

# Accessibility by Design

## Considerations for Digital Assessments

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# About Us



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Offering TAO integration, Cloud deployments & Helpdesk.  
Delivering >10M tests per year.

Working with our clients to enable accessibility since 2012

- NCSC, MSAA, Florida ALT, NFER, INVALSI, DEPP...



Co-author: Ruth Williams, Head of Product Delivery and  
eAssessment Services at NFER

# Topics

- Define Accessibility
- Rethink Your Approach
- Formulate Your Assumptions
- Follow Industry Standards
- Points To Remember
- Q&A



# Defining Accessibility

- How we **access** places, things, and information.
- Much broader than what most people think 
- **Accessibility** as a practice is about providing MORE access to people who, for whatever reason, can't access something with the provided affordances.

For Example

Wiener  
Burgtheater







# Recommended Process

- Reset people's mindset
- Define your starting point
  - Broad range of needs
    - Physical and Cognitive accommodations
  - Constraints established by Legislature
- Design from assumptions
  - Setting of test (access to room, lighting conditions, etc.)
  - Cultural connotations (objects, names, etc. that candidates may or may not relate to)
  - Type of test (paper, digital)
- Follow industry standards
  - WCAG 2.1
  - QTI 3.0
- ALWAYS finish with actual user testing!

# I. Rethink Your Approach

INSPIRED BY A PUBLIC SCHOOL STUDENT WITH DISABILITIES

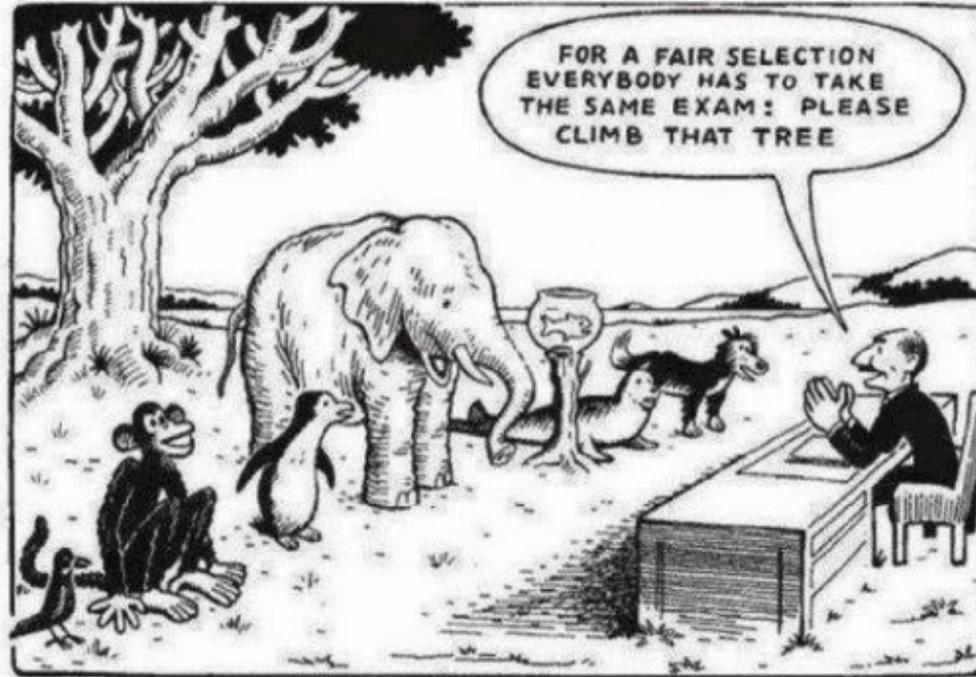


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CLEARING A PATH  
FOR PEOPLE WITH SPECIAL NEEDS  
CLEARS THE PATH FOR EVERYONE!

## 2. Define Your Starting Point

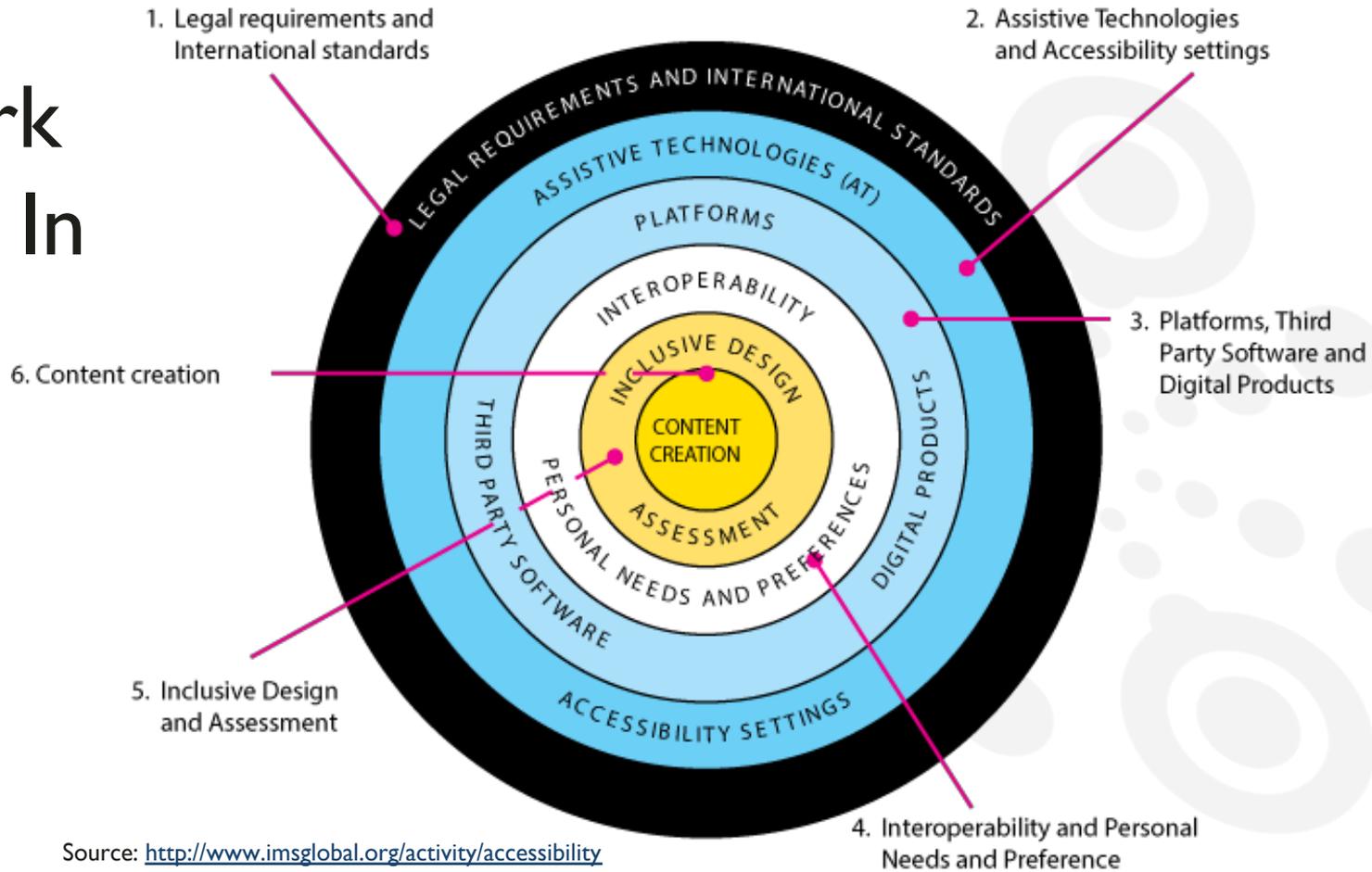
- Instead of like this:



# Watch Users In Their Natural Habitat

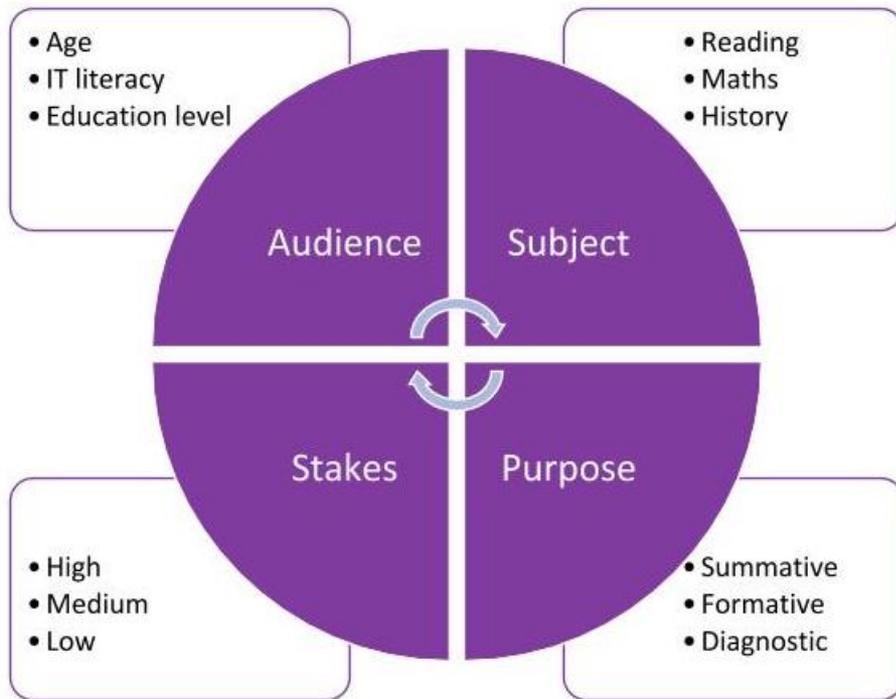


# Then Work Your Way In



Source: <http://www.imglobal.org/activity/accessibility>

# 3. Formulate Your Assumptions



Source: Ruth Williams, NFER

# Map Assumptions To Universal Design Principles

- Impaired people are the experts of their own disability
- Design for the Unexpected (What if...)
- Aim to cover as many needs as possible



	Permanent	Temporary	Situational
Touch	 One arm	 Arm injury	 New parent
See	 Blind	 Cataract	 Distracted driver
Hear	 Deaf	 Ear infection	 Bartender
Speak	 Non-verbal	 Laryngitis	 Heavy accent

**Inclusive**  
A Microsoft Design Toolkit

# Design Considerations



- WCAG 2.1 web pages should have a minimum contrast by default
- 4.5:1 for normal sized text

## Colour

- Default
- Black on White
- Black on Cream
- Black on Light Blue
- Black on Light Magenta
- White on Black
- Yellow on Blue
- Grey on Green

The screenshot shows a web browser window with a high contrast accessibility menu open. The menu is titled "High Contrast is Enabled" and includes a "Disable (Shift+F11)" button. Below this, it states "Color scheme for www.nfer.ac.uk: (Shift+F12):" and lists several options: Normal, Increased Contrast, Grayscale, Inverted Color, Inverted Grayscale, and Yellow on Black. The "Yellow on Black" option is selected. There are also buttons for "Set as default scheme" and "Forget site customizations". The background of the browser shows a website with a yellow and black color scheme and a photo of a child writing at a desk.

Size of the writing



# Zoom

# Resources and Examples

- Experiencing impairment:
  - <https://www.atalan.fr/agissons/en/index.html>
- Check colour contrast for compliance
  - <https://accessible-colors.com/>
- Lacking Alt text
  - <http://107.22.217.66/tts.php>
- The wrong Alt text
  - see next slide

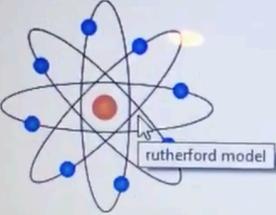
# Don't use Alt Text in this manner

s.edtell.com/portal/site/cc1999af-b604-4bbe-97cf-9e6694f1494a/tool/9f3

sons > Test 2

Question 37 of 50  
2 Points

Which atomic model is depicted by the image below?



A. Rutherford model

B. Bohr model

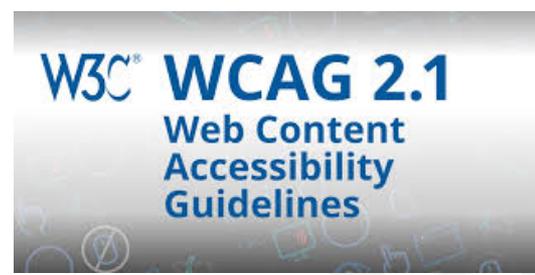
C. Dalton model

D. Quantum model

[Reset Selection](#)

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# 4. Follow Industry Standards



- WCAG helps create access for ALL users of online content, not just people with specific accessibility needs
- <https://www.w3.org/WAI/intro/wcag>
- Following WCAG allows us to move from an accommodation mindset to an **accessibility** mindset.
  - WCAG 2.1 was published in 2018 and is backwards compatible to 2.0



- APIP
  - Introduced the concept of PNP
  - Standard was too rigid, inflexible
  - Was difficult to implement, and difficult to author APIP content
- QTI 3.0
  - Addresses these issues
    - Builds on top of APIP and QTI 2.2
  - Leans on WCAG and web-based accessibility
    - Uses HTML5 to create the content
    - Refers to WCAG to ensure accessibility needs are met
  - Adds assessment-specific support, e.g., Glossary, Keyword translations
  - Elevated accessibility certification

# Accessibility Challenges in Assessment

- Custom Interactions
  - Will you spend the time & money to make it accessible?
  - Can you make it accessible?
  - Cognitive load can be high, even if it is technically accessible
  - Unfamiliar ways of interacting with content
  - More time = more fatigue
- Technology isn't frozen
- Differences in Learning & Assessment Environments
- Security

# Recommended Process

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tao



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