

# Universal Design, Ability-Based Design, Value-Sensitive Design

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Intro HCI  
03/28/2013

Based on Shaun Kane's paper "Ability-based design: Concept, principles and examples" and Jeff Bigham's slides

## Universal/Ability-Based/Value-Sensitive Design

### Universal Design

## Equitable use



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## Flexibility in use



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## Simple and intuitive



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## Perceptible information



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## Tolerance for error



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## Low physical effort



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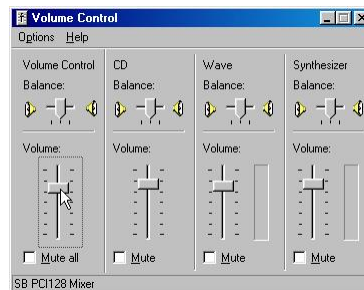
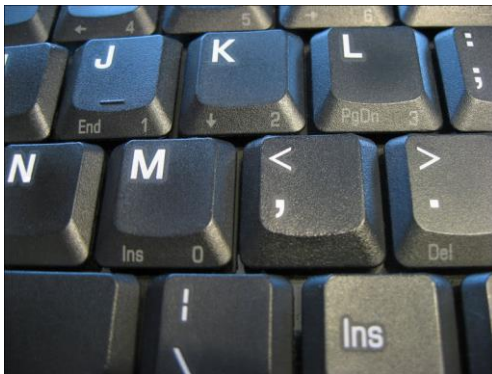
## Size and space



[http://all-free-download.com/wallpapers/other/playing\\_cards\\_wallpaper\\_miscellaneous\\_other\\_wallpaper\\_3281.html](http://all-free-download.com/wallpapers/other/playing_cards_wallpaper_miscellaneous_other_wallpaper_3281.html),  
<http://www.americanbathind.com/accessabath.htm>

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## Examples



<http://www.gamespot.com/forums/topic/26565244>,  
<http://tones.wolfram.com/tsfaq/windows/volumecontrol98.en.html>

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## Curb cuts



[http://4sbccfaculty.sbccc.edu/lecture/2000s/lectures/Jan\\_Shapiro.html](http://4sbccfaculty.sbccc.edu/lecture/2000s/lectures/Jan_Shapiro.html)

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## Sacrifices



<http://www.bellyitchblog.com/2013/03/how-to-get-kids-to-accept-concept-of.html>

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## Your Turn

- Equitable use
- Flexibility in use
- Simple and intuitive
- Perceptible information
- Tolerance for errors
- Low physical effort
- Size and space

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## Ability-Based Design

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This...



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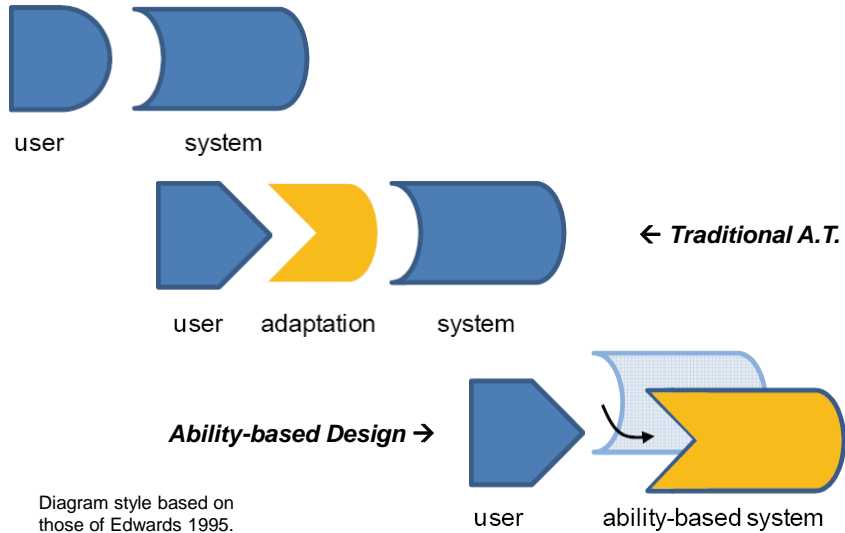
... vs. this



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## Ability-Based Design

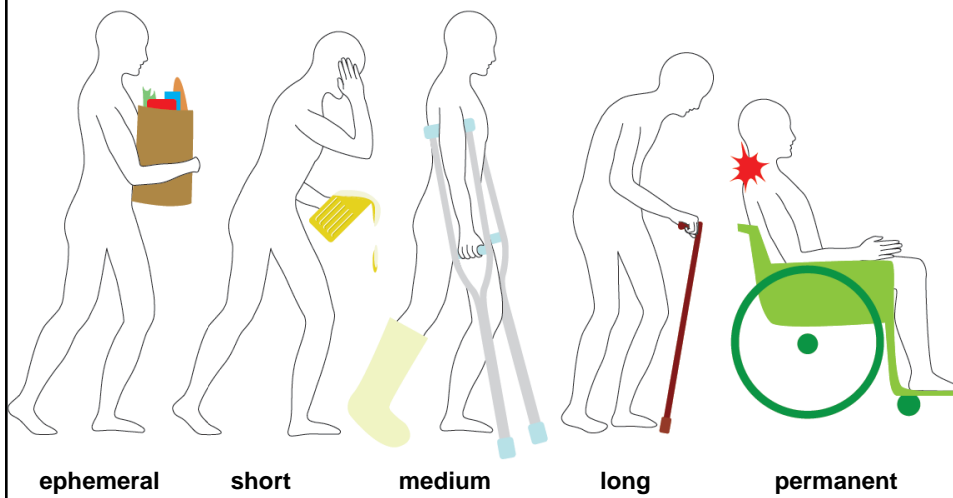
## How it works



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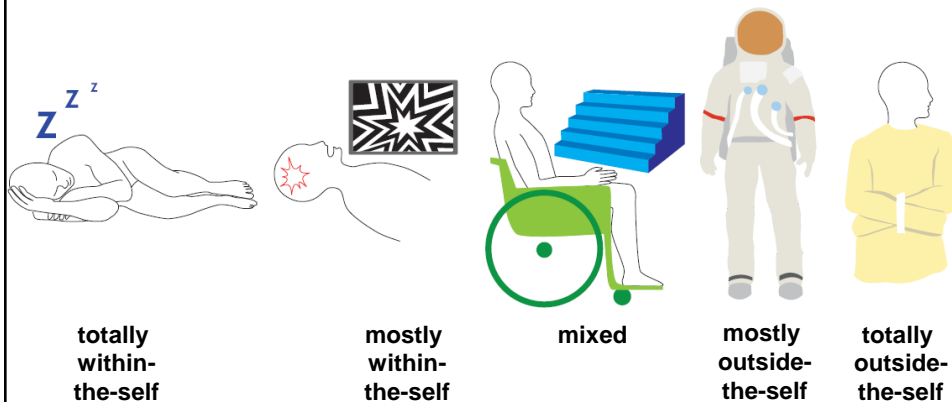
## Ability-Based Design

## Duration



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## Impairment source



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## Source vs. duration

SOURCE			
DURATION		<i>within-the-self</i>	<i>outside-the-self</i>
	<i>short</i>	acute injuries (e.g., sprained ankle)	encumbrances (e.g., trying to open a door while holding groceries)
	<i>long</i>	birth defects, chronic injuries (e.g., spinal cord injury)	limiting working conditions (e.g., workdays spent welding in a loud factory)

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# Ability-Based Design: Principles

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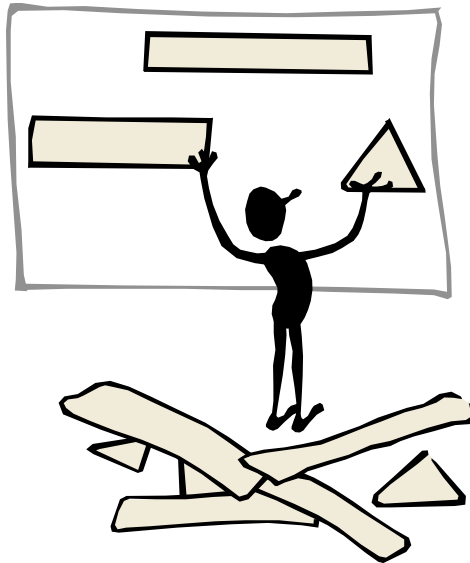
## Ability



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## Ability-Based Design: Principles

## Blame



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## Ability-Based Design: Principles

## Commodity



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## Ability-Based Design: Principles

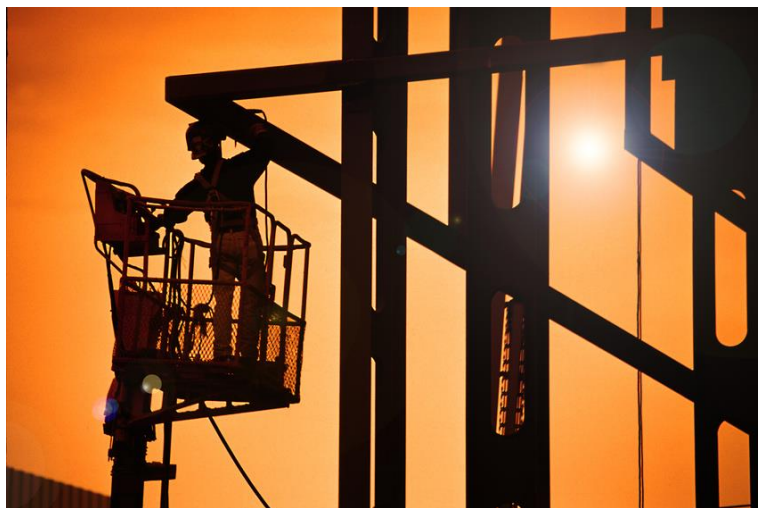
## Performance



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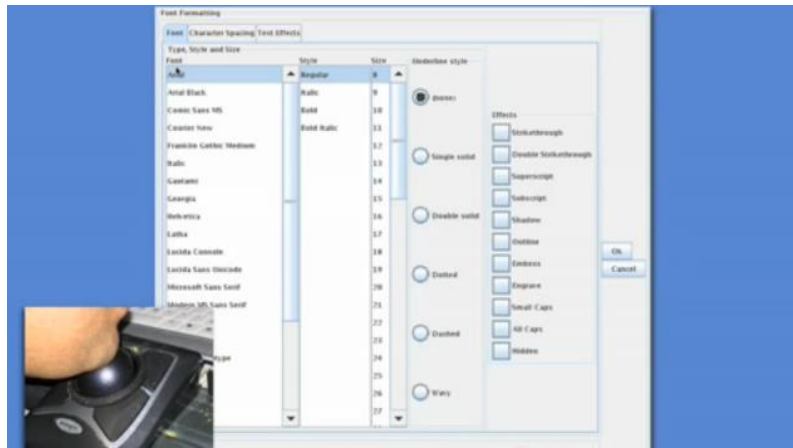
## Ability-Based Design: Principles

## Context



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# Adaptation



<https://www.youtube.com/watch?v=B63whNtp4qc>

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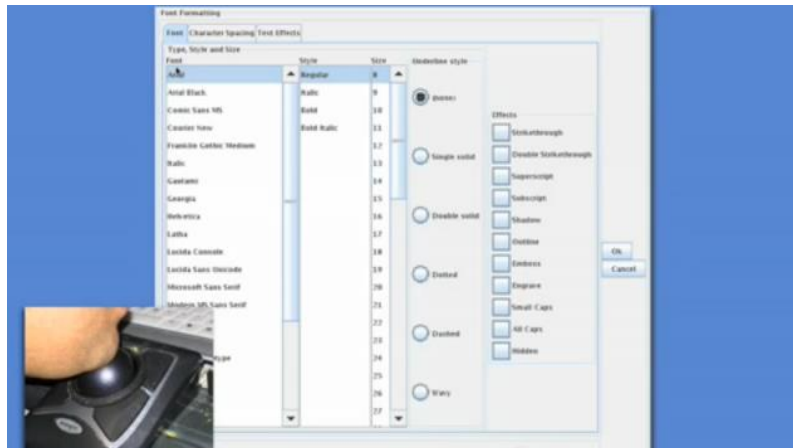
# Transparency



[http://inception.wikia.com/wiki/File:Movie\\_Trailer\\_Preview\\_Screen.jpg](http://inception.wikia.com/wiki/File:Movie_Trailer_Preview_Screen.jpg)

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# SUPPLE



<https://www.youtube.com/watch?v=B63whNtp4qc>

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## Value-Sensitive Design

Based on Katey Deeny's slides:  
<http://www.slideshare.net/kateydeeny/applying-value-sensitive-design-principles-to-user-engagement>

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## Value-Sensitive Design

## What are values?

Ambition	Friendship	Justice	Patience
Compassion	Generosity	Kindness	Perseverance
Courage	Gratitude	Leadership	Privacy
Creativity	Honesty	Learning	Respect
Dedication	Hope	Loyalty	Responsibility
Determination	Humility	Mentoring	Security
Education	Humor	Motivation	Sharing
Equality	Ingenuity	Opportunity	Sustainability
Excellence	Inspiration	Optimism	Trust
Forgiveness	Integrity	Passion	Unity

<http://www.slideshare.net/kateydeeny/applying-value-sensitive-design-principles-to-user-engagement>

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## Value-Sensitive Design

## Context-based values



<http://www.slideshare.net/kateydeeny/applying-value-sensitive-design-principles-to-user-engagement>

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## Tensions



<http://www.slideshare.net/kateydeeny/applying-value-sensitive-design-principles-to-user-engagement>

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## Value-Sensitive Design: Steps

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## Value-Sensitive Design

## Identify value, tech, context



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## Value-Sensitive Design

## Identify stakeholders



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## Value-Sensitive Design

## Identify benefits/harms



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## Value-Sensitive Design

## Map benefits/harms to values



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## Identify potential value conflicts



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## Your Turn

- Identify value, tech, context
- Identify stakeholders
- Identify benefits/harms
- Map benefits/harms to values
- Identify potential value conflicts



[http://nintendo.wikia.com/wiki/Dr.\\_Mario\\_%28character%29](http://nintendo.wikia.com/wiki/Dr._Mario_%28character%29), <http://www.mariowiki.com/goomba>

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