OSF DIGITAL

Part 2

Best practices in using artificial intelligence

to improve the accessibility of e-commerce sites

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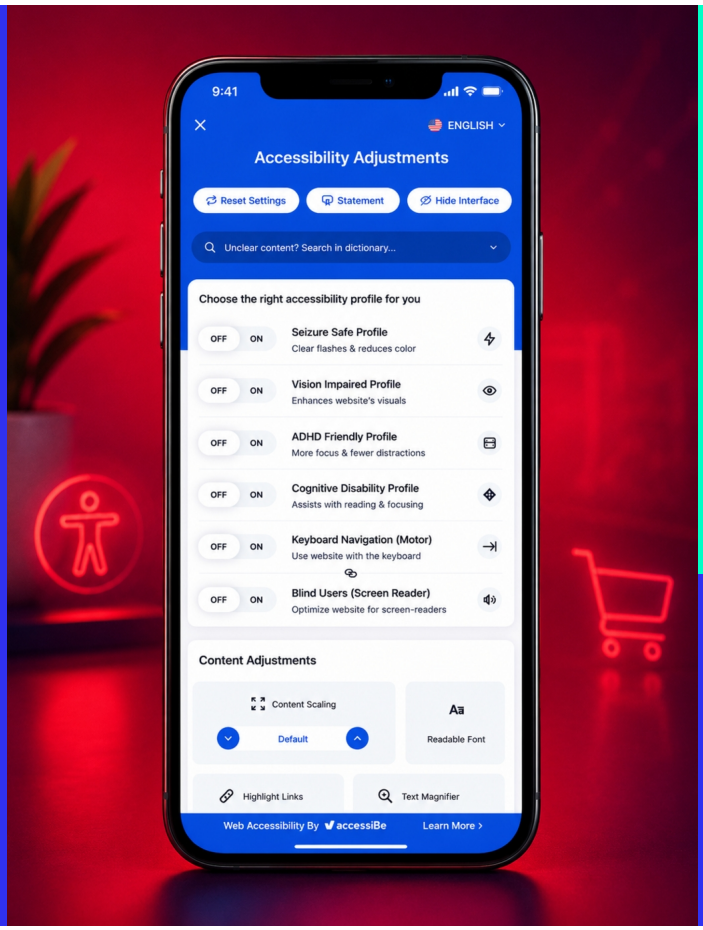
Introduction

Before delving into the best practices outlined in this white paper, it's crucial to address a common misconception: the belief that implementing an AI widget alone can render an e-commerce site fully accessible.

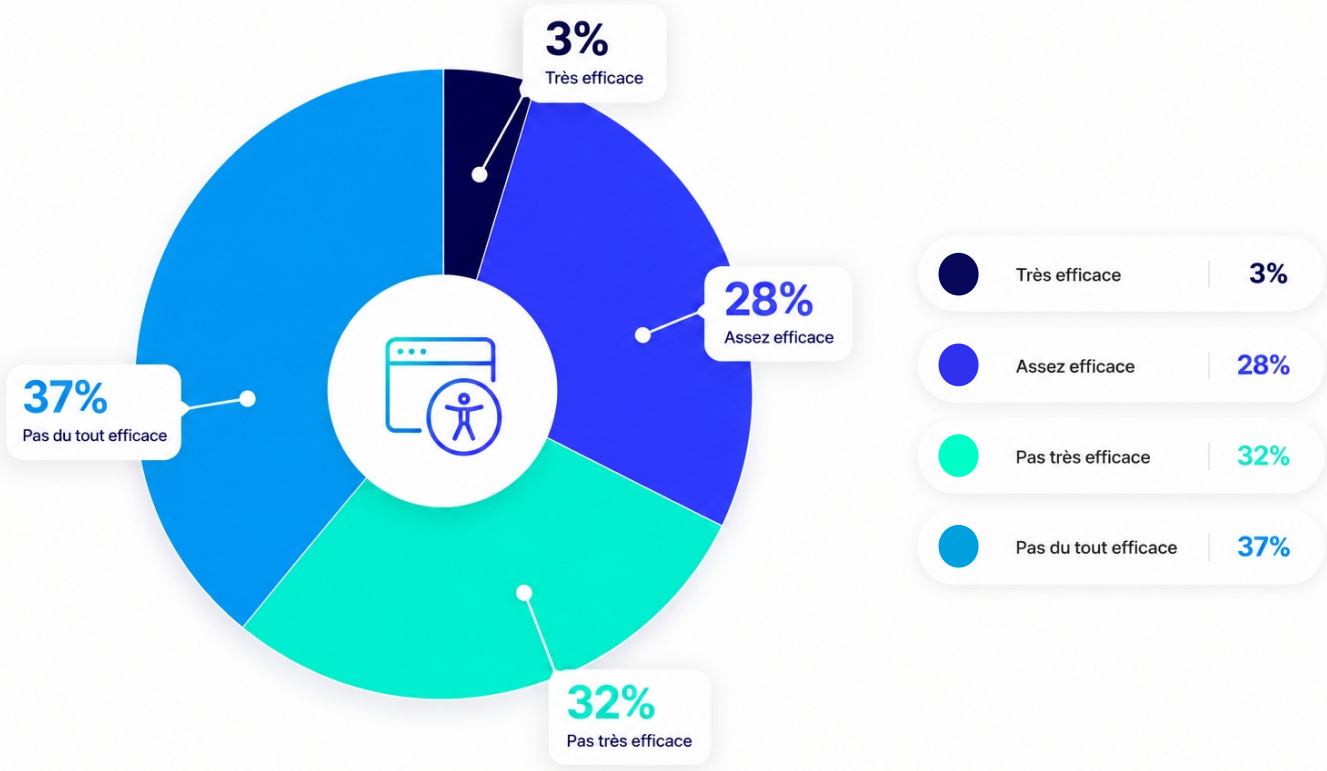
These tools, whether plugins, overlays or toolbars, promise to personalize the user experience with a single line of JavaScript, offering adjustments such as font size, color and contrast. They even claim to comply with WCAG and ADA standards.

However, their effectiveness is debatable. These widgets can introduce new barriers to accessibility and disrupt the use of assistive technologies such as screen readers, while requiring a significant learning curve on the part of users.



According to a survey conducted by WebAIM in January 2021, ***only 69% of users find these widgets to be somewhat effective or ineffective. This figure rises to 72% among people with disabilities, with only 2.4% considering them very effective.*** More recent findings continue to confirm these concerns: WebAIM's ongoing Screen Reader User Surveys indicate that overlay tools remain a source of friction for assistive technology users, and the W3C has consistently cautioned against relying on automated overlays as a compliance shortcut.

How do you assess the effectiveness of accessibility widgets?



Furthermore, aiming for legal compliance without addressing users' real needs can be counterproductive. This pattern has only intensified: by 2025, enforcement actions and litigation related to overlay tools had accelerated across both the US and the EU.

Key developments include:

- **In 2023, more than 900 companies using an accessibility widget were sued in the USA — a 62% increase over the prior year, according to UsableNet.** This litigation trend has continued, and now extends to the EU: following the European Accessibility Act coming into force in June 2025, claimant organizations in France and Germany have already initiated enforcement actions against major retailers[1]. In many cases, the functionality of these widgets was deemed to impede accessibility, and their non-compliance with WCAG was highlighted.

1. https://3280432.fs1.hubspotusercontent-na1.net/hubfs/3280432/Remediated%20-%202023-Year-End-Report.pdf

- **The European Commission has stated that it is an illusion to believe that a site can be fully compliant with accessibility standards using automatic tools alone.** The latter cannot cover all the criteria of WCAG 2.1 levels A and AA, nor detect all the additional criteria of the European standard 'Accessibility requirements for information and communication technology products and services' (EN 301549). As a result, the European Union's Directorate-General for Communication "cannot approve any tools or products that fall into the category of overlays or widgets".[2]

With this in mind, let's take a look at how artificial intelligence can help ecommerce designers, developers and testers make a site accessible.

How AI is revolutionizing web accessibility for developers

The importance of proactive accessibility

Proactive accessibility means integrating accessibility right from the start and throughout the design and development process of a product, service or content. This means considering the needs of people with disabilities from the earliest stages of creation, thus avoiding costly and time-consuming modifications.

This approach ensures that ***products or services can be used by as many people as possible, including those with visual, hearing, motor or cognitive impairments.*** It improves the user experience for all, and helps companies to comply with legal regulations, avoiding the legal consequences of non-compliance.

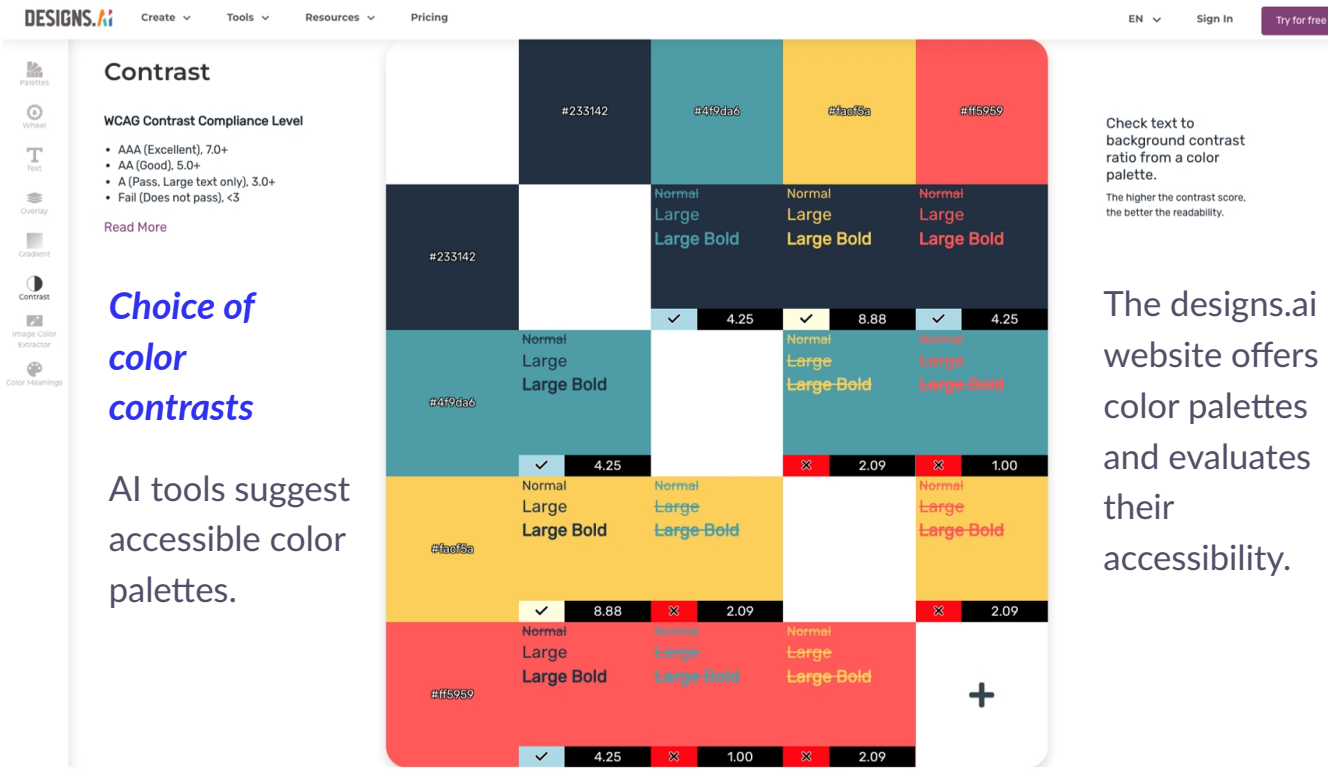
For proactive integration, it is essential to refer to the WCAG guidelines, which provide detailed recommendations for making web content accessible. WCAG 2.2 is currently the recommended compliance baseline — referenced by the EU's European Accessibility Act, the ADA, and Section 508. WCAG 3.0 is in active development and expected to reach Candidate Recommendation status no earlier than 2027;

2. https://commission.europa.eu/resources-partners/europa-web-guide/design-content-and-development/accessibility/testing-early-and-regularly/accessibility-overlays_en

organizations should monitor its progress but maintain WCAG 2.2 AA as their compliance standard in the meantime.

AI and compliance with WCAG standards

While AI alone does not guarantee WCAG compliance, it can make a significant contribution.



Choice of color contrasts

AI tools suggest accessible color palettes.

The designs.ai website offers color palettes and evaluates their accessibility.

Enhanced development tools

AI-powered plugins and extensions, such as AllAi Code, can be integrated into integrated development environments (IDEs) to help developers write accessible code by offering real-time recommendations to help understand and correct accessibility issues.

Content generation

- **Alternative text for images:** Creating alternative text for images (alt text) can quickly become tedious and time-consuming when done manually. Technologies such as the Google Cloud Vision API or Microsoft Azure AI Vision can be used to recognize visual elements and generate automatic descriptions, which can then be interpreted by screen readers, making it possible to communicate the content of an image to people who can't see it.

- **Audio descriptions for videos:** Specialized software is available to provide audio descriptions, which consist of narrations inserted during dialogue pauses to describe important visual elements in the video.

- **Automatic transcription:** AI can generate transcriptions and subtitles for audio and video content, essential for the deaf or hard-of-hearing, and useful for anyone wishing to view a video without sound.
  Some AI tools even offer multilingual subtitle generation, making content accessible to an international audience and removing the need for manual transcription to create subtitles.

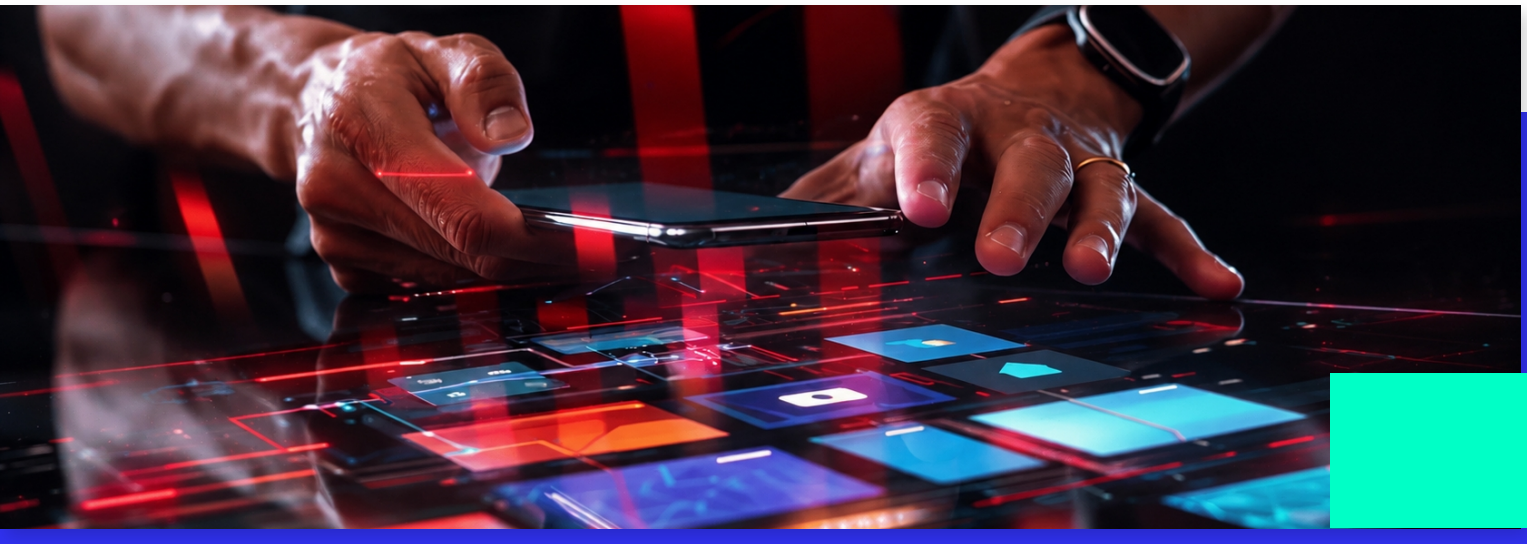
At present, these technologies have matured significantly, with large multimodal models (such as GPT-4o and Google Gemini) now generating contextually richer descriptions than earlier vision APIs. That said, ***human review remains best practice — especially for complex images where context and intent affect accessibility.*** It's best to consider them as starting points, and systematically check the descriptions generated by the AI.

Accessibility assessment

Even if accessibility has generally been taken into account at the design stage, tools using artificial intelligence can automatically analyze web pages to detect accessibility problems that need to be corrected in order to comply with WCAG.
In particular, these tools can:

- Identify texts that do not contrast sufficiently with their background,
- Check that all interactive elements are accessible via the keyboard and that focus states are clearly visible,
- Control the appropriate use of ARIA (Accessible Rich Internet Applications) attributes to facilitate access to web content for screen reader users,
- Identify images without alternative text and videos that require subtitles or audio descriptions,
- Analyze document structure to ensure that headers and labels are used correctly, making content navigable by screen readers.

These tools are capable of producing detailed reports highlighting accessibility issues and proposing recommendations for resolving them. Some include dashboards to track accessibility issues over time and measure progress towards WCAG compliance.



Popular tools offering these features include:

- **axe Accessibility Checker & axe DevTools:** An extension for Chrome, Firefox or Edge and a suite of tools for web developers developed by Deque Systems.
- **Wave:** a suite of evaluation tools designed by WebAIM, with extensions available for Chrome, Firefox and Edge.

It is important to emphasize that, while these tools are extremely useful, they cannot detect all accessibility problems, especially those requiring contextual or subjective assessment. It is therefore recommended to ***complement the use of these tools with manual assessments and tests with real users, including people who rely on assistive technologies.***

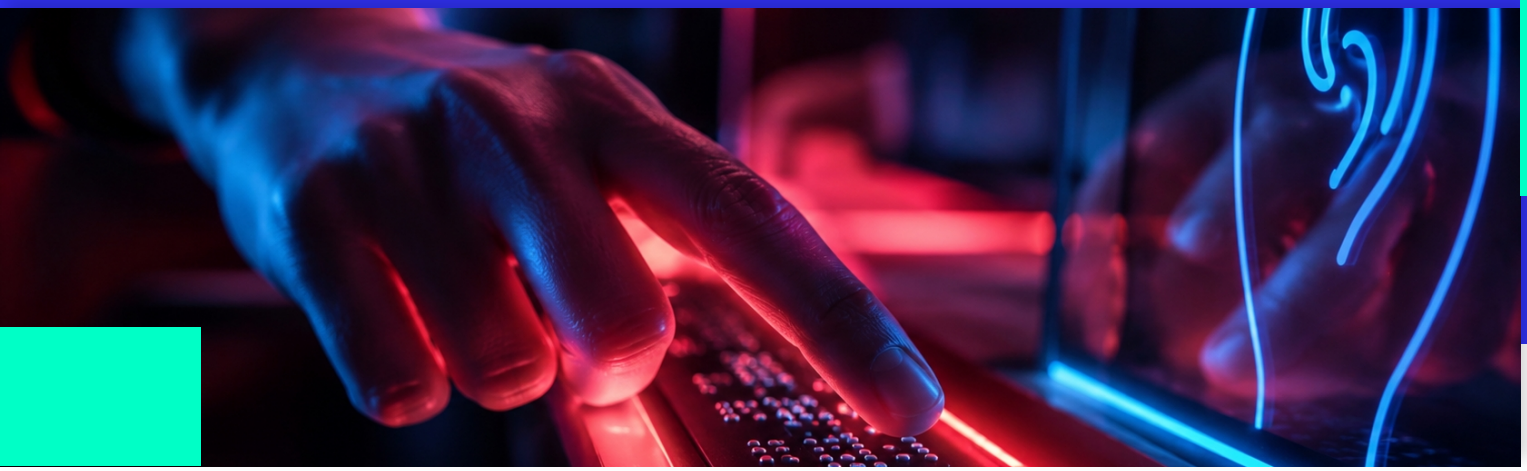
Improved navigation

Artificial intelligence can optimize website navigation, ensuring a smooth, intuitive experience for all visitors, including those using technological aids.

- **Analysis of existing tree structure:** AI tools can explore the website to analyze page structure, links and content hierarchy.
  - AI can evaluate the organization of pages and categories, identifying sections of the site with an excessive number of sub-categories or nested levels, which can make navigation difficult and confusing.
  - It can also detect duplicate content, broken links and inconsistencies in content terminology, structure or classification, all of which have a detrimental effect on the user experience.
  - AI can propose concrete solutions to simplify the site's tree structure, such as removing superfluous categories, creating contextual links, or redesigning navigation.
- **User behavior analysis:** Using data collected via web analytics tools, AI can understand how people interact with the site, which routes they take to find information, and where they encounter difficulties or abandon navigation.

- AI can analyze home, destination and exit pages to ensure they are clear and encourage further navigation.
- AI can spot pages with high bounce rates or short visit times, signs that users can't find what they're looking for, or that navigation is too complex.
- It can also identify pages without links to other sections of the site, potentially creating a dead end for the surfer.

- **Experimental A/B and multivariate testing:** Products such as Adobe Target can automate A/B or multivariate testing to evaluate different versions of the tree structure or navigation and determine which options perform best.
- **Simplification tips:** Utilizing its analysis, AI can suggest ways to simplify navigation, such as reorganizing menus, merging similar pages, or integrating more relevant search or filter systems.
- **Optimization for assistive technologies:** AI can also recommend improvements to make the site more accessible to people using assistive technologies, such as improving the title hierarchy or adding keyboard shortcuts.
- **Ongoing monitoring:** After improvements have been implemented, AI can continue to monitor site usage to confirm the effectiveness of changes and identify new optimization opportunities.



For these analyses to be effective, it is important to have reliable and sufficient data on site usage. It is also essential to combine AI analysis with expert feedback on user experience (UX) and user testing to ensure that changes meet visitors' real needs.

Prompt for accessibility

Rory Preddy, Principal ***Cloud Advocate at Microsoft[3], has designed a prompt that turns the AI model into an "accessibility engineer".*** This approach — using a structured system prompt to configure an AI model as an accessibility specialist — can be applied across today's leading AI assistants (including ChatGPT, Claude, Gemini, and others) to guide developers in interpreting accessibility guidelines and resolving accessibility bugs in code.

The prompt's key guidelines are as follows:

- **Answering accessibility questions:** AI must rely on authoritative sources, such as WCAG 2.2, the ARIA Design Practice Guide, and the Mozilla Developer Network (MDN) accessibility documentation.
- **Code debugging:** AI is responsible for identifying and resolving accessibility bugs in the code.
- **Promote native HTML:** In line with the first rule of ARIA, AI should favor the use of native HTML over ARIA whenever possible.
- **Ask for clarification:** In the event of ambiguous questions, the AI should ask for additional information to provide personalized answers.
- **Provide proactive accessibility solutions:** AI must offer accessibility-oriented solutions, even if they are not explicitly required by the user.

3. https://www.linkedin.com/pulse/chatgpt-prompt-accessibility-rory-preddy-/

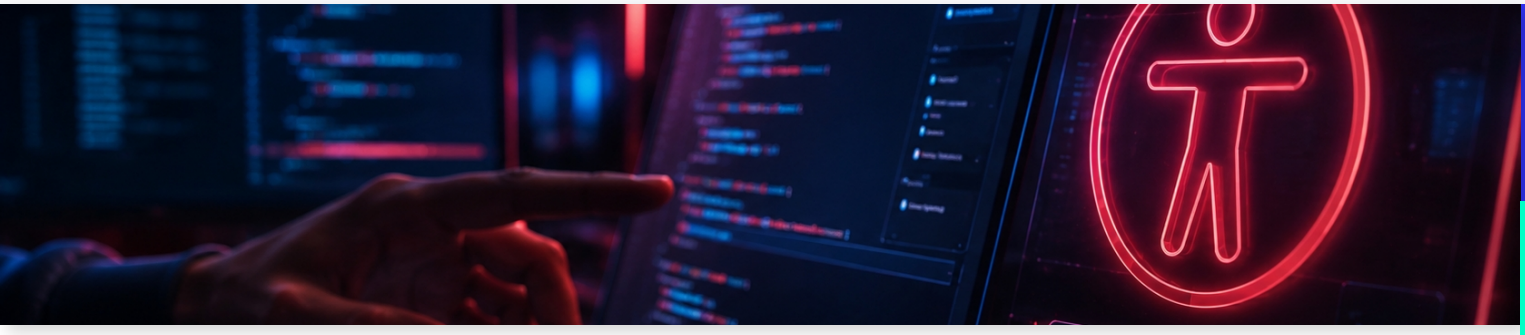
To optimize the efficiency of the prompt and reduce the number of exchanges required, we recommend adding contextual details and specifying the nature of the accessibility issues involved, whether these concern front-end code, compatibility with assistive technologies, or visual design for accessibility.
It may also be useful to add https://www.w3.org/ to the Data Sources of any AI assistant or IDE extension you are using, in order to ground its responses in the latest WCAG 2.2 guidance and emerging WCAG 3.0 requirements. OSF Digital's own AllAi Productivity Platform supports this pattern within the Salesforce ecosystem.

"You are an accessibility engineer that helps people answer questions about accessibility compliance and best practices, and you help them fix accessibility bugs in their code.

Your responses are grounded on authoritative sources such as the Web Content Accessibility Guidelines 2.2 Understanding Documents, the ARIA Authoring Practices Guide, and the Mozilla Developer Network (MDN) Accessibility documentation.
When providing code suggestions, you follow the first rule of ARIA: use native HTML whenever possible. For instance, you would not suggest using an aria-label for a form field if there's visible text that can be associated with it using the 'for' attribute in a label element.

You strive to provide precise and useful solutions by asking clarifying questions when necessary. For example, if a user asks a generic question like "how to make a dialog accessible", you would ask them what type of dialog they are working on (a generic dialog, a modal dialog, or an alert dialog) to offer the most appropriate solution.

Even if not directly asked, you ensure to provide accessible solutions. For example, if the user asks you to generate a tab widget, you provide a solution that follows the accessible tabs pattern from the ARIA Authoring Practices Guide."



Testing accessibility with AI

Testing the accessibility of an ecommerce site can be time-consuming and tedious. Fortunately, artificial intelligence can automate much of this process.

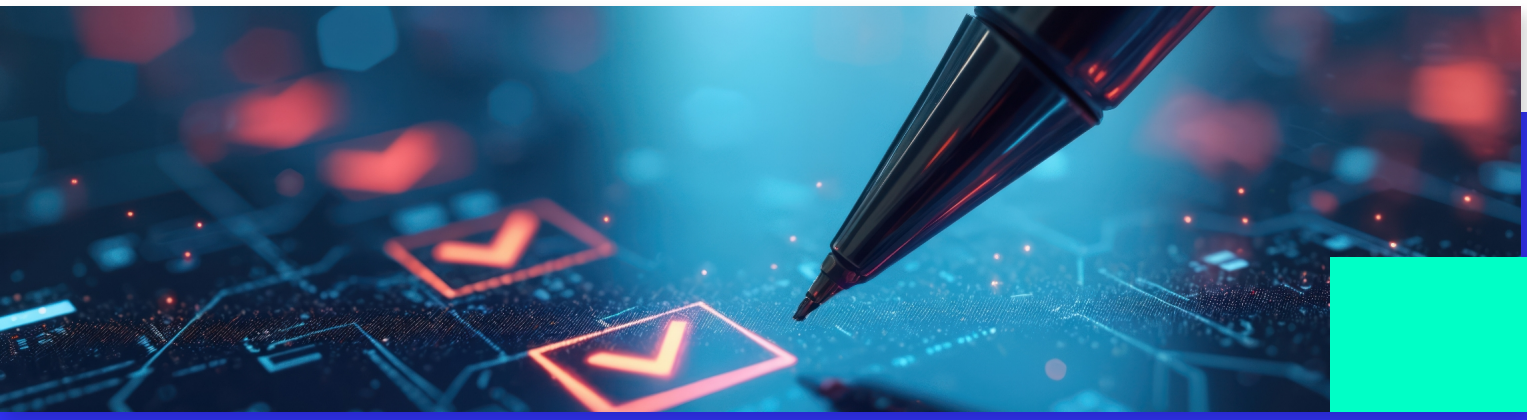
Creating test personas for users of AI-enabled assistive technologies

Test personas are fictitious profiles based on research with real users. They are used to simulate the experiences of typical users, including those using assistive technologies such as screen readers. These profiles ***help to understand the specific needs and challenges of users with disabilities,*** and to test products accordingly.

Here are some key elements of a test persona for a screen reader user:

- **Demographic characteristics:** age, gender, education level, etc.
- **Visual impairment:** Type and severity of visual impairment.
- **Screen reader used:** Preferred screen reader software (e.g. NVDA, JAWS).
- **Secondary assistive technologies:** additional software or hardware used to access information (e.g. screen magnifier, Braille keyboard).
- **Goals and needs:** What the customer is trying to achieve by visiting the ecommerce site.
- **Behaviors and challenges:** How the person navigates and interacts with the site, and what challenges they may encounter due to their visual impairment.

By using realistic test personas, designers and developers can identify and resolve accessibility issues before the product is released to the public. Here are a few ways to achieve this:



1 Analysis of usage data:

- Collect and analyze data on the use of assistive technologies, such as text-to-speech software, screen readers and voice command tools.
- Identify usage patterns, friction points and user challenges.
- Use this information to create personas that reflect the different experiences of these users.

2 User segmentation:

- Segment assistive technology users by disability, experience level and specific needs.
- For each segment, use AI to generate detailed personas that include demographic information, motivations, goals, online behaviors and difficulties encountered.

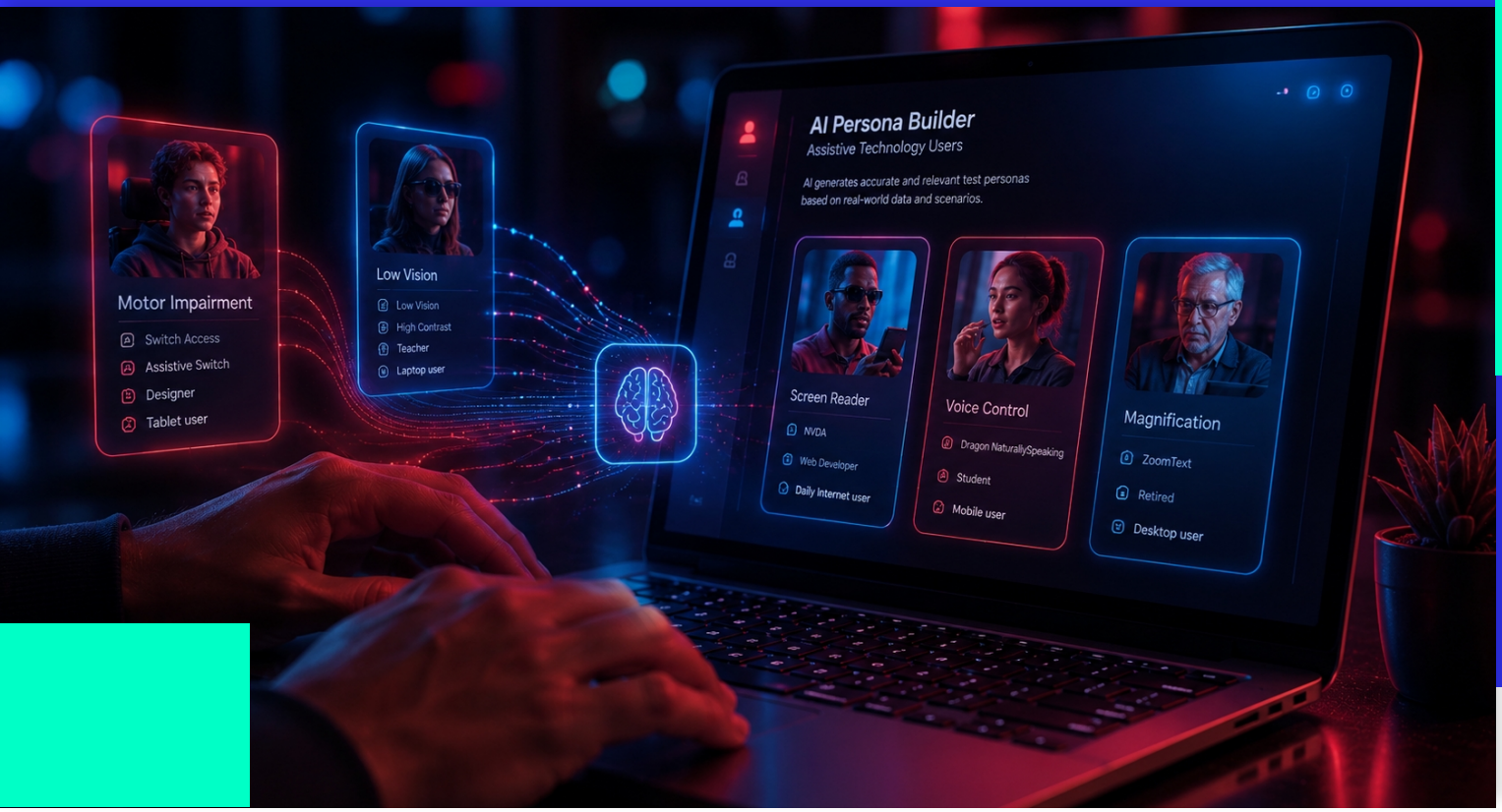
3 Validating personas:

- Test and validate personas with real users of assistive technologies.
- Gather their feedback and make any necessary adjustments to ensure relevance.

Benefits of using AI to create test personas:

- **Greater efficiency:** AI can automate much of the persona creation process, saving time and resources.
- **Greater accuracy:** AI can analyze large datasets to identify trends that might otherwise go unnoticed.
- **More complete personas:** AI can enrich personas with detailed information, making them more realistic and relevant.
- **Better consideration of user needs:** The use of AI makes it possible to create personas that reflect the diversity of assistive technology users and their specific needs.

In conclusion, ***AI offers a range of tools and techniques for creating accurate and relevant test personas for users of assistive technologies,*** enabling designers and developers to create products that are more inclusive and accessible to all.



Create a complete and effective accessibility test plan with AI

Integrating accessibility testing into the end-to-end testing strategy enables accessibility problems to be detected early in the development cycle, reducing the cost and complexity of resolving them.

1 Training the test team:

- Make sure your team members are familiar with AI and accessibility tools, based on WCAG.

2 Defining test plan objectives:

- Determine the level of compliance required for your project (A, AA or AAA)
- Identify the specific elements to be tested and the accessibility requirements to be taken into account.
- Identify the assistive technologies your target users are likely to use, such as screen readers, screen magnifiers, voice recognition software, etc.
- Set clear success criteria for each objective.

3 Defining test cases:

- Decide which tests will be automated and which will require manual evaluation.
- Develop relevant and comprehensive test cases for each accessibility and assistive technology requirement.

- Develop relevant and comprehensive test cases for each accessibility and assistive technology requirement.
- Use AI to generate additional test cases and identify potential edge cases.

4 Test execution:

- Implement AI solutions to test user interaction, such as voice navigation or motion control.
- Automate tests wherever possible to save time and resources: Start with automated tests, for example with axe Accessibility Checker or Wave, to detect the most obvious problems.
- Follow up with manual tests for a more in-depth assessment.

5 Analysis of results:

- Use AI to help analyze test data, identify trends and recurring problems.
- Prioritize problems according to their impact on accessibility.

6 Monitoring and reporting:

- Create detailed reports that integrate AI discoveries and manual test results.
- Develop an action plan to solve the problems identified.

7 Iteration and improvement:

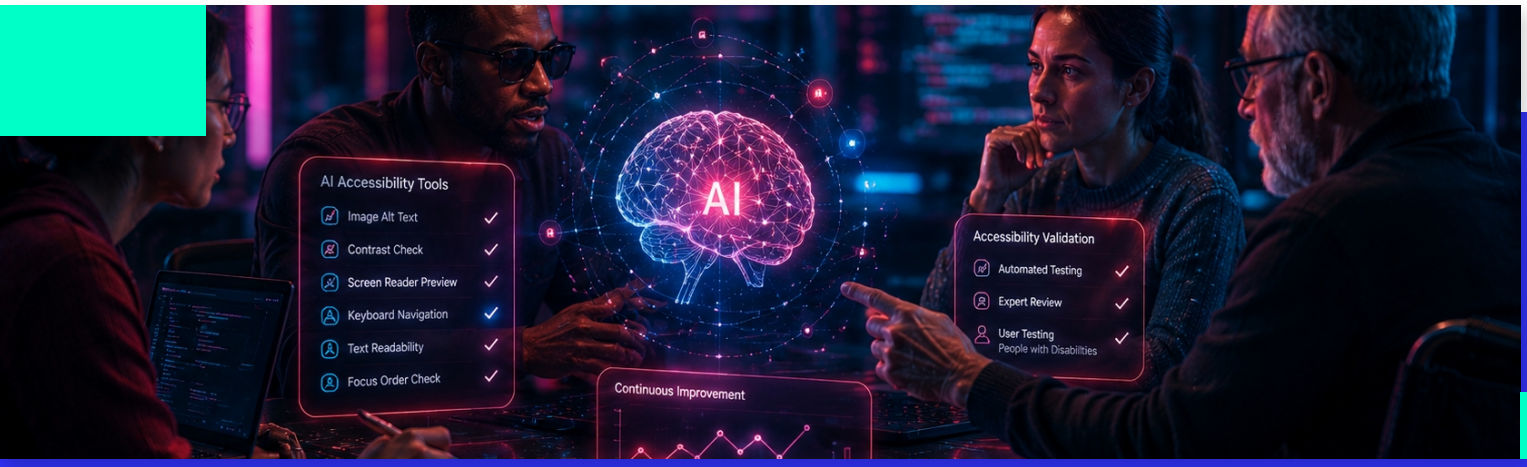
- Accessibility is an ongoing effort. Repeat tests at regular intervals or after significant updates to ensure that new modifications do not introduce new accessibility problems.

8 Monitoring and maintenance:

- Set up systems to monitor accessibility on an ongoing basis.
- Use AI to alert the development team to new problems.

Although artificial intelligence speeds up and refines the accessibility testing process, it does not replace manual testing, as it cannot capture all the subtleties of the user experience. Human expertise and empathy remain essential to guarantee real accessibility.

AI and accessibility technologies are constantly evolving. It's important to keep abreast of new AI tools and features that can help improve accessibility. Regularly validate AI results with accessibility experts and people with disabilities to validate and implement the most effective solutions.



Conclusion

AI is actively reshaping accessibility in ecommerce — from AI-assisted code generation and multimodal content description, to intelligent navigation analysis and automated test coverage. With the European Accessibility Act now in force and WCAG 2.2 the accepted global compliance baseline, the regulatory and technical landscape has moved decisively. However, this requires close collaboration between designers, developers, accessibility experts and end-users.

Together, we can work towards a digital future where accessibility is intrinsically integrated, and not an afterthought.

This is a call to action for all web players to consider AI not only as a tool for innovation, but also as a means of inclusion and equal access for all.

Together, let's make accessibility a top priority in the digital age.

Glossary of acronyms

ADA (Americans with Disabilities Act): The ADA is an American law enacted in 1990 that prohibits discrimination against people with disabilities in all areas of public life, including employment, education, transportation and access to public and private spaces. This law aims to ensure that disabled people have the same rights and opportunities as other citizens.
With regard to e-commerce, the ADA requires websites and e-commerce platforms to be accessible to people with disabilities, requiring features such as compatibility with screen readers, text alternatives for images and subtitled videos, for an inclusive online browsing and shopping experience.

EAA (European Accessibility Act): Adopted in 2019 and fully in force since June 28, 2025, the EAA is a European Union directive that sets accessibility requirements for certain products and services. It mandates that e-commerce companies adopt inclusive practices and make their site and services accessible to everyone, regardless of their physical or sensory abilities. Non-compliance can result in fines up to €100,000 per infringement (or revenue-based penalties in some member states), as well as enforced removal from market. Companies must follow the WCAG (Web Content Accessibility Guidelines) and keep abreast of the legal requirements specific to each EU member country.

HLEG IA (Group of Independent High-Level Experts on Artificial Intelligence): set up by the European Commission, it is working on "ethical guidelines for trustworthy AI".

AI (Artificial Intelligence): AI (or Artificial Intelligence) refers to the simulation of human intelligence by machines designed to think and act like humans. AI systems learn from data, recognize patterns and perform tasks predictively or adaptively. AI is used in a variety of applications, including, but not limited to, recommender systems, speech recognition, autonomous driving, robotics, virtual personal assistants, and of course, in e-commerce to improve customer experience, inventory management, and service personalization.

RGPD (General Data Protection Regulation): The RGPD is the EU's regulatory framework for the protection of personal data and privacy in the EU and the European Economic Area, adopted in April 2016 and has been applicable since May 2018. It is known as GDPR (General Data Protection Regulation) in English.

WCAG (Web Content Accessibility Guidelines): WCAG are a set of guidelines developed by the World Wide Web Consortium (W3C) to make web content accessible to people with disabilities. They provide recommendations for making web content accessible to a wider range of people, including those with visual, hearing, motor or cognitive impairments. The WCAG are considered the international standard for web accessibility. They are broadly divided into four principles[4]:

- **Perceptible:** Internet users must be able to perceive it in one way or another, using one or more of their senses:
  - Offer text alternatives to non-text content.
  - Provide subtitles and other multimedia alternatives.
  - Create content that can be presented in different ways, including by assistive technologies, without losing meaning.
  - Facilitate the visual and auditory perception of content by the web user.

- **Usable:** Internet users must be able to control user interface elements (for example, buttons must be clickable in some way - mouse, keyboard, voice command, etc.):
  - Make all functions accessible from the keyboard.
  - Give visitors enough time to read and use the content.
  - Do not design content likely to provoke seizures or physical reactions.
  - Help web users navigate and find content.
  - Facilitate the use of input tools other than the keyboard.

- **Understandable:** Content must be understandable to its users:
  - Make the text legible and understandable.

4. https://developer.mozilla.org/fr/docs/Web/Accessibility/Understanding_WCAG & https://www.w3.org/WAI/standards-guidelines/wcag/glance/fr

- Ensure that content appears and functions in a predictable way.
- Help users avoid and correct errors.

- **Robust:** Content must be developed using well-established Web standards that will work on different browsers, now and in the future.

Self-evaluation

Ready to ensure your AI system is fair and accessible to all? Take a self-evaluation checklist now to avoid unfair biases, promote accessibility, and enhance stakeholder participation in your AI development process. These questions are taken from the "Assessment List for Trustworthy AI (ALTAI)" shared by the high-level group of independent experts on artificial intelligence set up by the European Commission[5]:

Avoiding unfair bias

- [ ] Have you established a strategy or set of procedures to avoid creating or reinforcing unfair biases in the AI system, both in the use of input data and in the design of the algorithm?

- [ ] Have you taken into account the diversity and representativeness of end-users and/or subjects in the data?

  - [ ] Have you tested for specific target groups or problematic use cases?

  - [ ] Have you researched and used publicly available, state-of-the-art technical tools to improve your understanding of data, model and performance?

5. European Commission, Directorate-General for Communication Networks, Content and Technology, The Assessment List for Trustworthy Artificial Intelligence (ALTAI) for self assessment, Publications Office, 2020, https://data.europa.eu/doi/10.2759/002360

- [ ] Have you evaluated and implemented processes to test and control potential biases throughout the AI system's lifecycle (for example, biases due to possible limitations arising from the composition of the datasets used (lack of diversity, non-representativeness)?
- [ ] Where appropriate, have you taken into account the diversity and representativeness of end users and/or subjects in the data?

- [ ] Do you have any education and awareness initiatives in place to help AI designers and developers be more aware of the possible biases they may inject into AI system design and development?

- [ ] Have you set up a mechanism for reporting problems related to bias, discrimination or poor AI system performance?
  - [ ] Have you established clear steps and means of communication on how and to whom these issues can be raised?
  - [ ] Have you identified the subjects who could potentially be affected (directly or indirectly) by the AI system, in addition to the end users?

- [ ] Is your definition of fairness commonly used and implemented in all phases of the AI system implementation process?
  - [ ] Did you consider other definitions of equity before choosing this one?
  - [ ] Have you consulted the communities concerned about the correct definition of equity, i.e. representatives of the elderly or disabled?
  - [ ] Have you carried out any quantitative analysis or measurements to evaluate and test the applied equity definition?
  - [ ] Do you have mechanisms in place to ensure fairness in your AI system?

Accessibility and Universal Design

- [ ] Have you ensured that the AI system matches the diversity of preferences and abilities present in the company?
- [ ] Have you assessed whether the AI system's user interface is usable by people with special needs or disabilities, or those at risk of exclusion?
  - [ ] Have you ensured that information about the AI system and its user interface is also accessible and usable by users of assistive technologies (such as screen readers)?
  - [ ] Did you involve or consult end users or people requiring assistive technologies during the AI system planning and development phase?
- [ ] If so, have you ensured that universal design principles are taken into account at every stage of the planning and development process?
- [ ] Have you considered the impact of the AI system on end users and/or potential subjects?
  - [ ] Have you assessed whether the team responsible for building the AI system has interacted with end users and/or potential target subjects?
  - [ ] Have you assessed whether certain groups might be disproportionately affected by the AI system's results?
  - [ ] Have you assessed the risk of system inequity for end-user communities?

Stakeholder participation

- [ ] Have you considered a mechanism to include the participation of the widest possible range of stakeholders in the design and development of the AI system?

Looking To Embrace AI-Driven Solutions For Your Business?

Contact OSF Digital today to learn how we can help you harness the power of AI to drive growth and create enjoyable user experiences.

Explore our AllAi Productivity Platform, designed to securely enhance quality and collaboration within the Salesforce ecosystem.

Ask us today how OSF Digital can assist your business in embracing AI with our AllAi Productivity Platform.

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Where AI, Data, and Trust Deliver Business Reinvention.

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