



Inclusive Innovation:

Transform your SME with Digital

Accessibility



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1. Introduction

The advancement of digital environments, teleworking and technological innovations have transcended mere convenience, leading to a significant transformation in individual autonomy. The acquisition of digital skills not only translates into improved quality of life, but also strengthens the foundations of inclusive social values.

The Internet has attained transcendental relevance in all spheres of action. In the most recent survey published by the INE, 96% of households have Internet access, reaching 100% in households with dependent minors [REF-01]. With these data, it becomes a collective responsibility to guarantee the existence of online spaces that ensure universal accessibility.

In the business sphere, digital accessibility is no longer simply an ethical issue; in the medium term, it will become a legal imperative (as we will see below) and a

By the end of 2020, the total number of people claiming to have some kind of disability stood at 4.38 million (equivalent to 9.5% of the Spanish population) who claim to have some kind of disability, with mobility problems being the most frequent disability [REF-02]. Those small and medium-sized companies that strive to offer accessible online services not only extend their reach, but also open the doors to a wider segment of the population [REF-03].

Analysis of online shopping habits reveals that the 16-44 age range leads the way in online transactions, accounting for 70% on average [REF-04]. This data underscores the importance of not only having an online presence, but doing so in a way that is inclusive and accessible to all.





When examining the size of the market for people who need digitally accessible

products or services, approximately 15% of the world's population has a recognized disability. Furthermore, as the population ages, the probability of acquiring one or more unrecognized disabilities increases. In countries with a life expectancy of over 70 years, such as Spain with 82.4 years [REF-05], people spend a significant 11.5% of their lives with some form of disability [REF-03].

This scenario reinforces the urgent need to develop and promote digital solutions that are accessible to all, considering both the population with recognized disabilities and those whose limitations have not been officially recognized.

The following section presents the conceptual and legislative framework as a starting point for a more comprehensive exploration of the subject.





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2. The key concepts of Digital Accessibility for SMEs and freelancers

Definition

Digital accessibility is a characteristic that a virtual environment, object or device must meet in order to be used by any person in an autonomous, safe, comfortable and equitable way from the principles of Universal Design [REF-06].

This approach claims that **digital** accessibility is a requirement that benefits all people, referring to digital accessibility from the perspective of Universal Design, where access to the Internet is as diverse as people's interests, needs or contexts [REF-07]. These are some of the functions that a universal design takes into account:

- Types of disability: visual, hearing, motor (temporary or permanent), cognitive and mental disabilities
- Devices: age, diversity of browsers, ergonomics
- Connection: Quality, usually referring to the weakness of the network and the necessary purchasing power.

Universal design, usability and digital accessibility concepts must therefore be part of the website creation process.

This monograph focuses on environments where SMEs can strengthen their digital accessibility, i.e. websites, virtual platforms and/or web tools. The elaboration of these constitutes a detailed work, whose efforts are rewarded at the moment in which the contents that it houses become accessible for the

different interested groups.



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<u>Legislation</u>

SMEs are susceptible to comply with the following regulations:

Currently in specific cases: transposition of EU Directive 2016/2102 in Spanish territory - Royal Decree 1112/2018, of September 7, on accessibility of public sector websites and applications for mobile devices.

These specific cases are:

- Private law entities linked to or dependent on Public Administrations.
- Websites and applications for mobile devices, linked to the provision of public services, of entities and companies that are responsible, either by concession

or through other contractual means, for managing public services.

• Entities or companies that have received public aid or funding to improve their digital assets and services. In these cases it will be a priority to comply with the terms and conditions of such aid.

Requirements of this Royal Decree:

- It specifies the standard to be applied for web and App accessibility for state public sector and related mandatory sectors.
- The framework requires compliance with the European Standard (EN) 301 459 V 3.2.1. Translated into Spanish language in UNE 301 549 - 2022.
- The EN 301 549 Standard covers the criteria and requirements dictated by the WCAG 2.1 Guidelines, in its level A and AA, and extends them with some more





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In specific cases as of 2025: Transposition of EU Directive 2019/882 in Spanish territory - Law 11/2023, of May 8, on the transposition of European Union Directives on accessibility of certain products and services.

- The same specific cases as in Royal Decree 1112/2018 of September 7 apply, but the scope is extended to a wider variety of private entities related to providing services to citizens. Moreover, it will not only apply to Web and App, but it is also extended to all application channels: biometric kiosks, ATMs, ticket vending machines, etc.
- The framework remains the same as in Royal Decree 1112/2018, requiring compliance with the UNE EN 301 549 Standard.
- Its entry into force will be June 28, 2025.

As of 2025 in specific cases and generally all cases as of 2029 must comply with Royal Decree 193/2023 of March 21, regulating the basic conditions of accessibility and non-discrimination of persons with disabilities for access to and use of goods and services available to the public.

Scope of application:

Public Administrations and companies providing services to the general public of special economic significance that have Internet pages or sites open to the general public must guarantee their universal accessibility and state therein the degree of accessibility of their goods and services, as well as their premises, facilities and procedures.

Likewise, they must also indicate if they carry out any line of action or attention

specifically aimed at people with disabilities.



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Effective date:

- For new goods and services in public ownership, it will be applicable on January 1, 2025.
- In the case of new privately owned goods and services that are contracted or supplied by public administrations, on January 1, 2025.
- In the rest of the privately owned goods and services that are new, on January 1, 2029.

Infringements:

- For minor infringements, the penalty will in no case exceed \in 30,000.
- For serious infringements, the penalty shall in no case exceed 90,000 euros.











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At the international level, the World Wide Web Consortium (W3C) is the leading consortium in the development of standards and guidelines for the construction of websites and mobile applications based on the principles of accessibility, internationalization, privacy and security.

Specifically, the WCAG 2.2 initiative (Web Accessibility Initiative - WAI) defines the accessibility requirements for web content that adapts the Spanish regulation Law 56/2007, of December 28. This initiative defines the conditions and the level of conformity according to levels and total criteria fulfilled (A, AA, AAA).

Level A is the minimum level of compliance, AA is an intermediate level, and AAA is the highest level of accessibility. These levels indicate the degree of accessibility of a website, where compliance with a higher level also implies compliance with the lower levels.

As an example, to improve accessibility for people with visual or hearing disabilities and following the criteria available on the website How to Meet WCAG (Quickref Reference) (w3.org) we represent the following example:



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LEVEL	CRITERIA	PRACTICAL EXAMPLE
Level A (Priority 1):	Criterion 1.1.1 - Alternative text for images:	Provide textual descriptions for all images on the page so that visually impaired users can understand the visual content.
Level AA (Priority 2):	Criterion 1.2.2 - Subtitles in videos:	eos: Include subtitles in the videos so that people with hearing disabilities can access the audiovisual content.
	Criterion 1.4.3 - Text contrast:	Ensure that the text has sufficient contrast with the background to facilitate reading, benefiting people with visual difficulties.

Level AAA (Priority 3):	Criterion 1.3.1 - Adaptable content:	Allowing content to be presented in different formats or layouts to suit individual needs, providing flexibility to users
	Criterion 3.1.2 - Language comprehension:	Provide definitions or explanations for technical terms or jargon, helping users who may have difficulty with specialized language.

Este esquema representa solo una pequeña parte de las pautas WCAG 2.2 de cada nivel. Para más información puede consultarse el anexo 1 de este monográfico.



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3. Win-win: Benefits for SMEs and people with disabilities



Although the legislation will not oblige private companies to create websites and/or applications with a view to digital accessibility until 2025 (Law 11/2023 of May 8 and Royal Decree 193/2023 of March 21), their adoption is beneficial in the long term. Keeping up to date with best practices makes it easier to adapt in the future, improves the company's own image (as part of its Corporate Social Responsibility) and provides a competitive advantage by ensuring that all people, regardless of their ability, can access information, thus expanding the audience for the product or service.

People who benefit from digital accessibility are mainly those with physical, visual, hearing, cognitive or mental disabilities. They can be congenital, temporary or acquired. To understand how different types of disabilities affect web use, the work of several authors is summarized, but especially Sergio Mora

on the problems associated with different types of disabilities [REF-08]:



People with visual impairments: these people make use of screen readers or other assistive tools to access website content, applications and documents. Low vision and color blindness can cause problems with images or multimedia elements without alternative text, very small text size, information based solely on color, and low-contrast color schemes.



People with hearing impairments: these people make use of captions or transcripts to access multimedia content such as video and/or audio. Deafness can cause problems with audio descriptions or video soundtracks, long and complex texts and lack of images to

complement textual information.



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People with motor disabilities: these people make use of assistive technologies such as alternative keyboards, adapted mice and voice recognition software to navigate websites and perform online tasks. Physical disability can lead to problems using tools such as mice, slow response time, delicate motor control, mouse-only user interfaces, links and form controls that are too small or have very short response times. For example, speech disabilities can cause problems with speech recognition.



People with cognitive disabilities: these people benefit from clear and simple layouts, navigation support instructions. Learning disabilities, distraction, inability to remember or focus on large amounts of information can cause problems with long text, lack of images to

complement textual information, lack of a site map, lack of descriptions and aids to interpret form controls, and inconsistencies between pages of the same website.



People with mental disabilities: these people are confused and frustrated by complicated and unintuitive digital interfaces. The simplification of interfaces, with a clear and easy-to-understand design that facilitates navigation, and provides flexibility in terms of time and duration of the tasks carried out in them, is crucial to improve their digital accessibility.



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Ageing-related situations: problems similar to those of visual, hearing and physical disabilities are usually encountered.



People affected by technological digital divide: this refers to old operating systems, alternative browsers, low internet communication bandwidth, lack of plugins or sound cards to play multimedia content and, finally, small display devices [REF-09].



 Image: Secretaria de estado de transformación digital

 Secretaria de estado de digitalización inteligencia artificial

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4. From theory to practice: Digital Accessibility Guidelines for your SME's success

The W3C consortium has developed the basic guidelines for web accessibility

laws WCAG 2.1. These guidelines are part of a standard that compiles a larger number of digital accessibility criteria: the UNE EN 301 549 standard, which establishes accessibility requirements for ICT products and services. The WCAG 2.1.guidelines provide recommendations, success criteria and techniques for making digital content accessible to all people.

In June 2018, WCAG 2.1 was published which structures the four principles that address people's information accessibility needs and serve as a general framework for understanding criteria and techniques. There are a total of 13 guidelines associated with the four principles that provide basic information for

creating accessible content. In addition, they establish 78 success criteria to validate compliance with the guidelines, classified into three levels A, AA, AAA [REF-10]. A new WCAG 2.2 version was published in October 2023; however, for

the time being its application is only a recommendation.









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In Spanish legislation, compliance with level AA is required, while level AAA is

considered a recommendation. As indicated above, each level focuses on improving accessibility for people with disabilities. Level A is the minimum level of compliance, AA is an intermediate level, and AAA is the highest level of accessibility. These levels indicate the degree of accessibility of a website, where complying with a higher level implies also complying with the lower levels. In addition, 700 techniques are provided that offer specific guidance for editing and evaluating content, including examples of code, resources, and tests.

This monograph does not go into the standards in depth, but rather presents a concise summary of the requirements established by the W3C Consortium that

every SME should then take into account when developing its Web site.



Effective organization of the website, orderly and simplified structure. A logical and clear structure is required on the website, with menus and navigation that facilitate understanding and navigation for all users, web maps or others.



Multimodal accessibility through mouse, keyboard, voice or other systems. Accessibility must be guaranteed for different input methods, such as mouse, keyboard or voice commands, to ensure an inclusive

experience for the cases discussed in the previous section.



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Descriptive alternative text, included in images and graphic elements.



All images and graphics should have alternative text descriptions that

explain their content, ensuring an accessible experience for visually impaired users.



Transcripts in multimedia elements such as video or audio. Audio transcripts and subtitles should be provided for videos, ensuring access to multimedia content for people with hearing disabilities.



Clarity of links, avoiding "click here". It is recommended to use clear and descriptive link text instead of phrases such as "click here", providing



relevant information about the link destination.



Adequate contrast between background, text and content. It is necessary to ensure sufficient contrast between text and background to improve readability, benefiting users with visual impairments or reading difficulties.



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used, it is essential to label them appropriately with titles and row and

column names to facilitate the understanding of the information, especially for users who use screen readers.



Structuring Word documents. The use of integrated headings and styles facilitates conversion to PDF to ensure accessibility: When creating Word or PDF documents, it is recommended to use integrated headings and styles to structure the information, facilitating reading and navigation.

These standards cover all the possibilities identified in disabilities and provide accessible responses to each of them.





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5. Tools and resources for Digital Accessibility and Inclusive Design

The WCAG 2.1 guidelines set the standard for Web accessibility, but conducting an effective evaluation requires the use of specialized tools. These tools act as practical allies, allowing developers and designers to verify compliance with the guidelines and make targeted improvements. By exploring tools to evaluate the accessibility of a web page, opportunities open up to implement necessary adjustments, thus ensuring a more inclusive online environment.

TAW (Web Accessibility Test). Developed by the CTIC Foundation (Information and Communication Technology Center), it is a family of tools designed to analyze the accessibility of websites in a comprehensive and global way. This suite includes several elements and pages, including page analyzers, monitoring systems and a specific tool for the realization of observatories.

- In English
- User level
- TAW | Web Accessibility and Mobility Services (tawdis.net)



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WAVE (Web Accessibility Evaluation Tool): Provides detailed accessibility analysis for web pages, highlighting potential problems and offering suggestions for improvement.

- In English
- User level
- https://wave.webaim.org/

Browser Extensions S	tand-alone API/Testing Engine Subscript	ion API AIM Report Help
	web accessibility evaluation tool	
	Web page address:	→
WAVE [®] is a suite of evaluation tools that WAVE can identify many accessibility and of web content. Our philosophy is to foc about web accessibility.	t helps authors make their web content more d Web Content Accessibility Guideline (WCAG rus on issues that we know impact end users,	e accessible to individuals with disabilities. 6) errors, but also facilitates human evaluation , facilitate human evaluation, and to educate
WAVE Browser Extensions	WAVE API and Testing Engine	Accessibility IMpact (AIM) Report
You can use the online WAVE tool by entering a web page address (URL) in the field above. <u>WAVE Chrome, Firefor</u> and Edge browser extensions are available for testing accessibility directly within your web browser - handy for checking password protected, locally stored, or highly dynamic pages.	The <u>WAVE subscription API</u> and <u>Standalone WAVE API and Testing Engine</u> are powerful tools for easily collecting accessibility test data on many pages. The stand-alone API and Testing Engine can be integrated into your infrastructure for testing intranet, non public, and secure pages, including in continuous integration processes.	Your <u>Accessibility IMpact (AIM)</u> <u>assessment report</u> provides detailed WAVE test data, your site's AIM score (a measure of end user impact compared to web pages generally and as determined by human testers), and expert manual test results to give you insights into the accessibility of your web site for users with disabilities.

Axe DevTools: Digital Accessibility Testing Tools Dev. This tool runs automated tests and Intelligent Guided Tests™ on your websites and applications that directly address the main obstacles that prevent people with disabilities from enjoying all that the web has to offer.

Axe DevTools Pro's Intelligent Guided Tests, which use Deque's industrystandard open source axe accessibility rules engine and machine learning, are based on simple question-and-answer interactions that require no accessibility expertise. Axe DevTools Pro guides developers through inspections of their websites and applications, allowing full or partial page scans, and then produces and saves comprehensive reports that highlight areas of optimization.

www.deque.com/axe/devtools





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These tools share the WCAG 2.1 Accessibility Guidelines in their evaluation bases. Although they focus solely and exclusively on the automatic checking of only certain web accessibility criteria, and require manual review of the results obtained and manual checking of the remaining accessibility criteria, they are fundamental tools for moving towards the creation of an accessible digital environment.

When designing a digitally accessible website with an inclusive design, it is essential not to forget to avoid the use of overlays. These are quick and easy-toimplement artificial intelligence-based solutions that overlay an existing website to provide accessibility features. However, despite the apparent convenience, overlays present several drawbacks in terms of efficiency and user experience.

In reference to this, the following considerations are set out in accordance with "The Joint Statement of The Disability Forum (EDF) **[REF-11]** and The International Association of Accessibility Professionals (IAAP) on Accessibility Overlays."

Artificial intelligence and other emerging technologies have great potential to improve accessibility and assistive technology. However, to date none of these technologies can instantly fix an inaccessible website.

An accessibility overlay is a type of technology that allows users to make changes to the way content appears on a website. Accessibility overlays add additional functionality to individual websites, such as text-to-speech conversion, contrast, magnification, or the ability to control color to improve readability, or some even attempt to automatically "fix" accessibility problems directly on the website when it is used.



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However, this in most cases is not always reliable and interferes with assistive technology or assistive products used on a one-to-one basis by the users themselves.

Accessibility overlays can cause significant problems [REF-12]:

Assistive technology users already have their devices and browsers configured with their preferred settings. Overlay technology can interfere with the user's assistive technology and override the user's settings, forcing people to use the overlay. This makes the website less accessible to some user groups and may prevent access to content.

Most of the functionality offered by accessibility overlays copy built-in features that already exist in current browsers and operating systems. It does not make sense to replicate these features with an overlay. Informing users about core functionality would be a much more efficient way to provide support when needed.

- Some overlays automatically detect when an assistive technology is running on a user's device. This can be a problem if there is no ability to opt out of such tracking, as assistive technology is often associated with a disability and disability information is sensitive personal information.
- Website owners who are not digital accessibility specialists may be led to believe that overlays can "fix" a website's accessibility, which is not the case. Overlays do not make the website accessible or comply with European accessibility legislation. They are not an acceptable alternative or substitute for fixing the website itself.



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Next, we will look at some platforms that offer accessible templates without



Resources and platforms for accessible templates



WordPress with Astra theme.

WordPress is a widely used website creation platform. The Astra WordPress theme stands out for its focus on accessibility and its lightweight design. This theme allows the creation of accessible websites without resorting to overlays, ensuring that templates meet accessibility standards and provide an inclusive user experience.

WAI-ARIA Authoring Practices.

Although not a platform per se, the WAI-ARIA Authoring Practices is an essential guide provided by the W3C consortium. It provides patterns and best practices for developing accessible web interfaces using WAI-ARIA technology. By following these practices, developers can create accessible templates without relying on overlays.





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framework that provides a variety of predefined components and styles. Its focus on accessibility is reflected in the design of components that comply with the WCAG Accessibility Guidelines. Bootstrap makes it easy to create accessible websites without relying on overlays, allowing developers to integrate inclusive functionality from the start.

To ensure the accessibility success of a website, it is essential to adopt an inclusive approach from the outset, using accessible templates, design tools and performing automated accessibility testing with the tools described above.

In doing so, we will be fostering an equitable and positive online experience for all users, regardless of their abilities or disabilities. Let's remember that inclusion and accessibility are core values in web design. It is in everyone's hands to ensure equal access to online information and services.

Practical guide to the inclusive design process and continuous improvement

Two practical guides are proposed below. The first one, for those who start the process from conceptualization to implementation. The second, with the objective of continuous improvement of the accessibility process in websites and apps.



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Phase 1: Research and knowledge of your audience



<u>Audience identification:</u>

Define who the end users are and understand their diverse needs and skills.



<u>User experience (UX) research:</u>

Conduct user-centric research to gain valuable insights into how different people interact with your digital content. Research how they interact with you or other SMEs in the same industry, from websites, social media, email, phone.

Phase 2: Conceptualization and Ideation



Inclusive brainstorming sessions:

Facilitate creative sessions that encourage inclusive idea generation early on with your team or individually.



Rapid Prototyping:

Develop prototypes that allow you to get early feedback and adjust the design according to identified needs. You can opt for the templates provided above or outsource the development. There are platforms such as "Fiverr - Freelance services platform".



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Implementation of accessibility principles:

Integrate key accessibility principles and logical structuring of content.



<u>Iterative user testing:</u>

Conduct testing with representative users to validate usability and accessibility, and adjust design based on feedback.

Phase 4: Implementation and launch



Final accessibility validation:

Perform final accessibility audits using automated and manual tools.



Launch with accompaniment:

Implement inclusive design along with educational and support resources for users and internal teams.





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Phase 1: Assessment of current status



Essential accessibility audit:

Conduct an initial accessibility assessment of the existing design with the tools provided in this monograph, identifying areas for improvement.



<u>Collect user feedback:</u>

Obtain direct feedback from current users on potential accessibility barriers.

Phase 2: Prioritization of improvements



Prioritization:

Ranking areas for improvement according to their impact and level of urgency.



Creating an action plan:

Develop a detailed plan outlining how improvements will be addressed, assigning responsibilities and timelines.



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Phase 3: Implementation of changes





Team training:

Provide training to team members on inclusive design best practices.



<u>Gradual implementation:</u>

Introduce changes gradually, starting with the areas of greatest impact.

Phase 4: Continuous monitoring and adjustment



<u>Automatic monitoring tools:</u>

Use automatic monitoring tools to continuously assess accessibility and address issues in real time.





<u>Continuous user feedback:</u>

Establish channels for users to provide ongoing feedback on design accessibility.







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4. Conclusions



In today's digital age, accessibility is not only an ethical imperative but also a strategic opportunity for small and medium-sized businesses. By building an accessible online environment, it not only improves the quality of life for users but also strengthens the foundations of inclusive social values.

The growing awareness of the market size formed by people who need digitally accessible products or services highlights the importance of embracing inclusive solutions. Approximately 15% of the world's population has a recognized disability, underscoring the urgency to develop and promote digital solutions that cater to this segment and those whose limitations have not been

For SMEs, the effort to offer accessible online services translates not only into expanding their reach but also into opening doors to a more diverse audience. In this context, international legislation, such as the United Nations Convention on the Rights of Persons with Disabilities, recognizes the importance of accessibility in various aspects of life. The European Union and Spanish legislation reinforce these principles, establishing regulations and directives that seek to ensure equality of opportunities and universal access.



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On this journey towards building an accessible website, the implementation of

standards and guidelines, such as those proposed by the World Wide Web Consortium (W3C), is key. Tools like TAW, WAVE, and Axe Dev Tool are valuable allies in assessing and improving digital accessibility.

Accessibility is not only an ethical path but also a route towards innovation and sustainable growth in the digital era. Building an accessible website is a smart strategy. We invite action, to adopt inclusive practices and tools, to design with diversity in mind, and to contribute to a digital environment that truly serves everyone, regardless of abilities.





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