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Is digital inclusion possible? Hints and tricks for creating accessible digital contents

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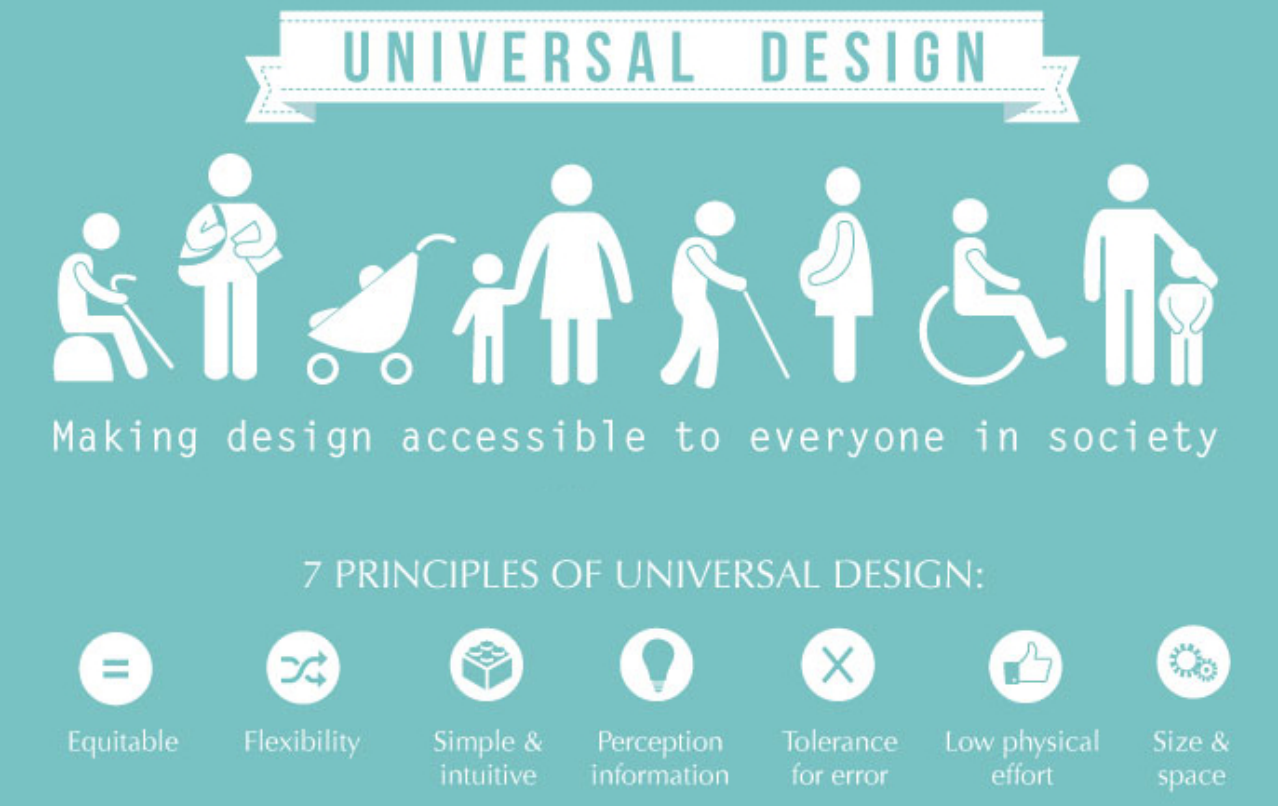
What is the difference?



← an ugly ramp

a ramp →





The infographic features a teal background with white icons and text. At the top, a banner reads 'UNIVERSAL DESIGN'. Below it, a row of eight icons depicts various people: a person with a cane, a pregnant woman, a person with a stroller, a child with an adult, a person with a cane, a pregnant woman, a person in a wheelchair, and a child with an adult. Below the icons, the text reads 'Making design accessible to everyone in society'. Further down, the text '7 PRINCIPLES OF UNIVERSAL DESIGN:' is followed by seven icons in a row, each with a corresponding label below it: an equals sign for 'Equitable', a circular arrow for 'Flexibility', a cube for 'Simple & intuitive', a lightbulb for 'Perception information', a crossed-out circle for 'Tolerance for error', a thumbs up for 'Low physical effort', and a gear for 'Size & space'.

UNIVERSAL DESIGN

Making design accessible to everyone in society

7 PRINCIPLES OF UNIVERSAL DESIGN:

- Equitable
- Flexibility
- Simple & intuitive
- Perception information
- Tolerance for error
- Low physical effort
- Size & space

*Are we able to think
in a “universal”
way?*

Disadvantaged Users



- Users unable to see, hear or move or handle some types of information
- Difficulties in reading or understanding text
- Users unable to use a keyboard or mouse
- Users that use a non-graphical (text only) screen, small screen, or a low bandwidth connection
- Users that cannot speak or correctly understand the language in which the document is provided
- In situations in which sensorial organs (eyes, ears, hands) are occupied or impeded (e.g., users are driving)
- Users with an older version of the browser, a different browser, a different operating system, a device that is too new or too old

Alternative Input/Output



Accessibility is the “usability of a product, service, environment or facility by people with the widest range of capabilities”.

ISO TS 16071

"As we look ahead into the next century, leaders will be those who empower others."

Bill Gates



Adrian Hands



I'm a big nerd who loves technologies!

<https://sadypaulson.com/>



Who does benefit from accessibility?

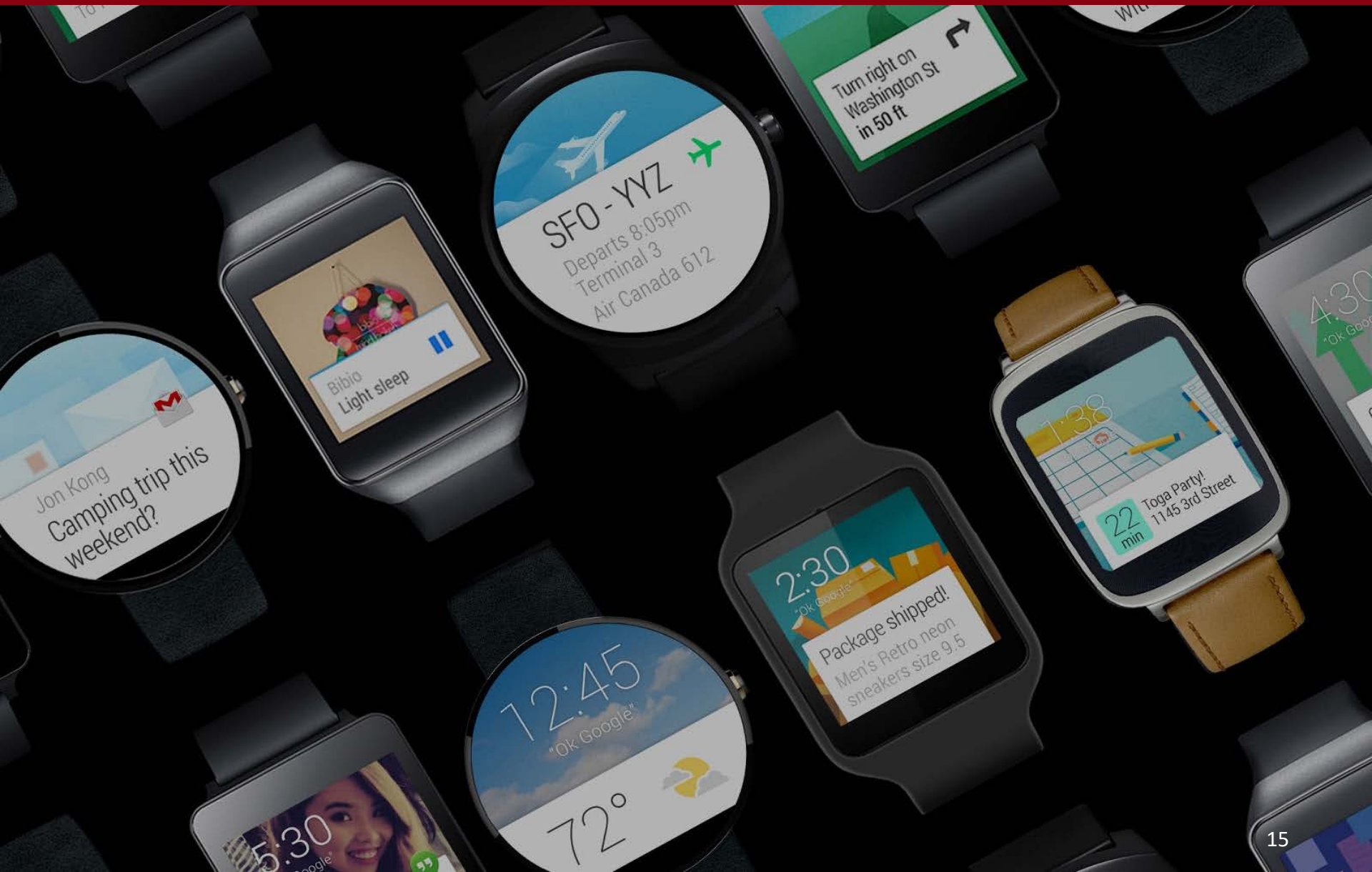
“The power of the Web is in its universality. Access by everyone regardless of disability is an essential aspect.”

Tim Berners-Lee

Although “accessibility” typically addresses users who have a disability, the concept is not limited to disability issues.



Alternative Input/Output





- Search engines are very important users in the web, which can be assimilated to a blind user
- Accessibility therefore also has an economic impact on the web sites



- Accessibility seldom requires specific action; in most cases it is sufficient to follow good design rules for a web site, which have the goal of making information easier to consult for ALL users.
- Accessibility is a mandatory for web sites and contents of the public administrations
 - In the US, the Section 508, applied since June 2001, establishes that all information disseminated by federal agencies must be accessible by users with disabilities (www.section508.gov)
 - In Italy, the Stanca law (no. 4, January 9, 2004, revised in April 2010), obliges public administrations to have accessible sites, under penalty of the application of sanctions
 - In Europe the WCAG 1.0 and 2.0 are used as the legal basis for accessibility judgment

WAI, Web Accessibility Initiative: is the most important initiative about accessibility. It was started by W3C consortium with the aim of making web accessible to everyone

The WAI working group

- defines the guidelines (recommendations) for accessible web sites
- guarantees that technologies promoted by W3C support accessibility
- promotes research and training on this topic

<https://www.w3.org/WAI/standards-guidelines/wcag/>

Each point of the guidelines has a level of priority, which is based on the importance of barriers considered by that point

Priority 1

- The developer must be compliant with this checkpoint, otherwise one or more categories of users will not be able to access the information
- It is a basic requirement

Priority 2

- The developer should be compliant with this checkpoint, otherwise one or more categories of users could find difficult to access the information
- It removes significant barriers

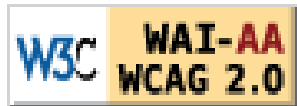
Priority 3

- The developer can take this checkpoint into consideration, otherwise one or more categories of users will be somehow impeded in accessing the information
- It improves access to contents

WAI defined 3 level of compliance:



Level of Compliance “**A**”: compliant with all checkpoints of priority 1



Level of Compliance “**Double A**”: compliant with all checkpoints of priority 1 and 2



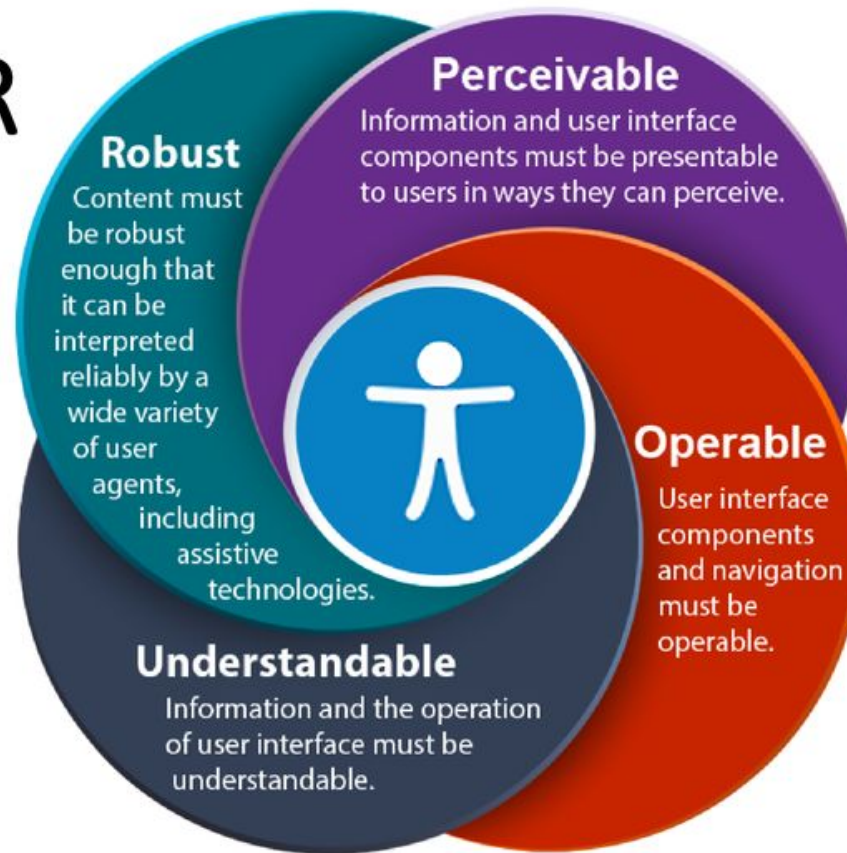
Level of Compliance “**Triple A**”: compliant with all checkpoints of priority 1, 2 and 3

The WCAG principles

The 4 WCAG 2.0 principles

A web site is accessible if it is:

POUR



The guidelines are based on two actions:

1. Use different sensory channels

- If we includes media that use different sensory channels (text, video clip, audio description) contents will be accessible independently by the used device or assistive technology
- The best accessible media is *text*

2. Create **understandable** and **navigable** contents and web pages

- The developers must use clear and simple language, provide easy interaction and navigation between pages

From Theory to Practise

- Use clear and simple language
- To use (they improve readability):
 - presentation by points
 - Line-spacing
- To avoid:
 - scrolling or blinking text
 - *Too elaborated or complex fonts*
 - underlined text if this is not the anchor of a link
 - ~~strikethrough text if it is not strictly necessary~~
 - pay attention to size and the use of colors

Scarica
sul tuo
cellulare
"La forza mia"

ERTECA
CULT



Ultime News

Galan in Abruzzo: "A L'Aquila senso di vera disperazione"

Il governatore veneto si è recato nelle zone terremotate. Nelle stesse ore in Abruzzo c'era anche l'Assessore trentino, Lia Beltrami, mentre il presidente del Consiglio regionale Trentino Alto Adige, Depaoli, incontra a Roma il collega dell'Abruzzo

[Leggi l'articolo »](#)

Treviso. Magnesio in fiamme, il Sindaco: "Sotto controllo"

Primiero. Libri anche il Sabato

- User must be able to easily identify links since they are fundamental elements of a web page
- At the beginning, they all use the same presentation (underlined, blue color for not visited links, purple for visited links)
- Today links can be depicted in different ways according to the palette of the web site
 - User must be able to recognize visited links
- The anchor text is very important. Don't use
 - Click here
 - Continue

Too much differences








The screenshot shows the Amazon.com homepage in a Microsoft Internet Explorer browser window. The browser's address bar displays the URL: <http://www.amazon.com/exec/obidos/subst/home/home.html/102-4224260-0363345>. The page features the Amazon logo, navigation links for 'Store', 'Account', 'Cart', 'Wish List', and 'Help', and a search bar. A banner for 'Clic readers at Amazon.com' is visible. The main content area includes a 'Browse' sidebar with links to 'Apparel & Accessories', 'Electronics', 'Jewelry & Watches', and 'Shoes'. A large advertisement for 'The Freshest Flowers for Mom' by ProFlowers is featured, along with a promotion for Amazon Prime and a section for 'Popular Pre-orders'.

Images

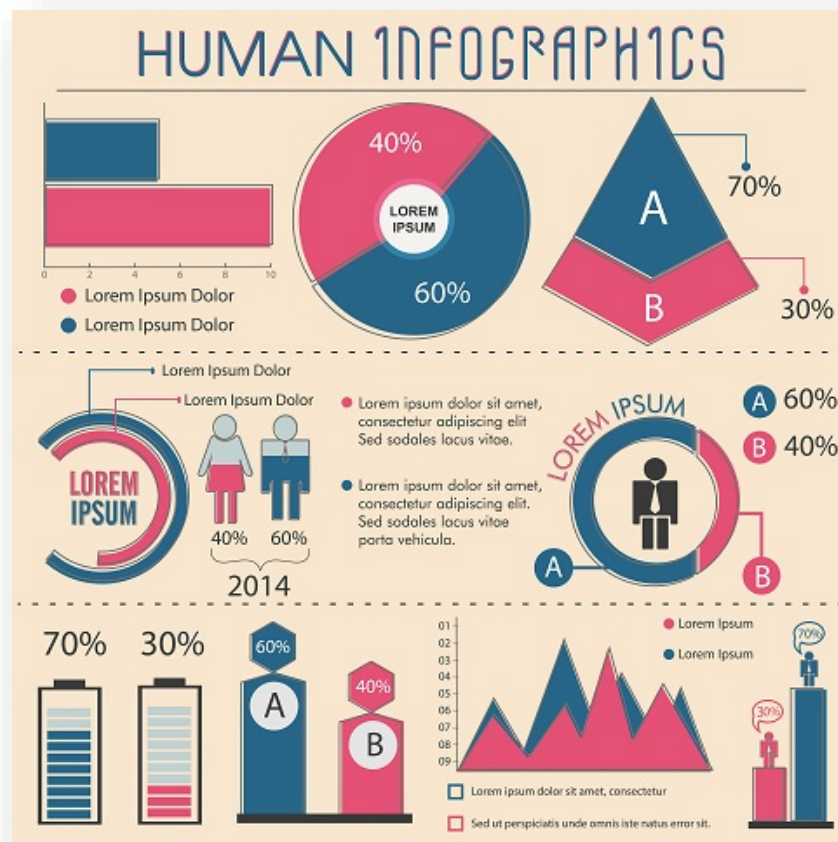
- Images have different roles:
 - Informative content
 - layout
- Images that provide information must always have the alternative text (*alt*)
 - Logo
 - Don't trust in automatically generated alternative text
 - Use empty *alt* for layout images
- Do not use map images
- Check that all the content are understandable even removing the images

An example: weather forecast

Local forecast

PD - Padova and central plain	Thursday 9 afternoon/evening	Friday 10 night/morning	Friday 10 afternoon/evening	Saturday 11 night/morning	Saturday 11 afternoon/evening	Sunday 12	Monday 13
sky conditions							
temperature	max 6/8 °C	min -2/0 °C max 5/7 °C		min -3/-1 °C max 8/10 °C			
precipitation	Light rainfalls	None	Light rainfalls	None	None	None	None
precipitation probability	40%	0%	30%	0%	0%	0%	0%
forecast reliability		Very good	Very good	Very good	Very good	Very good	Very good

Do not use only text!



- Images allow to capture users' attention
- Infographics can help people with cognitive disabilities to better understand and memorize content

Tables can be used only for data, not for layout

Tables must be simple and well designed and organised

The most relevant problem with the tables concerns the use of two dimensions: totally visually impaired users have difficulty in managing this kind of data since rows-columns associations are easily detected with eyes, but difficult to explain by relying only on hearing

Hints:

- Add a brief description of the content of the table
- Add headers to cells
- Pay attention to make clear the association headers-cells
- Define abbreviations for headers

An accessible table

How I chose to spend my money

Purchase	Location	Date	Evaluation	Cost (€)
<i>Haircut</i>	<i>Hairdresser</i>	<i>12/09</i>	<i>Great idea</i>	<i>30</i>
<i>Lasagna</i>	<i>Restaurant</i>	<i>12/09</i>	<i>Regrets</i>	<i>18</i>
<i>Shoes</i>	<i>Shoeshop</i>	<i>13/09</i>	<i>Big regrets</i>	<i>65</i>
<i>Toothpaste</i>	<i>Supermarket</i>	<i>13/09</i>	<i>Good</i>	<i>5</i>
SUM				118

A more complex table

	Monday	Tuesday	Wednesday	Thursday	Friday
Literature					
8.00	1s			3d	
9.00		2f			1a
Geography					
8.00		4c	6d		
9.00	2f			1a	

	Monday	Tuesday	Wednesday	Thursday	Friday
Literature					
8.00	1s			3d	
9.00		2f			1a
Geography					
8.00		4c	6d		
9.00	2f			1a	

Weekly class schedule

		Monday	Tuesday	Wednesday	Thursday	Friday
Literature	8.00	1s			3d	
	9.00		2f			1a
Geography	8.00		4c	6d		
	9.00	2f			1a	

Always check that content is accessible to users who are unable to see colour

Do not convey information only through color, but use also other communication channels

- ex. bold text or underline for links

Avoid references to colour in the instructions

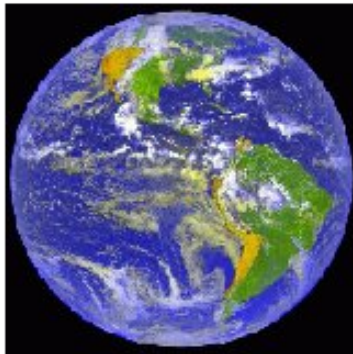
- ex. “Click on the yellow button”, “You can find this information on the blue box”

Beware of overly harmonious colour scheme

- The contrast ratio between text and background must be at least 4.5:1 or 3:1 for large text
- www.vischeck.com

Problems with colors - 1

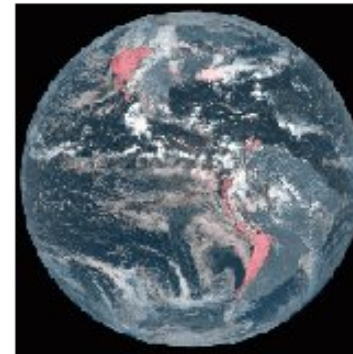
The world.



How the world looks to a person with a red/green color deficit (deuteranopia).



How the world looks to a person with a blue/yellow color deficit (tritanopia).



Some colorful hats.



As seen by a person with deuteranopia.



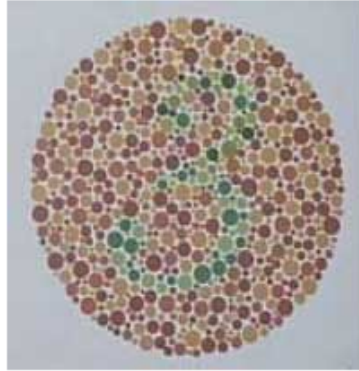
As seen by a person with protanopia, another form of red/green deficit.



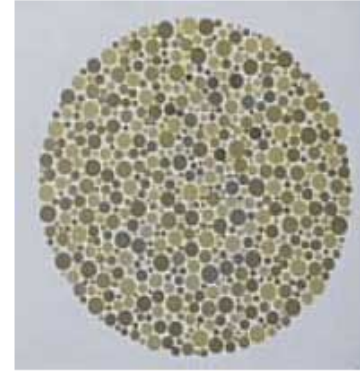
www.vischeck.com/example

Problems with colors - 2

This is an Ishihara plate commonly used to check for red/green color blindness



This is what a red/green color-blind person might see. Note that the digit (3) is practically invisible.

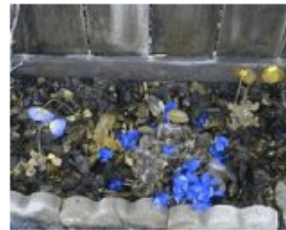


People with color deficiencies may have difficulty distinguishing certain colors (e.g., a red/green color deficiency means that reds and greens are more difficult to distinguish). But as this photo demonstrates, many other colors are just as distinguishable to a person with a color deficiency as to someone with normal color vision.

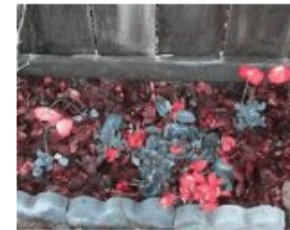
Poppies and cyclamen.



Protanope.



Tritanope.



www.vischeck.com/example



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*Thank for your
attention!*

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