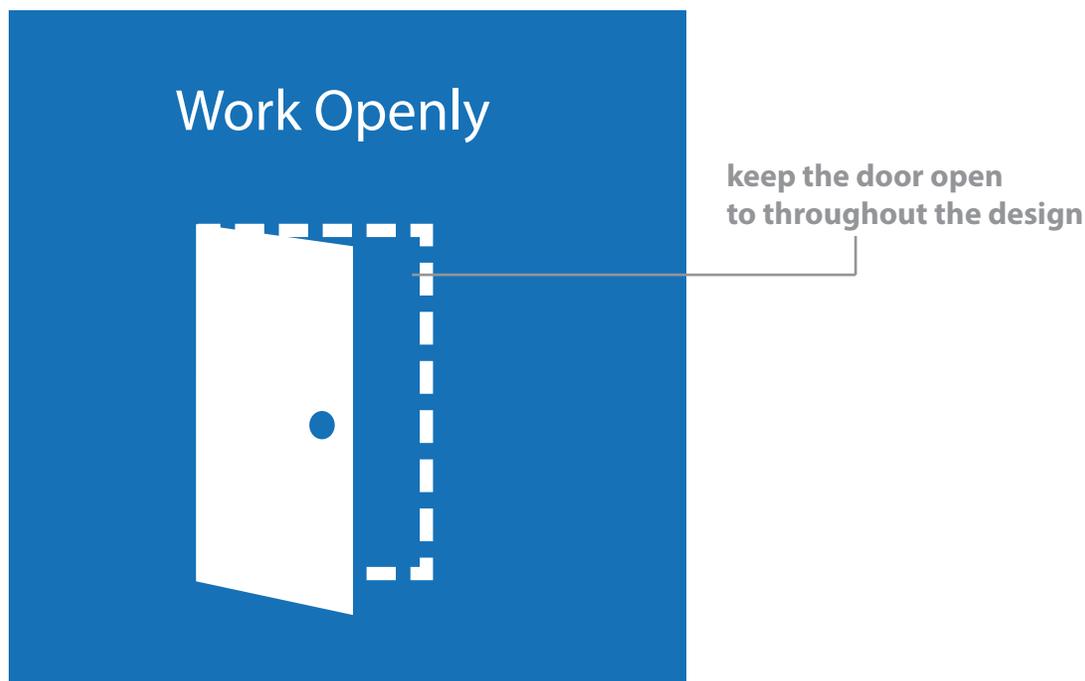


# Work Openly

Working transparently makes diverse participation possible, as those who wish to get involved and who have access to the content can learn and contribute. Transparency is an important aspect of inclusive design; it is an invitation to participate, and it allows for collaboration from a diverse group of people. Openness does not guarantee accessibility however; content and tools themselves must be accessible.

By working transparently, we provide greater access to our collective knowledge, and input and feedback is more likely to come from unexpected sources. This allows us to learn from and incorporate diverse perspectives, such that our solutions meet more diverse needs. Collaborating with people from different areas of study or work, from different cultures and/or with different life experiences broadens everyone's perspective and encourages empathy and an openness to new ideas.

Learning to work transparently requires an adjustment in the way that we approach our work. Sharing design ideas, sketches or unpolished mockups before they are complete can be scary at first. Learning to trust a community takes time and practice, but as more of us learn to work in this way, the more we can invite others into the process, resulting in a virtuous cycle of inclusion.



# Integrate Accessibility From the Start

By considering accessibility and inclusion from the start of a project, it is much easier to integrate accessibility features into the design of the final product or service. Multiple modes of interaction and access are best considered from the beginning of the process.

When designing a building, multiple modes of physical access (stairs, ramp, door widths, etc) must be considered in the early planning stages. The same approach should be taken in other fields. For example, when designing a website, the visual impact of the interface often takes priority; the experience of a screen-reader user, a keyboard-only user, and someone who may not use a keyboard or mouse at all should also be considered from the start. In addition, visual preferences like high and low contrast need to be taken into account early on in order to successfully integrate these alternatives into the visual aesthetic. By integrating accessibility into the design, the segregation of “special” solutions as well as expensive future retro-fitting can be avoided.



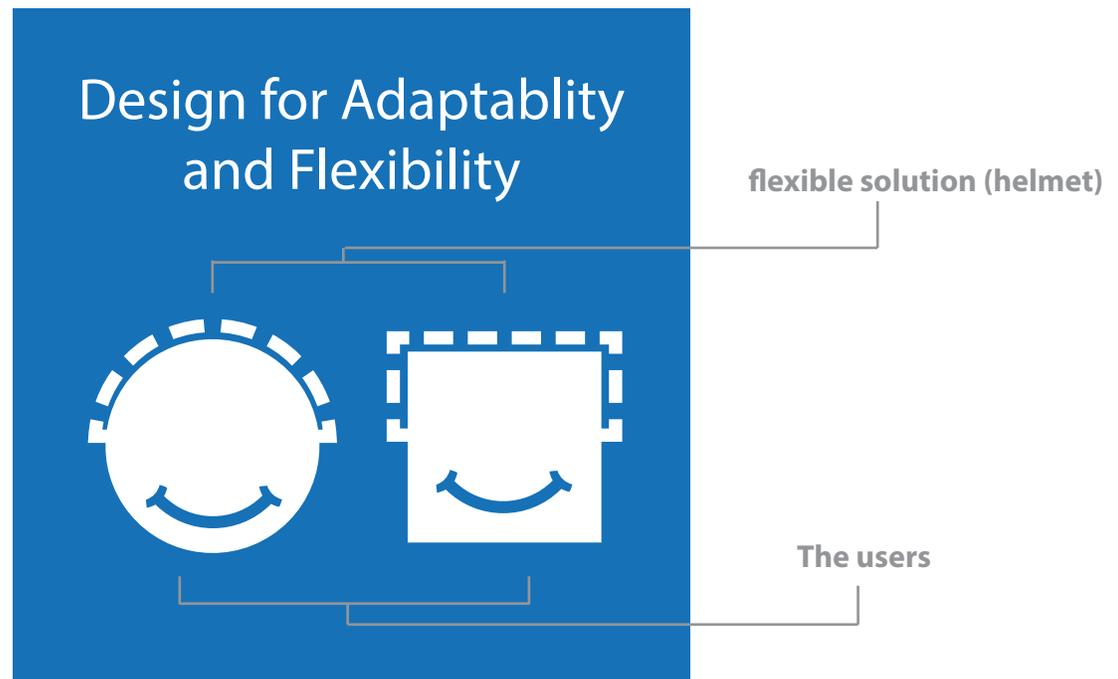
Integrate Accessibility  
From the Start

**ANY IDEAS?**

# Design for Adaptability and Flexibility

Designing for adaptability and flexibility means creating products or services that give the user more control over their experience, whether by including design features that allow for user configurability, or by building products or services that can easily be shared, remixed or repurposed by the user (e.g. building a digital tool using modular components). In addition, designing and building extensibility into products and services means that they can be used for a longer period of time, thus reducing their cost and increasing their reach.

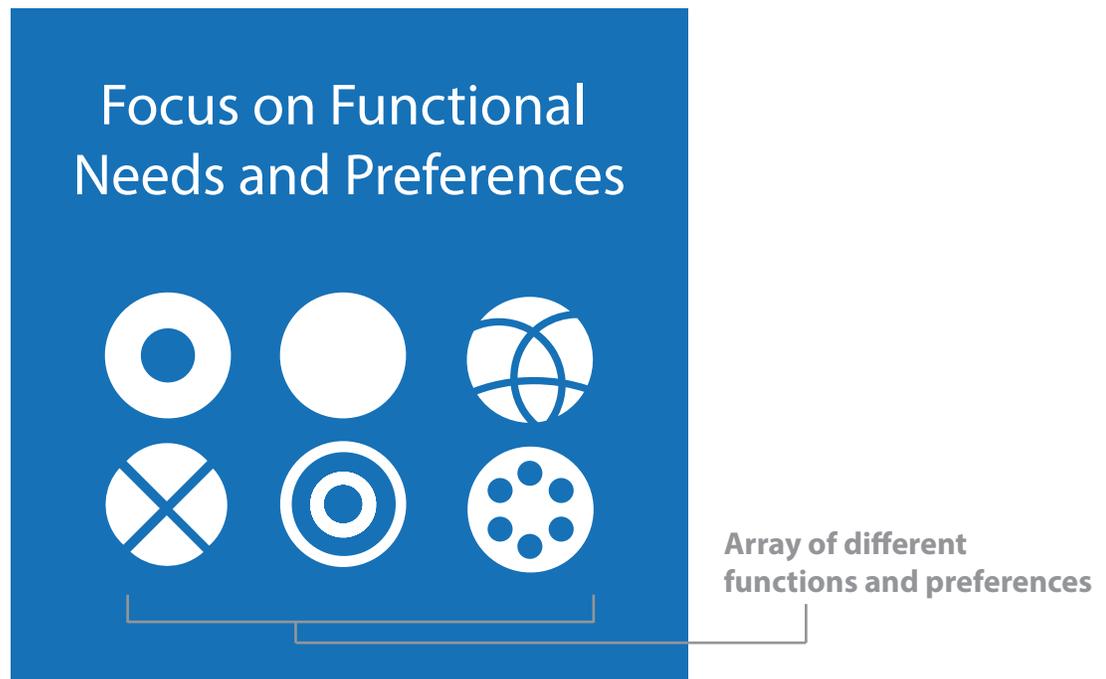
Adaptable and flexible products and services sustain the design process by actively supporting their own unexpected, creative, and ongoing redesign (by users). This redesign may include adding alternatives or customizations based on specific user requests, or adaptations made based on personal needs (that in turn meet the needs of others). In this way a product becomes a living system, capable of changing to meet current and future needs, thus making it more sustainable.



# Focus on Functional Needs and Preferences

When designing for users “at the margins”, including those with disabilities, the focus can often be put on the limitations of an individual or group of users, rather than on their functional needs related to completing a task or reaching a goal. Keeping the design focus on meeting a user’s needs puts the responsibility squarely on the features of the product or service to meet those needs - that is, if the users’ needs are not met, it is a failing of the design, rather than of the user (a mismatch). Also, by focusing on needs and preferences, our perspective is broadened to include others who may benefit from the same design features.

Individual needs and preferences are complex and defined by much more than a medical diagnosis or other singular label. When engaging in co-design, or when developing personas and use-cases, taking into account a user’s full range of interests, daily experiences and contexts will help to ensure that the unique and complex needs and preferences of a broad range of users are included.



# Communicate Multimodally

When sharing design artifacts, giving a presentation, holding a meeting, bringing someone new into a design community or sharing information with that community, it is important to use multiple modes of communication to make it possible for more people to have access to the knowledge and activities of the group. For example, when preparing a slide presentation, consider the accompanying text description of your content so that members of your audience who cannot see the visuals also have a fully nuanced and engaging experience. When holding a meeting, ensure that the space is physically accessible but also how you might include remote participants. When posting shared design artifacts, consider both the accessibility of the artifacts themselves, as well as the forum you are using to display and share them.

Engaging in multi-modal communication can go beyond the specific or technical aspects of accessibility. For example, considering different learning styles and using a range of communication methods, and ensuring someone has all the information they need in order to fully participate in a process means that the design process can be more inclusive of participants with a diverse range of needs, interests, personalities and ideas.



Communicate  
Multimodally

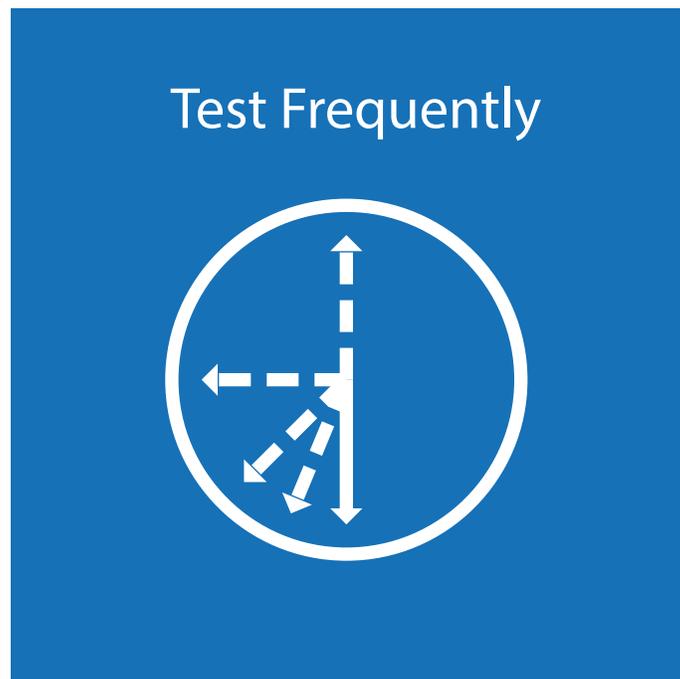
**ANY IDEAS?**

# Test Frequently

The earlier and more often user feedback can be solicited in the design process, the better. When usability testing is delayed, it becomes more difficult and costly to change the design. Waiting to have a fully functional prototype is not necessary; User Experience (UX) walkthroughs and usability testing can be done with rough prototypes or sketches.

When engaged in a co-design process, the entire team, including users and other stakeholders, can participate in quick testing and feedback cycles. In each of these cycles a number of ideas can be tested by team members themselves. Feedback is used to enhance those ideas or come up with new ones; these ideas can then be run through another cycle of testing, feedback and discussion.

Early and frequent usability testing is a critical component of an inclusive and efficient design process that helps to achieve a successful design solution, and safeguards against costly after-the-fact changes.



**ANY IDEAS?**

# Facilitate Inclusively

When organising or leading a meeting or discussion, encouraging equal participation among members is important to ensure that everyone's voice is heard. Using or creating a space that is accessible to all is the first step; facilitating participation from everyone present (whether remotely or locally) is the ultimate goal.

As a starting point, using accessible communication tools (e.g. accessible presentations or accessible sketching and note-taking tools) during a meeting or discussion allows for greater participation of all members. Staying open to ideas that are offered (a "yes, and" approach\*) provides positive reinforcement and encouragement, and can yield unexpected results, while remaining flexible and ready to change direction allows for new ideas to emerge.

Thinking beyond technical limitations and avoiding getting bogged down in technical details too quickly, while using plain language wherever possible to communicate ideas means that the discussion can stay open for longer and more people will be able to participate, resulting in a richer and more productive session.



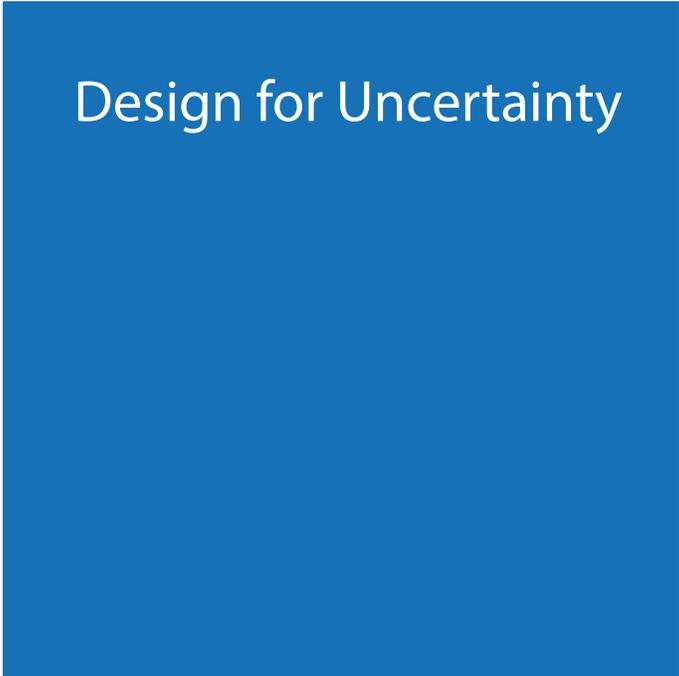
Facilitate Inclusively

ANY IDEAS?

# Design for Uncertainty

It is impossible to predict the infinite number of creative, serendipitous, and unexpected uses of a product or service. Embracing and encouraging this unpredictability is an important part of the inclusive design process. Although it relies on serendipity and other unknowable factors, unexpected uses can be encouraged by giving the user ways to extend, remix, share, repurpose, and in other ways personalise the “final product”.

Staying open to new ideas in the design process for as long as possible, getting designs into users’ hands early and often, and making it easy and attractive for the design team to respond to change are some of the ways that uncertainty can be embraced.



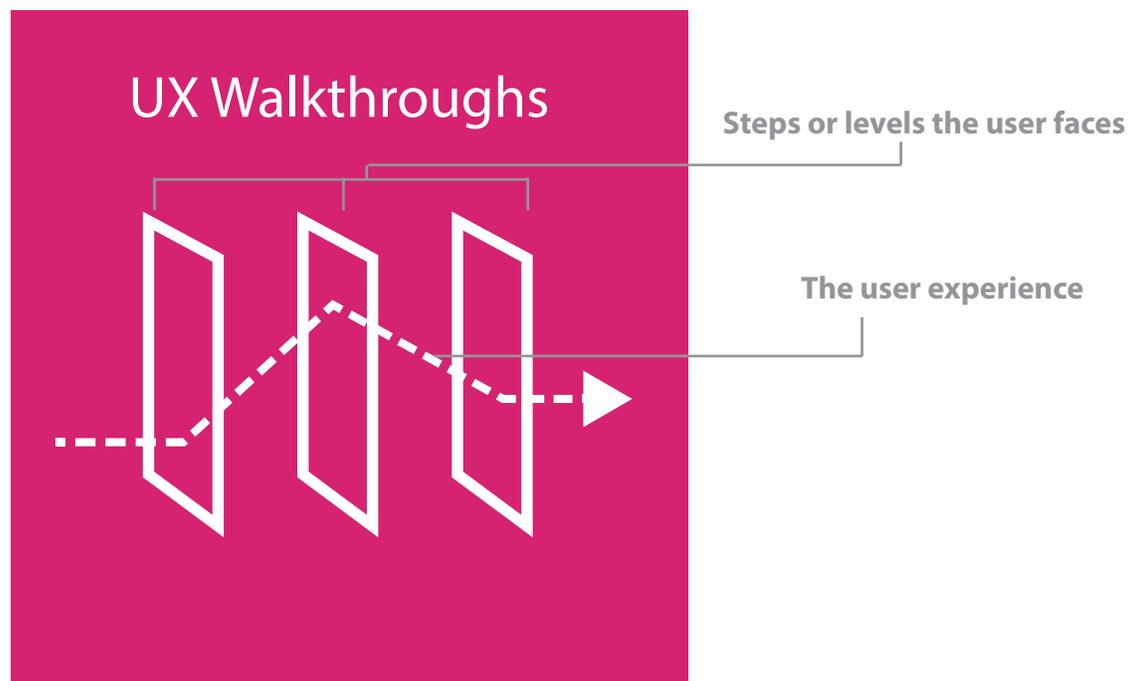
Design for Uncertainty

**ANY IDEAS?**

# UX Walkthroughs

A User Experience (UX) Walkthrough is a technique used to identify usability and accessibility issues in a website or application. It is a procedure for examining a user interface following a set protocol and making assessments based on predetermined criteria. It emphasizes paired or collaborative evaluation of user interfaces by designers and non-designers alike, and serves to bring a diversity of perspectives to bear on the design process.

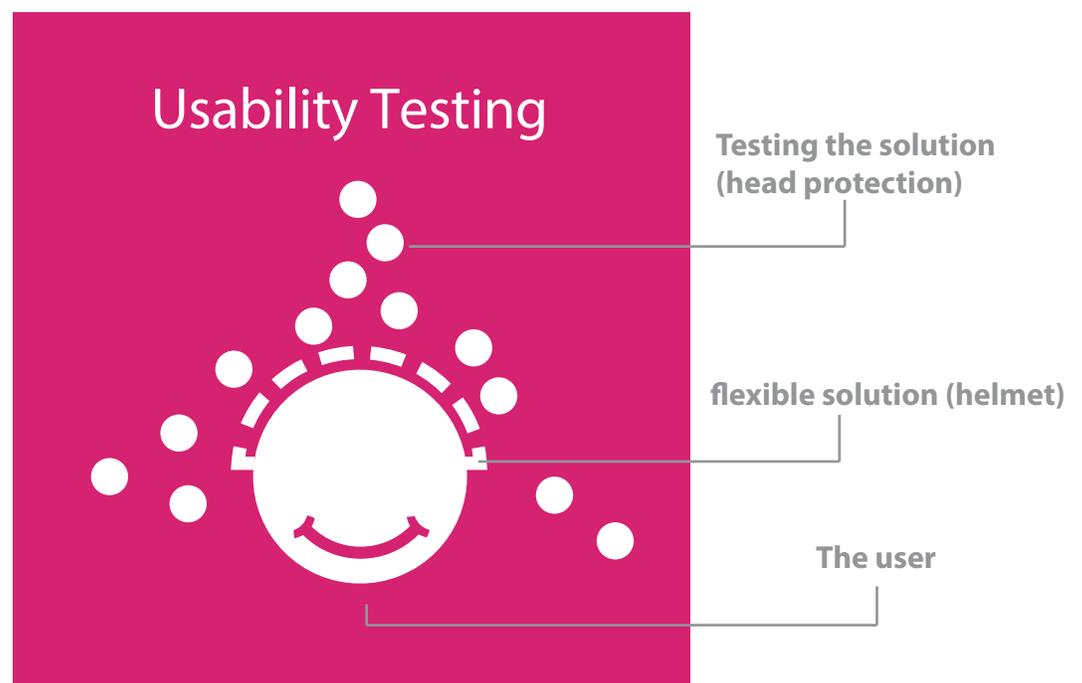
The UX Walkthrough technique is a synthesis of conventional methods (heuristic evaluation, cognitive walkthrough and code review) that enables the reviewer to make assessments both from the user's point of view and that of the designer. The multifaceted nature of the UX Walkthrough enables the reviewer to make assessments across several dimensions, including: general design quality, task-oriented usability, assistive technology usability, accessibility standards compliance, and code quality. A UX Walkthrough produces a result that reveals usability and accessibility issues effectively and efficiently.



# Usability Testing

Usability testing, also sometimes referred to as user testing, is a technique for evaluating the usability of a design by working with an actual or potential user of a product or system. At a basic level, a usability test usually involves a facilitator asking a user to complete a series of tasks (which may or may not be predetermined) while observing the interaction, noting any problems the user encounters, suggestions for improvements, and sometimes the amount of time it takes to complete a task. These findings are then fed back into the design and development cycle in order to improve the product or system. This does not mean that every suggestion made during testing should be directly incorporated into the design; rather it is the designer's responsibility to consolidate and parlay the information into the next stage of the design.

Usability testing can be performed on products or systems at any stage of development, from the early stages of design to the final stages of production. It is most helpful to start early in the design process by performing usability tests with rough sketches or prototypes, and continuing to test more interactive prototypes as a product or system is iterated upon.

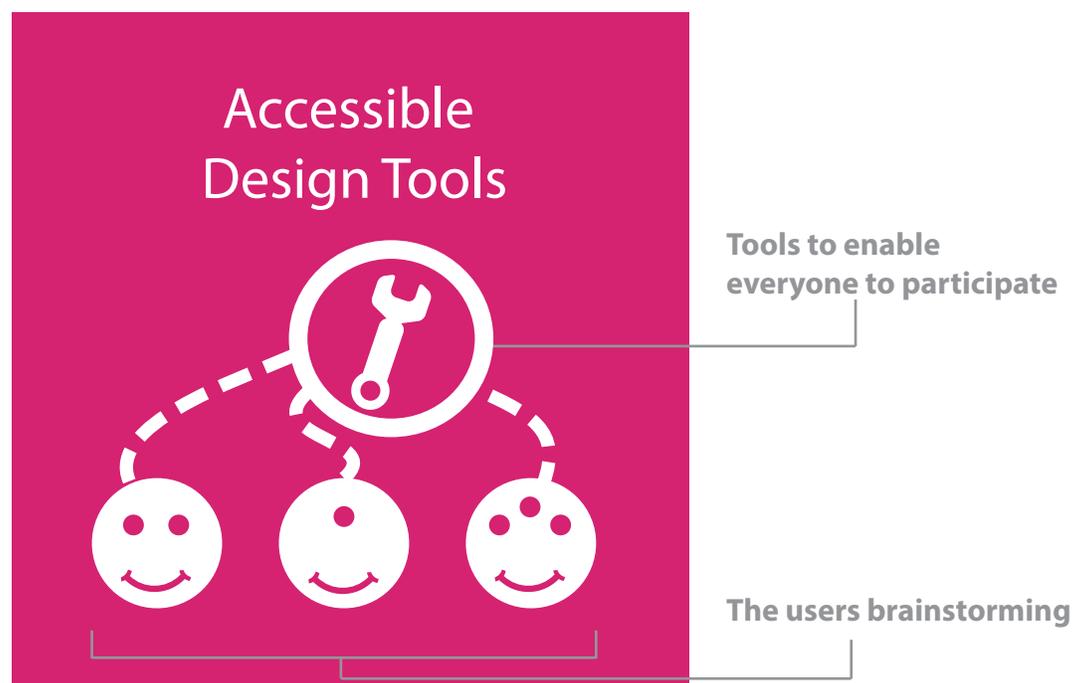


# Accessible Design Tools

Accessible design tools can be grouped into two different categories:

The first category includes design tools used most commonly during the early ideation and iteration phases of the design process. These tools enable team members to participate in the process of brainstorming, sketching, and ideation. There are a limited number of tools available that are open source and/or relatively easy to learn and use, such as:

The second category of design tools are used to execute a design idea. Few of the most common design tools in use today have accessibility features (for example, the ability to attach descriptive text narratives to images, to enlarge the controls, or to navigate and execute designs using a screen reader).

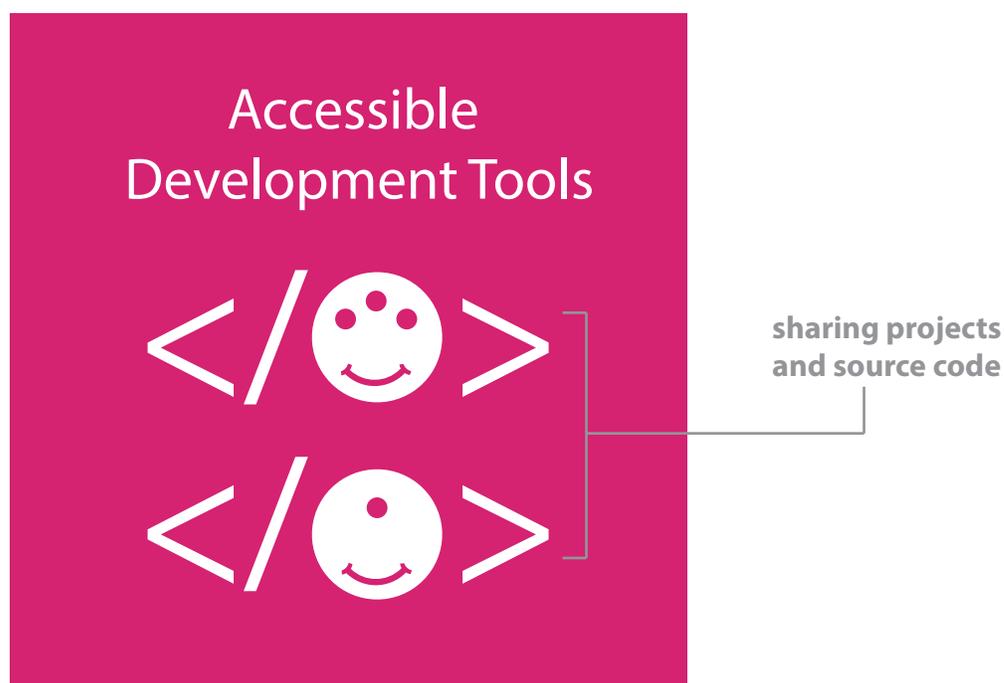


# Accessible Development Tools

The first category consists of tools that enable developers to share their projects, solicit peer feedback, and collaborate.

One of the tools that provides an open platform for sharing projects and source code is Github. The Github web browser-based interface is compatible with screen readers and can be navigated by different means including keyboard, mouse and switches.

Development tools in the second category provide accessible environments for writing code. Most current code editors are highly customizable and developers can adjust the font type, size, text color, background color and brightness, etc. based on their preferences. There are few other accessible development tools that are made for developers with specific needs and preferences.

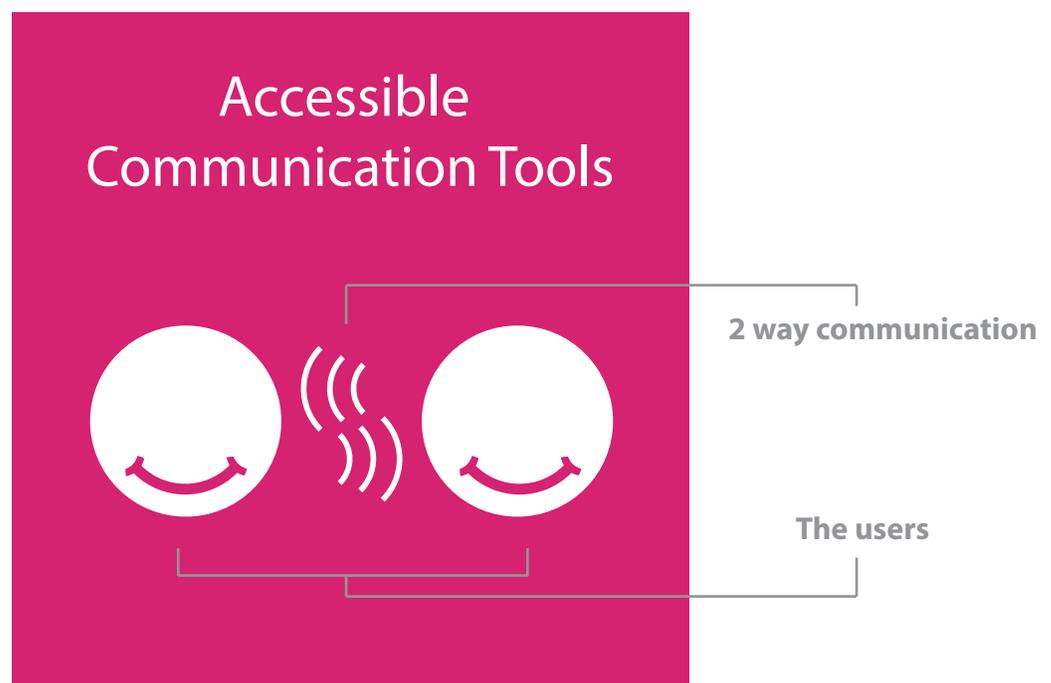


# Accessible Communication Tools

In an inclusive design process, team members share ideas throughout the design/development process and at different stages of completion in order to solicit feedback from peers and stakeholders on an ongoing basis. This approach contrasts with that of many organizations that follow a waterfall approach, where pre-defined steps in the design and development process are followed in a strict order, requiring the completion of one step before moving to the next. With a waterfall approach members of different teams usually communicate only during the transition periods, when passing specific artifacts on from one step to another (e.g. handing off completed design mockups to developers).

An inclusive process encourages the exchange of ideas openly and fluidly, which not only improves the final outcome, but helps the entire team to be aware of the decisions that are being made along the way, thus minimizing last-minute surprises. To maximize participation, the communication tools themselves should be available to all and accessible to individuals with a wide range of needs.

Accessible communication tools can help to build open communication channels and allow the sharing of ideas at any stage of completion within a team as well as within a larger community.

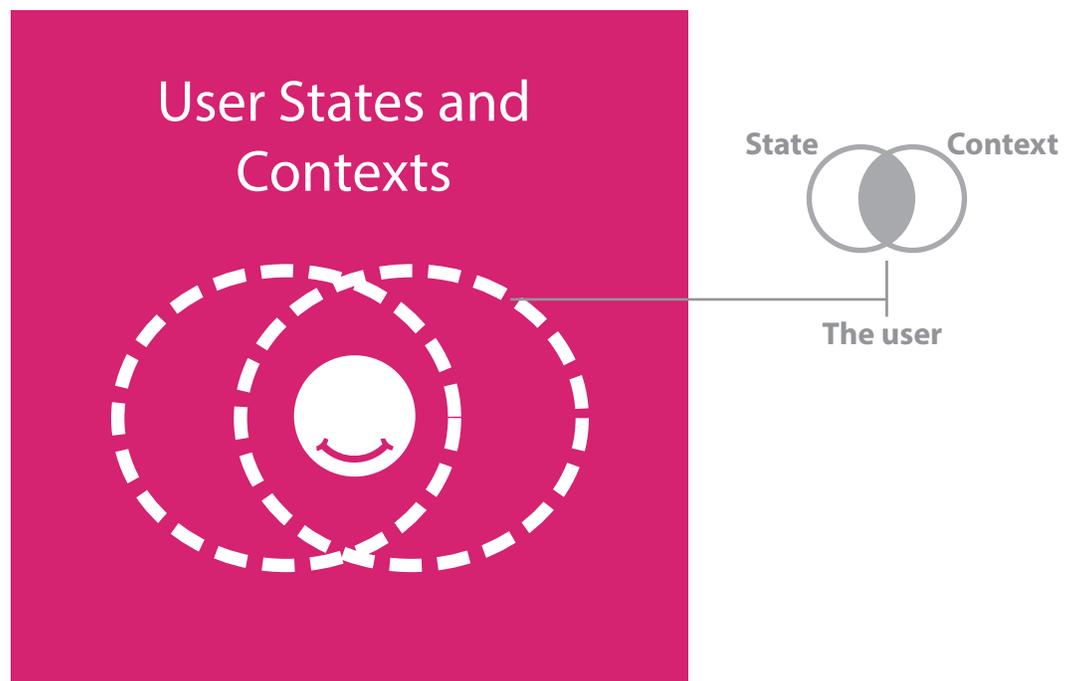


# User States and Contexts

User states and contexts is a use-modelling tool for conceptualizing, designing, and evaluating the ability of a design to be consumed and operated by users in a wide range of states and contexts.

A user states and context map can demonstrate needs that are represented by a particular persona, or that of a collection of personas. The map can also be used to consider how states and contexts can change in the short term (e.g. on a daily basis) or the long term (e.g. over a lifetime).

By demonstrating the many states and contexts a user can be in at any given time and in any given situation, the map presents a bigger picture. It describes the broad and ever-changing needs of a single user, and also allows a comparison of the needs of multiple users. In this way it can reveal patterns, interesting outliers, or commonalities in needs that might not otherwise be obvious.

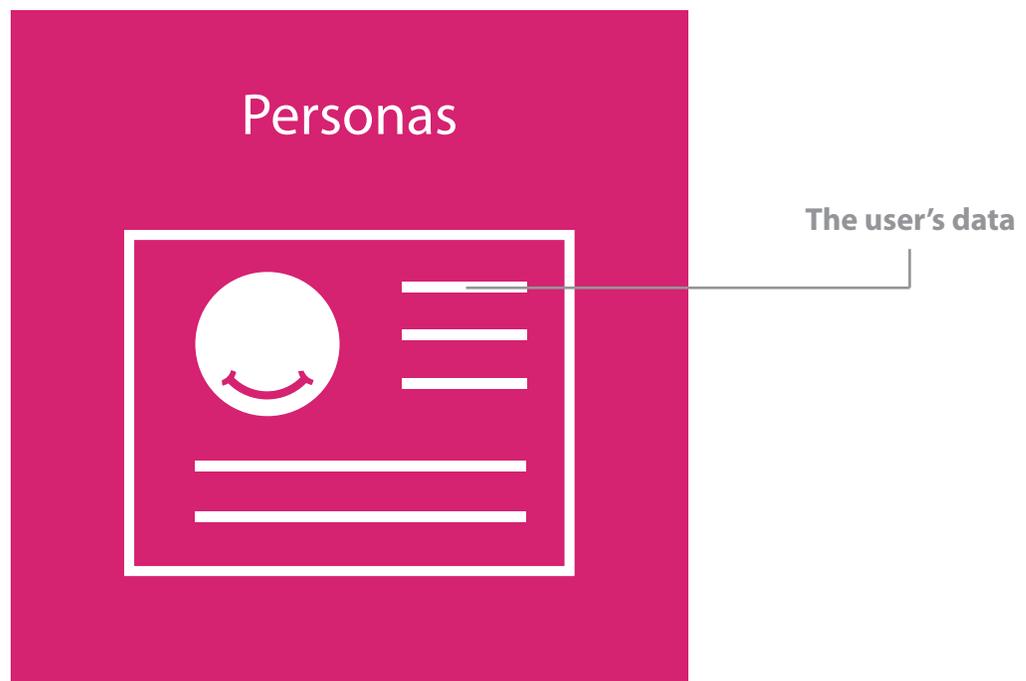


# Personas

Personas are models representing potential stakeholders who may use a product or service. Although they are fictional people, their characteristics, needs, goals and motivations are rooted in the insights and feedback collected from various sources including formal or informal interviews/surveys or through familiarity with the needs and interests of self, co-workers, friends or family members. They begin as early, provisional sketches and often evolve through iterations as more information is gathered.

Personas are behavioural models; they do not represent the full demographics of any given population of complex and unique people. They enable designers, developers and evaluators across a project to keep a broad and diverse collection of stakeholders in mind. Considering the needs, interests and daily tasks of non-obvious or untraditional users helps a design team to think broadly and stay open to unpredicted uses of the systems they are creating.

When paired with the other tools, particularly User States and Contexts, UX Walkthroughs, and Use-Cases, Personas can help to paint a clearer picture of a broad and diverse range of user needs and preferences. They must be developed and used with care in order to avoid stereotyping or fictionalising the user, and they must be tempered with the awareness that no single persona or group of personas can independently determine the full range of potential uses of a product or service.



# Use-Cases

Use cases describe particular scenarios in which a user may encounter and use a product or service, providing more detail about specific tasks and goals as well as helping to map out the potential steps in a workflow. User personas and accompanying use cases are not meant to exhaustively describe all potential stakeholders or situations; rather they help to illustrate key goals, the main steps that should be taken towards achieving that goal, and behaviour patterns related to the design in question.

In an inclusive design process it is important to include edge cases. These are personas and use-cases that describe both users with needs that are not typically considered in the design process, as well as non-typical or unexpected uses of a product or service. Use-cases present a picture of a person in a specific context, with available tools, existing constraints and potential distractions, who is hoping to achieve a specific goal using the product or service in question.

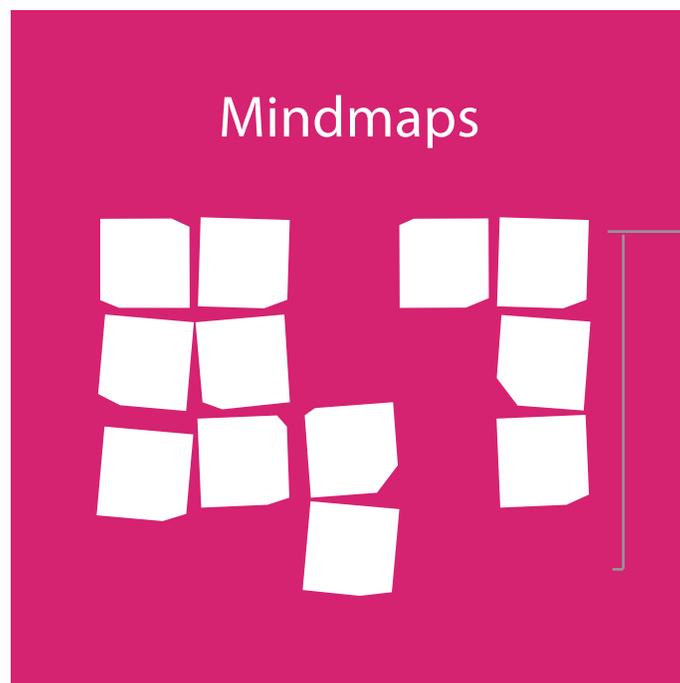


# Mindmaps

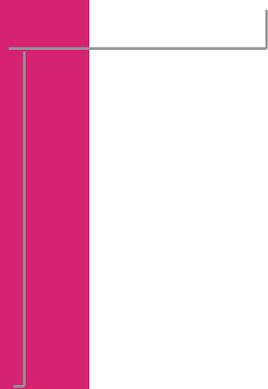
Mindmaps are visual diagrams used for organizing often complex information related to a specific topic or concept. They help designers, developers or others on the project to think through and reveal the interconnections between different pieces of information. Creating a mindmap can be useful in the early stages of a project to move from a loose narrative or vague concept into a more concrete picture of a system or workflow, prior to making more detailed design decisions about specific functions or interface layout etc.

Creating a mindmap is one way to dig deeper into the more complex layers of how a product or system might work. It can be used to explore different options, and/or to present a bigger picture of a complex system. In this way it enables designers or developers to better contextualize a specific topic, concept or system.

2nd option  
brainstorming



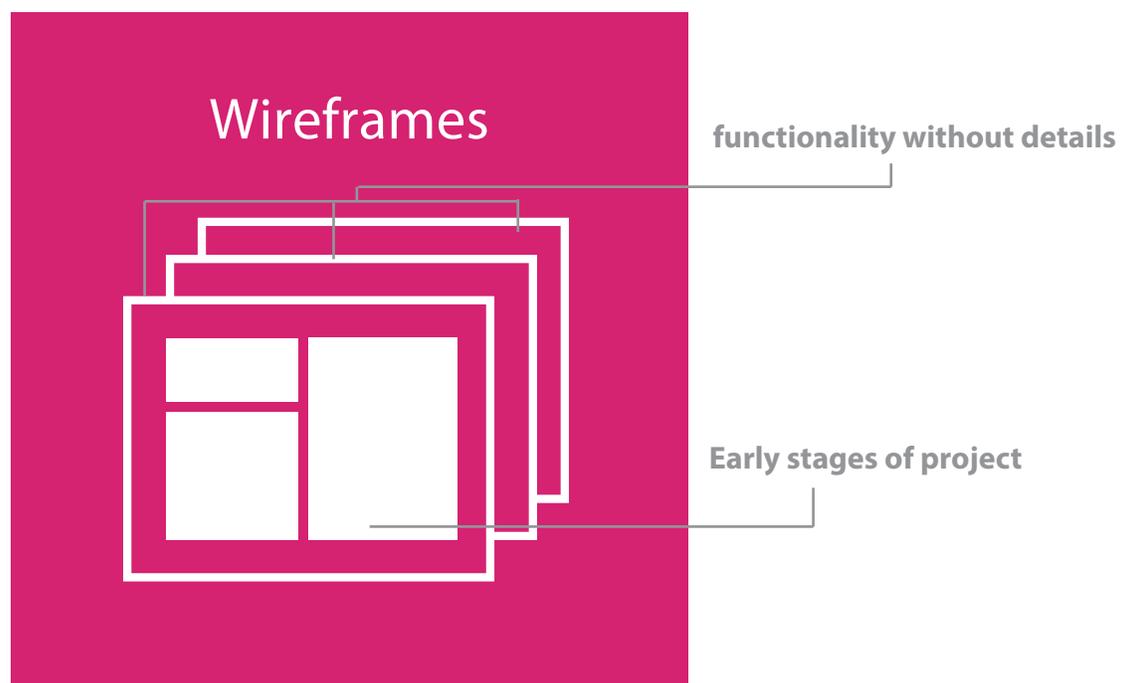
mind maps or  
brainstorming  
with post-it



# Wireframes

Wireframes provide a way to develop and present design ideas in the early stages of a project. They can be made up of very rough paper sketches or can be more refined and detailed digital artifacts. In the early stages of designing an interface, they can be used to help plan the layout of the design. They are a good way to focus on the functionality of the design without getting into the details, such as style and colour.

Alongside the visual wireframes, it is best to also consider narratives, long descriptions, or written step-by-step "tours" through the wireframes as a way to create a textual alternative. Not only does this make the wireframes more accessible, but it is a good way to start imagining how the interface can be presented in alternative modes. Considering this in the early stages of design will result in more successfully integrated features.

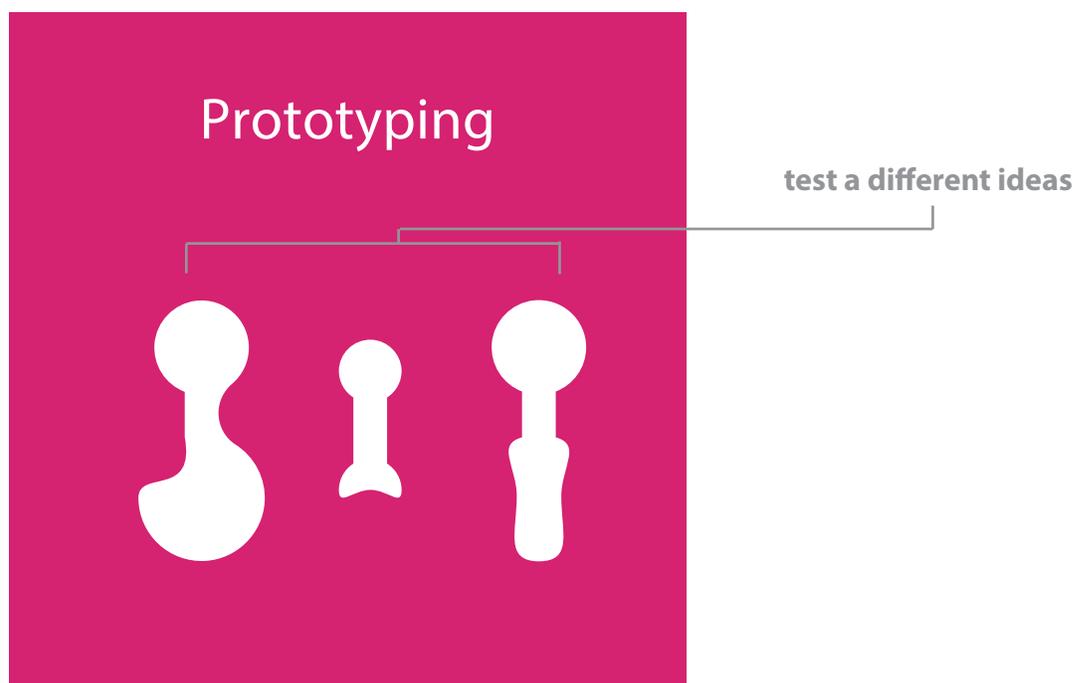


# Prototyping

Prototyping is an effective way to quickly communicate your ideas with others, solicit feedback, and learn through making and sharing your ideas. Prototypes can be used at different stages of your design and development process. In the early stages, try rough and low fidelity prototypes to test a number of different ideas. Don't be bogged down with details and don't try to make them look good. The purpose of these prototypes is to test a number of different ideas to find out whether they have the potential to be taken forward or not. Paper prototypes are good examples of rough and quick prototypes.

In the next phase when your ideas are more refined you can spend a little more time on details and the look and feel of the prototype. These prototypes focus more on the interaction points between a user and a product, and on creating the user experience; they help to refine the details and interaction patterns.

In the final phases of the design and development process, high fidelity prototypes come in handy. Their look, feel, and function more closely reflect the final product. These prototypes are often presented in a final round of usability testing.



# Synchronized Design Assets

When working collaboratively, designers need a platform that enables them to freely and easily share design artifacts. An ideal tool would allow versioning as well as structured commenting and discussion that is attached to the design artifacts (with associated archiving). The platforms that are currently available to developers, such as Github, are not compatible with most designers' needs and workflows. Thus, designers have often been left to come up with alternative methods of collaborative file sharing, each with its own benefits and limitations.

The main purpose of creating synchronized design assets is to provide the community with a common location where they can access the latest version of a file rather than searching through emails or chat logs. This helps the design teams establish more stable and shared archives for their design projects, and makes it easier to bring newcomers on board.



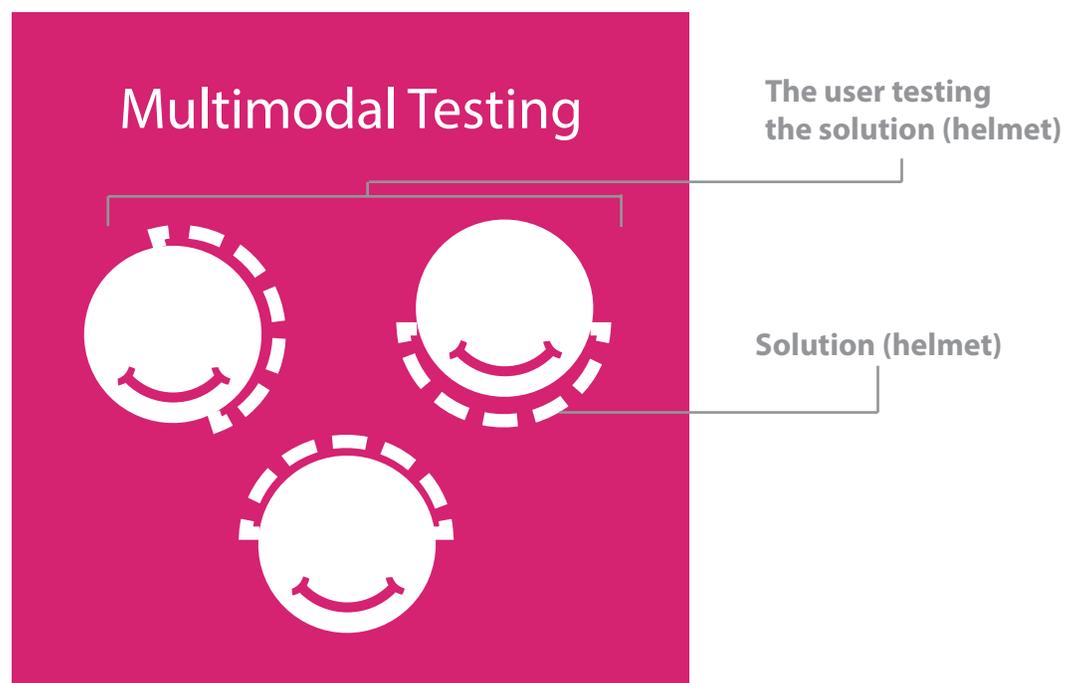
Synchronized  
Design Assets

**ANY IDEAS?**

# Multimodal Testing

When designing and developing a product or service, consider all the different ways that a user might interact with it. For example, in the case of a digital interface, ensure that you integrate features into your product to make it compatible with screen readers, keyboard only users, and single switches. When you are ready, you can test your design in a number of different ways. It is best to run usability tests with participants who have a broad range of needs and experiences.

The audio experience of a digital interface can be tested in the very early stages of design with only sketches or paper prototypes, by having someone act as a human screen reader (by reading out the audio as a screen reader would). Once an interactive prototype is created, it can be tested with various input/output methods, including screen readers or other assistive technologies. Websites can be tested using various web accessibility checkers, however, these should be used only as an initial guide.

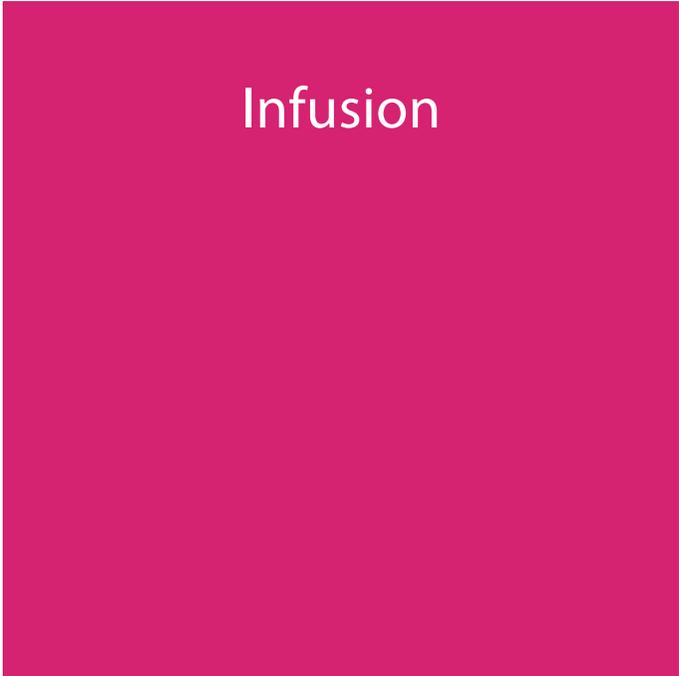


# Infusion

Infusion is a code framework for building personalizable and adaptive applications using JavaScript and other web technologies. It also includes a growing collection of user interface components, built on top of jQuery, that help make it easier to build user interfaces by mixing and matching accessible components and then customizing them to suit your unique context. Infusion's components are designed flexibly so that all their default features, styling and parts can be easily changed, replaced and added to.

Infusion provides individuals with a way to actively engage in the creative process by adapting or redesigning an application to suit their personal needs and preferences. Components such as User Interface Options (<http://build.fluidproject.org/infusion/demos/uiOptions/>) offer customization features that support the discovery of personal preferences, allowing for one-size-fits-one customizations and storage of portable preferences.

The Infusion framework gives developers a way to build open, modular systems that can be changed and configured during use, so that anyone can modify and adapt it to create systems, applications, components, etc. that meet their specific use cases and needs. The Infusion framework reflects an accumulation of experience about how to make applications accessible, and is as much about community values, shared inclusive practices, and documentation as it is about code and components.



Infusion

ANY IDEAS?

# Metadata Authoring

Content authors can use metadata to provide information about what needs a learning resource can accommodate. Metadata can be used to describe, among other things: what the technical/environmental requirements are for a given resource (e.g. is a mouse required to interact with the resource?); what sensory modalities are required to perceive the content of the resource (e.g. does the learner need to be able to hear the content?); what learning style the resource accommodates (e.g. is this a highly visual learning resource?).

Describing Open Education Resources (OERs) and other resources with metadata allows a delivery system to automatically personalize the content and its delivery to meet the unique needs of each learner. Metadata can be recorded in a metadata record separate from the resource itself.

Authoring metadata promotes cumulative accessibility of resources as third parties create and associate alternatives to original resources. Together, the many resources in a system contain the features or educational materials that every student needs, but no single resource must be 100% accessible to every kind of learner. By creating metadata about each resource, it is easier to determine which resources might need to be adapted to meet an individual's needs.

