



Error 404: Color not found

Dennie Declercq // [WeAreDevelopers](#) .NET Day// May 2023



Intro

An abstract background on the left side of the slide. It features a dark, textured surface with several bright, overlapping light rays in shades of purple, pink, orange, and blue. These rays converge towards a central point where a small, semi-transparent square is located. The square has a blue and white geometric pattern.

Content

- Intro
- Intro to Accessibility
- Color Contrast
- Outro

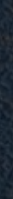



Who am I?

- Dennie Declercq
- President, IT-Coach & Developer DDSOFT
- Microsoft MVP
- Mr. #DreamingIsBelieving
- @DennieDeclercq




Intro to Accessibility





What is Accessibility?

- People with all needs can access:
 - Internet
 - Daily life activities
 - All areas



The importance of Accessibility & Inclusion

- **Inclusion** = All people are living together in the same environment.
- When people depend on others to have access for their needs, they are **excluded**.
- If your communication* is not accessible, then it leads to **exclusion**.
- * Communication examples: websites, apps, leaflets, commercials, banners, posters, (info)graphics.

The business side

If your commercial is not accessible for all people, than they can't buy your product.

An inaccessible website can prevent people to buy the product/ service.

1 on 3 men are colorblind.

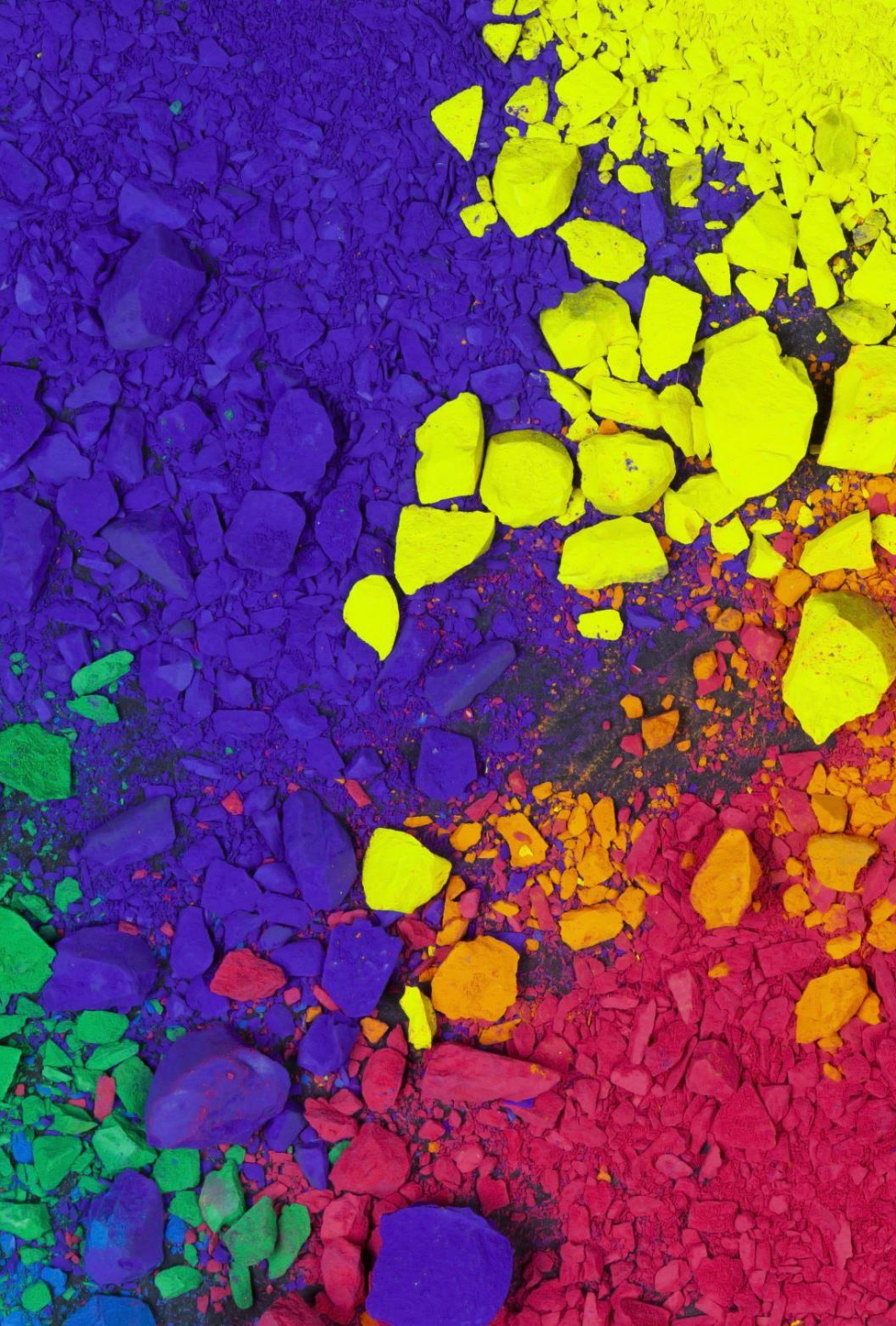
A lot of people (with elderly) have a visual impairment

“Even I look until my eyes hurt on a digital or physical folder!”-Dennie



Visual Impairment

- Worst eye: <50%



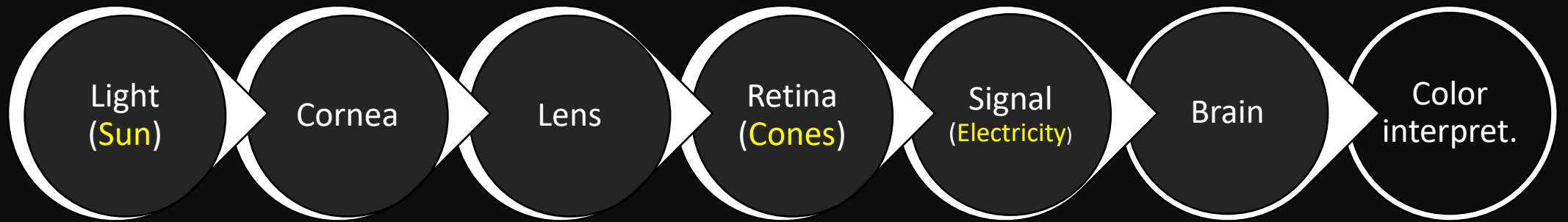
Color blindness

- Difficulties with distinguishing color
- 1684: Dr. Turberville
- 1794: Daltonism (John Dalton)
- Deficiency in Color Cones



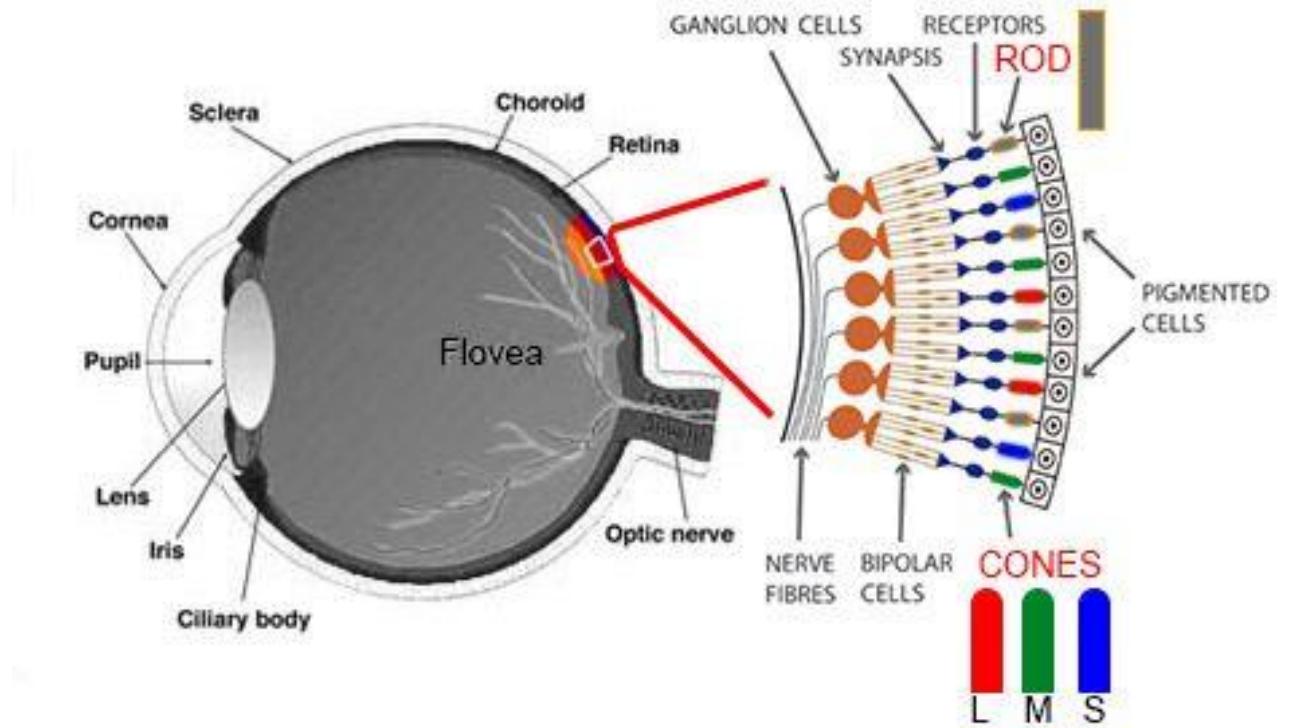
Color contrast

How we see color: It's all about signals



How we see colors: Color Cones

- Red: Prot
- Green: Deuter
- Blue: Trit



© www.theinkrag.com/colour_blindness/monochromacy.html

Luminance

- How many light comes from in
- Measured by:
 - Cone type
 - On a scale





How we see colors: Terminology

- Anopia: Missing cone(s)
- Anopsia: Good working cone(s)
- Anomaly: Dysfunctioning cone(s)

Examples: Protanopia

Normal vision



Protanopia



© Images: <https://www.colourblindawareness.org>

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Examples: Tritanopia

Normal vision



Tritanopia



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Examples: Deutranopia

Normal vision



Deutranopia



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Examples: Monochromacy

Normal vision



Monochromacy



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DEMO: Windows 10 Color filters

Web Content Accessibility Guidelines (WCAG)

1. Perceivable

2. Operable

3. Understandable

4. Robust

1. Text Alternatives

2. Time Based Media

3. Adaptable

4. Distinguishable

A
AA
AAA

Contrast Ratio

Important Ratio's

- 3:1
- 4.5:1
- 7:1

Formula

$$(L1 + 0.05) / (L2 + 0.05)$$

L1: Relative luminance of the lighter of the colors

L2: Relative luminance of the darker of the colors.

1.4.1: Use of Color – Level A

- Color is not the only way of conveying information

1.4.3: Contrast (Minimum) – Level AA

- 4.5:1
- Except
 - 3:1: Large text
 - None:
 - Incidental
 - Logo

WCAG 1.4.6 – Level AAA

- 7:1
- Except
 - 4.5:1: Large text
 - None:
 - Incidental
 - Logo

1.4.11: Non-text Contrast – Level AA

- 3:1
- Except
 - None:
 - UI: Inactive Components
 - UI: Not meant to adjust
 - Non-essential graphical objects

Questioning WCAG

Logotypes: Text that is part of a logo or brand name has **no contrast requirements**.

- Are logo's recognizable if people have difficulties distinguishing color?
- What about too low contrast between logo (text) and background?
- Is company name/ detail still readable?

Testing for Color Contrast:

Adobe Color Contrast
Analyzer (Design Phase)

Microsoft Accessibility
Insights (Develop/ Test Phase)

WCAG Contrast Checker
(Develop/ Test Phase)

DEMO: Adobe Color Contrast Analyzer (Design Phase)

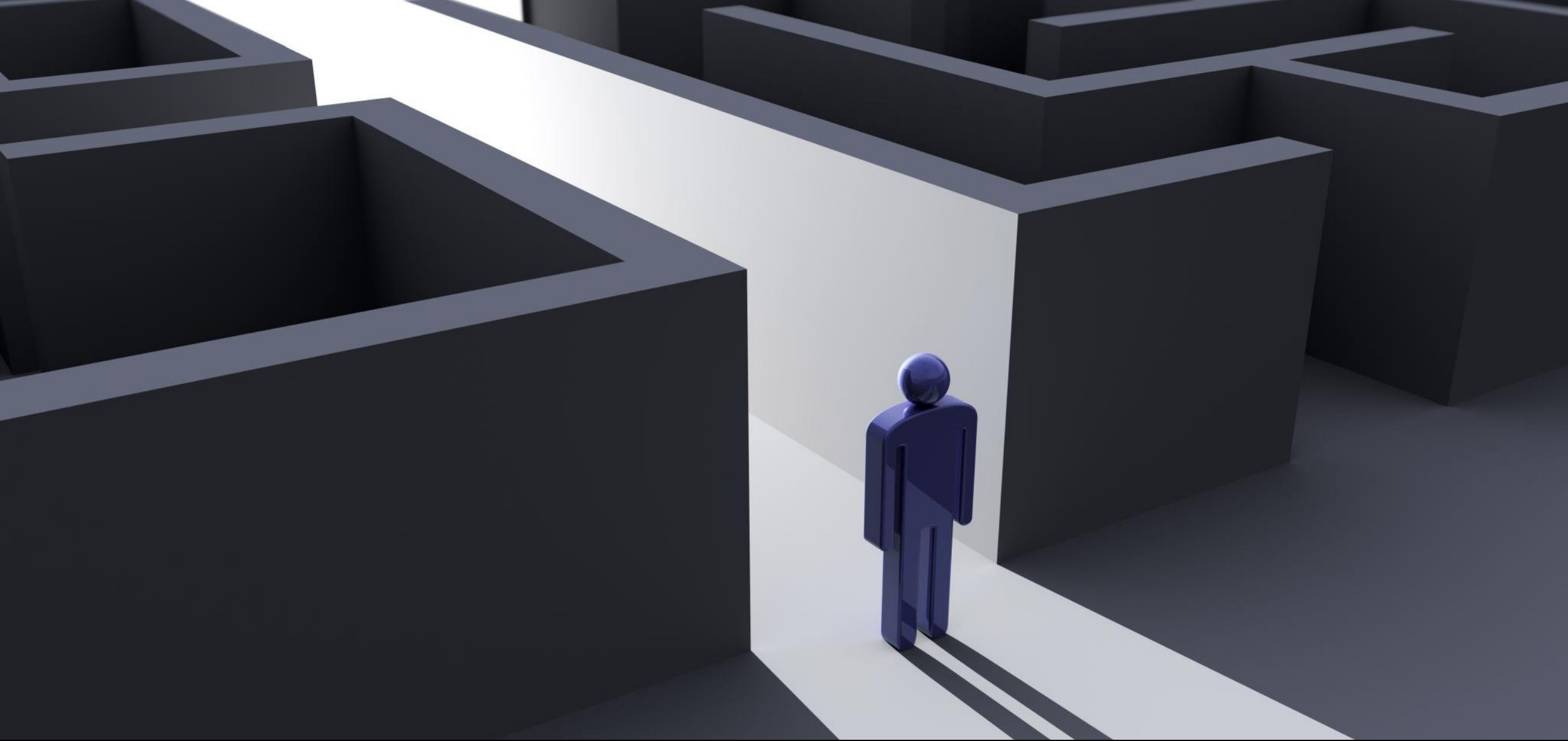
<https://color.adobe.com/nl/create/color-contrast-analyzer>

DEMO: Microsoft Accessibility Insights (Develop/ Test Phase)

<https://accessibilityinsights.io>

DEMO: WCAG Contrast Checker (Develop/ Test Phase)

<https://go.ddsoft.be/WCAGColorChecker>



Outro

Recap

- I told about Accessibility & Inclusion
- I gave insights in Color Vision Deficiencies (Color Blindness)
- I showed tools how to handle accessible colors



Thanks || Q&A

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