

# Digital Accessibility on Institutional Websites of Portuguese Tourism



Fátima Matos Silva and Isabel Borges

**Abstract** In this chapter we address [the problem](#) of accessibility and accessible tourism [concerning the various](#) types of information and communication, namely, the digital information resulting from technological innovation implemented in recent years in various websites.

As we have been developing studies on the impacts of accessibility and accessible tourism, we consider it fundamental to analyse the compliance of Portuguese institutional sites in the tourism area with the new European directives and Portuguese legislation.

In this sense, the main objective of this chapter is to understand how the institutional Web content related to Portuguese tourism meets the accessibility requirements of the *Web Content Accessibility Guidelines 2.0* (WCAG 2.0), of the *World Wide Web Consortium* (W3C). The sample reflects the Portuguese panorama of institutional websites related to Portuguese tourism activity and promotion.

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Overall, with respect to accessibility practices, it is possible to conclude that none of the websites analysed meets the compliance levels of WCAG 2.0. The results point to an inequality in the dynamics and development of the Portuguese territory.

**Keywords** Digital accessibility · Accessible tourism · Institutional websites · Portuguese tourism

## 1 Introduction

The World Wide Web offers a vast amount of information and services, with the aim of improving people's lives, raising the quality of information accessed, without constraints of access to their content.

The information accessibility essentially refers to the right to access a series of virtual information, eliminating barriers in access to communication, ensuring the compatibility of equipment and programs, with content adjusted and presented in compatible formats, if possible, with all types of limitations. It is, therefore, extremely important to analyse and evaluate this issue, associated with the design and availability of the most varied information on web pages.

Recently, the European Community published, on March 21, 2019, new guidelines set out in the *European Accessibility and Standard Design for All Act*. Likewise, Portugal, in anticipation, published in October 19, 2018, Decree-Law n° 83/2018 on *Accessibility of mobile websites and applications*.

As we have been developing studies on the impacts of accessibility and accessible tourism (Silva & Borges, 2018, 2019a, 2019b) we consider fundamental to analyse, in a constructive perspective, the conformity of Portuguese institutional websites in the tourism field with the new European directives and the Portuguese legislation.

In this way, we intend to contribute to the awareness of the problems that the generality of the users of the websites related to Portuguese tourism have, and particularly those that, for various permanent or occasional disabilities, still see this difficulty increased by the small existence of accessible websites.

The main objective of this research work is to analyse how the institutional web content of tourism in Portugal meets the accessibility requirements indicated in the WCAG 2.0 (*Web Content Accessibility Guidelines 2.0*), of the *World Wide Web Consortium* (W3C).

The sample studied is based on 19 institutional web sites related to Portuguese tourism activity and promotion and reflects the Portuguese panorama.

Of course, the computer analysis of web site results does not move us. Rather, we want to obtain quantifiable data that can enhance the qualitative analysis of strengths and weaknesses. Based on these data, we intend to reflect on the needs of improvements that the websites studied require, from the perspective of the user, the tourist who has permanently or temporarily, limitations.

Thus, in methodological terms, we made a collection and, later, a critical review of the existing literature and its contextualization, regarding the referred themes.

Subsequently, we preceded to the survey of the representative sites, collecting the URLs; we collect the statistical data of the software; and, finally, we did the synthetic analysis of the data obtained.

In order to verify compliance with the recommendations of WCAG 2.0, whose Portuguese version was published in 2014 and developed by the Access Unit of the Foundation for Science and Technology, we use the automatic validator *AccessMonitor* for version 2.0.

## 2 The User with Special Needs

The term accessibility, in the context of the Internet, is related to the availability of information to all users, regardless of their limitations, technology or platform used. In the past, when referring to accessibility issues, we only thought about alternative versions of websites, that would allow reading for people with visual impairments. Nowadays, it is a question of allowing all users to access, in a perspective of apprehending, understanding, navigating and interacting with the Web, regardless of their particularities (visual, auditory, physical, speech, cognitive, neurological disabilities or elderly).

There is also another problem, as most people, including web designers, are not informed about accessibility issues.

There are currently several recommendations that must be followed by everyone to have access to the content. Among them we highlight:

- Recommendations for WCAG 1.0 (*Web Content Accessibility Guidelines*), used for several years;
- Recommendations for WCAG 2.0 (*Web Content Accessibility Guidelines*), published in 2008, which replace those previously mentioned, and;
- Recommendations WAI-ARIA 1.0 for *Rich Internet Applications*, published in 2017, and used to improve the accessibility and interoperability of web content and applications;

In the case of Portugal, it is important to consult the AMA—Agency for Administrative Modernization (<http://www.acesibilidade.gov.pt>) and the Access Unit of the Foundation for Science and Technology, which developed the tool *AccesMonitor*—WCAG 2.0 (<http://www.acesibilidade.gov.pt/accessmonitor/>).

For the authors Darcy and Dickson (2009, p. 34), “Accessible tourism allows people with specific mobility, vision, hearing and cognitive needs to travel in the most autonomous, independent way, on an equal basis with other tourists and with dignity, through the availability of products, services and tourism environments of universal design. This definition covers all people, including those who travel with young children, strollers, the disabled and the elderly.” Although often considered a

niche market, it is effectively growing. The World Health Organization estimates that about 15% of the world's population lives with some kind of disability.

Adapted technology can be a crucial tool in order to make the choice of destination and the travel possible for a person with special needs, even helping to reduce their own limitations, temporary or permanent. This type of segment must feel prepared to travel, having a real notion of the selection parameters of destination and what will they find when staying in the territory.

### 3 Motivations, Accessibility and Destinations

The decision-making process of a visitor with temporary or permanent special needs is decisive, which is why the economic agents of the destination should pay special attention.

The motivations that lead the tourist to travel, the barriers that he encounters throughout the decision-making process, as well as the various physical and/or intellectual impediments, must be analysed, studied and accessible solutions must be created.

Motivation is only one of the factors that can contribute to understand tourist behaviour, but it is a crucial variable, because it is the driving force behind all behaviour (Crompton, 1979; Fodness, 1994). Regardless of the greater or lesser degree of incapacity, the tourist always implies a motivation, or a set of motivations, that seduce them to go to the destination and to want to feel an integral part of it (Fontes & Monteiro, 2009).

The decision to travel, for visitors with special needs, is different from those that do not need the usufruct of special access conditions (Devile, Kastenholz, & Santiago, 2010).

They usually do not travel alone, and their relationship groups will tend to choose destinations where their needs are met, with as much autonomy as possible. Thus, the products offered by the territory supply should be more careful, always considering the diversification of demand needs.

More than a matter of physical access, accessibility in tourism is related to the environment, positive experiences, and gradual progression, until the potential demand of tourists with reduced mobility becomes in an effective demand (Yau, McKercher, & Packer, 2004).

Currently, access to information is an indispensable factor in the choice of tourist destinations. The main sources of value and competitiveness, in almost all sectors of economic activity, are based on image, brand, brand management and its form of promotion (offline and online). However, the various actors and the capacity for innovation, or knowledge and relationships with consumers, cannot be ignored. In fact, increasingly requires the ability to management, integration and cooperation capacity in a value-added network, targeted to the satisfaction of the consumer.

According to Buhalis (2000), tourist destinations compete mainly through image, as long as the tourist's image of destinations before the visit is a determining element

in the purchase decision. A deficient lack of answers in tourism, to this segment that, temporarily or permanently, feels the need for development and knowledge, starts from the difficulty of the barriers found in the moment of choosing the destination, aggravating when the real obstacles to the usufruct of the tourist activity are verified.

The accessible tourism segment, a social phenomenon in growth that has very particular characteristics, should allow tourists with special needs to enjoy tourism products/services that in the past were unattainable. In fact, accessibility implies the possibility of access to public and private buildings, but also to transport and information and communication technologies (Buhalis, Eichhorn, Michopoulou, & Miller, 2005; Silva, Costa, & Macedo, 2009).

Given this scenario, the balanced development of a destination implies that all its components respond to the needs of tourist demand, as well as to its constant changes. Effectively, both the facilities and the services designed to meet the needs of tourists compete primarily through image and promotion—powerful means of attraction. Increasingly, we are looking for models for promoting and developing sites that are sustainable and that incorporate new approaches.

The strategic management of a destination should consider sustainable development, with a rational use of resources, the environment and the well-being of the communities, fundamental factors for future generations to enjoy conditions that are equivalent and/or better to those that exist currently (Saarinen, 2006).

The competitiveness of a tourism destination based on differentiation allows its positioning in the tourists' mind, based on the equality of the enjoyment of the tourist experience, to evolve in the path of sustainability.

## **4 Accessibility on the Internet: The Main Guidelines and European Legislation**

In recent years, the European Union (EU) has developed a research and technological development work, where it addresses the needs and requirements of people with special needs. The promulgation of common European accessibility laws, conventions and protocols has also helped member states to adopt measures to safeguard the rights of the thousands of people with disabilities or with special temporary or permanent needs living in the European Union.

An important step was taken on 13 December 2006 with the signing of the United Nations Convention on the *Rights of Persons with Disabilities at United Nations Headquarters*, in New York, and entered into force on 3 May 2008. It should be noted that this document has obtained the largest number of signatories in the UN history for ratification of a Convention, being the first comprehensive human rights treaty of the twenty-first century.

With EU support, the ENAT—*European Network for Accessible Tourism*—was established in January 2006—a project-based initiative of nine sponsoring organizations in six Member States.

In 2013, the World Tourism Organization (UNWTO) issues several recommendations in the document *Accessible Tourism, Tourism for All*.

In 2015, prepared by the European Commission, the *Mapping and Performance Check of the Supply of Accessible Tourism Services* was published, which identified the tourism services that contribute to the Accessible Tourism market. In total, the study identified 313,286 providers with Accessible Tourism potential in EU Member States.

Most recently, the European Community made public, on 21 March 2019, new guidelines set out in the *European Standard Accessibility and Design for All Act*. The *European Standard EN 17161: 2019 Design for All—Accessibility following a Design for All approach in products, goods and services—Extending the range of users*, was published. The goal is to help organizations to develop a consistent approach by defining requirements that enable them to develop and deliver products, goods or services that can be accessed, understood, and used by all, including people with disabilities. As each user has their needs, characteristics or capabilities profile, it is crucial to take these factors into consideration when planning products or services.

This European standard defines the context requirements of the organization; the needs and expectations, ensuring the inclusion of people with disabilities; the integration of operational processes related to user requirements; leadership, policy and responsibilities to support a *Design for All* project, in order to ensure achievement of accessibility results; the design of the *Design for All* goals and how to achieve them; monitoring, among others.

The EN 17161 encourages organizations to take a consistent approach through a range of innovative and accessible applications, maximizing potential users of products and services, helping to increase the percentage of the population that can actively participate in society.

## 5 The Case of Portugal

The planning and strategic development of an accessible destination is primarily due to government agencies, an integral and crucial part of the tourism system. Through the implementation of laws, they force the stakeholders to create more positive and proactive responses and attitudes to the tourism offer. In fact, the Government, as a regulatory stakeholder, must play an active role in balancing the interests of the private and public sector, the local population and the visitors (Kastenholz, Eusébio, Figueiredo, & Lima, 2012).

Portugal has been, from the first moment, sensitive to issues related to accessibility on the Internet. It was, in fact, one of the first countries in the world to create legislation in this area. Despite the implementation of actions is not as fast as desirable, our country is referenced, in many studies and documents, as a pioneering and exemplary case.

In 1999, it was the first Member State to adhere to the accessibility guidelines of the World Wide Web Consortium (W3C).

The first initiative for the inclusion of accessibility was the promulgation of Decree-Law n.º. 123/97, of May 22. This introduced technical standards, identified the elimination of urban and architectural barriers in public buildings, public facilities and public road. Subsequently, in 2006, this decree was revoked, and a new decree was promulgated, Decree-Law n.º. 163/2006 of August 8, which is applied to the Government, local authorities, public associations, public institutes, public sector entities, among others.

By Resolution of the Assembly of the Republic (n.º. 56/2009, of July 30 and n.º. 57/2009), the *United Nations Convention on the Rights of Persons with Disabilities*, adopted in New York on March 30, 2007, is ratified, as well as its Optional Protocol.

In 2011, by Law n.º. 36/2011, of June 21, Portugal defines for the first time the standards and digital formats to be adopted by the Public Administration. The following year, through the Resolution of the Council of Ministers no. 91/2012 of November 8, the Portuguese Public Administration would have to adopt the WCAG 2.0 Standards of the WC3 through the publication of the *National Digital Interoperability Regulation* (RNDI). Also, in that year, through two Resolutions of the Assembly of the Republic (131 and 132/2012, October), the Government of Portugal is recommended, for the first time, the creation of a strategy to promote accessible tourism in Portugal. Even in 2016 (Regulatory Order n.º. 11/2016, of October 28), an *Accessible Tourism Support Line* was approved, which defined the conditions of potential applications.

With the introduction of the recent decree-law no. 83/2018 of 19 October, it is required that all websites comply with certain rules and implement them by September 2019. Portugal, therefore, transposes Directive (EU) 2016/2102 of the European Parliament and of the Council on the accessibility of websites and mobile applications, regardless the device used to access from public sector (except for public broadcasters).

The Article 4 defines the concept of accessibility: “the principles and techniques to be observed in the design, construction, maintenance and updating of websites and mobile applications in order to make their content more accessible to users, in particular, to people with disabilities”.

It should be noted that the Decree-Law stipulates that the most accessible web sites and mobile applications must meet the requirements of perceivability (information and interface components), operability (to ensure that components and interface navigation are actionable), comprehensibility (easy to understand) and robustness (solid content interpreted in a reliable way). Entities should monitor using an automatic or semiautomatic validator, commonly used in the market, conduct usability tests with people with disabilities, making the results public.

One of the points mentioned are the Web Content Accessibilities, which allow it to be accessible to people with various types of disabilities, including blindness and low vision, deafness or hearing loss, disabilities in terms of cognitive limitations, movements limitations, speech disabilities and photosensitivity. It is also assumed that older people will have ease of use, of course, when the accessibility requirements are met.

The aim is to create websites that can be used equally by disabled and non-disabled users.

In detail, it is noted that the new *National Digital Interoperability Regulation* (RCM n.º. 2/2018, of January 5) obliges public entities to use the Web accessibility content of the *International World Wide Web Consortium* (W3C), which developed the *Web Accessibility Initiative* program.

The public entities that are covered by this obligation are: the organs of sovereignty; central public administration services, including public institutes and decentralized state services; the regional public administration services; and, finally, the Government business sector.

These entities must comply with the compliance levels stipulated in Table III of RCM n.º. 2/2018. In summary, it implies that all Internet sites that exclusively provide information and content are required to comply with level ‘A’ of WCAG 2.0 or ISO/IEC 40500: 2012.

As far as Internet sites that offer online services are concerned, the level to be achieved is the ‘AA’ level of WCAG 2.0 or ISO/IEC 40500: 2012, and the RNID regulation recommends that the level of accessibility should be ‘AAA’ for WCAG 2.0 or ISO/IEC 40500: 2012.

About 20 years later, Portugal has only 124 public administration sites accessible to people with disabilities. Of these, only three are fully accessible.

It should be noted that in the *Tourism Strategy 2027*, the theme of Accessibility is a priority, and *Turismo de Portugal* has developed various tools that aim to support entrepreneurs and managers of tourism destinations to make the national offer accessible. However, as we will see, several obstacles remain to be overcome in terms of websites.

## 6 The *AccessMonitor* Automatic Validator

The *Web Content Accessibility Guidelines* (WCAG) 2.0 cover a wide range of recommendations that aim to make website content more accessible to people with special needs.

Virtual accessibility is intended to cover a wide range of special needs, such as visual limitations (blindness and low vision), hearing impairments (deafness and low hearing), learning difficulties, cognitive and neurological limitations, such as those related to speech, language, physical and movement limitations, and photosensitivity.

If these guidelines are met, the content will be more accessible and easily usable, for a greater number of people with special needs and for the elderly individuals whose capacities change due to aging. They also often improve accessibility for general users. We must, however, be aware that, unfortunately, they do not address all the needs of people of all kinds, degrees, and combinations of special needs.

WCAG 2.0 was developed through the World Wide Web Consortium (W3C), in collaboration with people and organizations around the world, to provide common elements of Web content accessibility that can meet the international needs of



people, organizations and governments at the international level. It is intended that they can be applied to the different existing Web technologies, now and in the future, and that can be verified through several automatic tests and several human validations.

In order to respond to the diverse needs of several stakeholders (programmers and Web designers, legislators, purchasers of goods and services, teachers and students), various levels of approach have been developed, including “global principles, guidelines general, testable success criteria, an abundant set of Sufficient and Counseling-type techniques, as well as documented common failures with examples, resource links, and source code availability” (<https://www.w3.org/Translations/WCAG20-en-EN/>).

As we have already mentioned, the four fundamental principles that constitute the foundation of Web accessibility are: perceptible, operable, understandable, and robust.

Based on these principles were created 12 guidelines that provide the basic goals to achieve to produce content more accessible to different types of users.

Although the guidelines are not stable, they are an important source of reference, as are the overall objectives, which help to understand the success criteria and improve the implementation of the techniques. As a result, success criteria were created for each guideline, which could be tested. In this way, it is possible that WCAG 2.0 will be used where requirements and compliance tests are required.

Based on the principles and criteria defined, three levels of compliance were created: “A” (the lowest), “AA” and “AAA” (the highest).

In order to prevent the success criteria that are not covered by the success criteria capable of being tested, informative techniques have been developed that fall into two categories: those that are of sufficient type to meet the success criteria and those that are advised type.

All these levels of approach (principles, guidelines, success criteria and techniques) have the ultimate and essential goal of providing guidelines to make content more accessible.

It should be noted that, even in the case of content that is at the highest level (“AAA”), it is not accessible to individuals of all types, grades or combinations of special needs, particularly in the areas of cognitive language and learning.

The program we use to know the accessibility of the websites we studied was *AccessMonitor* which is “an automatic validator that verifies the application of accessibility guidelines in the HTML contents of a website. *AccessMonitor* uses version 2.0 from the Web Content Accessibility Guidelines (WCAG 2.0) of the World Wide Web Consortium (W3C)” ([http://www.acesibilidad.gov.pt/accessmonitor/nota\\_tecnica.html](http://www.acesibilidad.gov.pt/accessmonitor/nota_tecnica.html)) that is available through the website of the Access Unit of the Agency for Administrative Modernization, IP (<http://www.acesibilidad.gov.pt>) and was the automatic validator for the WCAG developed by the *ACCESS Unit of FCT*—Foundation for Science and Technology, IP.

Currently there is a more up-to-date version of WCAG 2.1. However, there is no translation into Portuguese, so it does not allow validating the contents of the websites we analyse.

In order to be able to meet the compliance requirements, it is necessary to know which list of references to be considered.

We now need to briefly explain, based on the Quick Reference Guide to the requirements (success criteria) and techniques of the *Web Content Accessibility Guidelines 2.0* (<https://www.w3.org/Translations/WCAG20-pt-PT/>), which is considered essential for a website to be considered accessible.

It is extremely important that text alternatives are available to any non-text content, allowing adaptation to the needs of each user, such as extended print, Braille, read out loud (available as functionality), symbols and simpler language.

These contents must also be adaptable, but there should be no loss of information or structure. They must also be discernible, that is, the hearing and the visualization must be facilitated through the colour of audio elements, being always accessible through the keyboard.

Users should be given enough time to read and use the content. This text content must be readable and understandable.

All websites should provide help options when you enter the services, to avoid and correct errors, but also, this help must be available throughout the browsing and localization of content. So, they must be predictable.

It is also expected that the various support systems and technologies will be compatible over time.

Multimedia elements must provide alternatives dynamically or temporarily. That is, pre-recorded or live video or audio content must provide clearly identified text content, subtitles and audio description.

Lastly, content that, with the current knowledge of information technology, can cause epileptic seizures should not be made available.

As we refer, the program we use, *AccessMonitor* works fully on the web and automatically provides a qualitative report for each page submitted to it. This report is organized in two parts.

In the first part, a brief description of the collected sample and an exhaustive presentation of the compiled results are provided in two sections. The URL page is provided, a link to the page that was the subject of the analysis, and access to view the source code. It is also possible to consult the title of the page, the size in KB, the number of elements found and the date and time of the analysis. In the second part, the results are also divided into two parts, presenting the summary and the exhaustive detail of the tests performed.

In the summary, the *AccessMonitor* index is available as the “valuation unit used in all validator tests and the final result of which summarizes and quantifies the practices for accessibility expressed in WCAG 2.0” ([www.acesibilidad.gov.pt/acesmonitor/](http://www.acesibilidad.gov.pt/acesmonitor/)).

The three types of results are stratified by three priority levels (‘A’, ‘AA’ and ‘AAA’).

*AccessMonitor* performs 86 tests, but only 78 enter into the quantitative index calculation, while the remaining eight contribute to the qualitative report, functioning as warnings, identified with a yellow triangle with an exclamation point in the middle.

The result of each test is presented by a green icon with a visa and the indication OK and those with an error are marked with that designation and a red circle with an X inside it.

Those who need more information about the detailed results should access the “linear version”, where they will find various information about all the tests that have been carried out and various explanatory documentation and links to other documentation.

*AccessMonitor* displays the results (of a page or a sample of pages) in a scale of 1.0 to 10.0, thus, synthesizing in only one value the degree of satisfaction of the automatic tests performed by the validator.

In *AccessMonitor* there are four types of tests: true, false, decreasing and proportional. True type tests validate a given condition on a scale of 1–10 (very bad practice: 1, bad practice: 2 or 3, regular practice: 4 or 5, good practice: 6 or 7, very good practice: 8 or 9 and excellent practice: 10).

This program infers the degree of compliance with WCAG 2.0, and its analysis is transversal to the three priority levels. The current 86 *AccessMonitor* tests do not have a one-to-one correspondence with the 61 success criteria of WCAG 2.0 (that is, there is no one-to-one relationship). There are also success criteria that are impossible to analyse automatically and there are tests that apply to multiple success criteria.

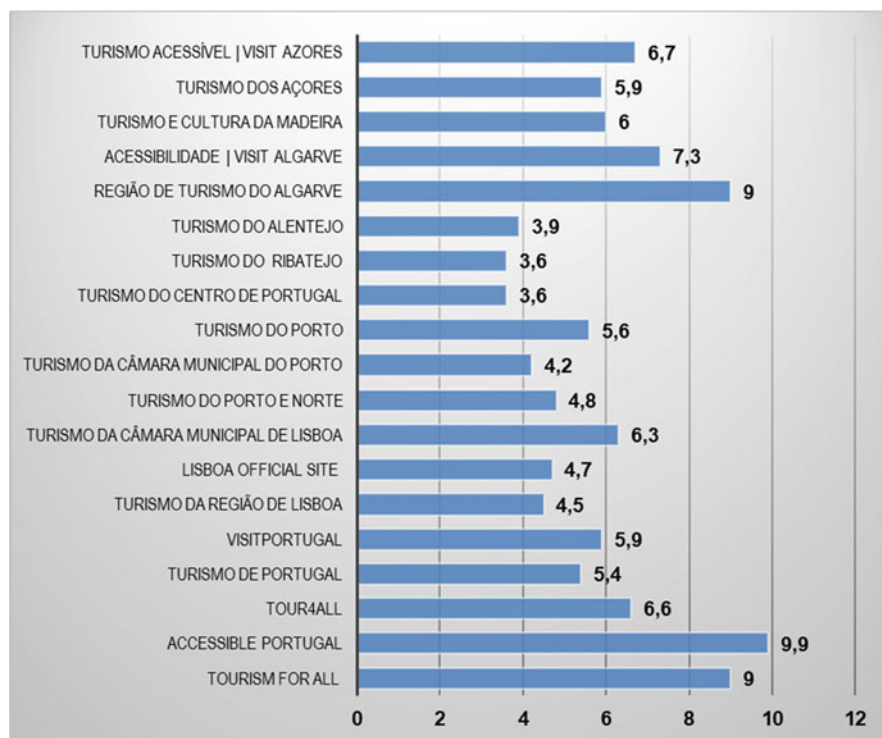
## 7 The Digital Accessibility of the Analysed Websites

The sample chosen concerns, in most cases, the official websites of *Turismo de Portugal* and the Regional Tourism Entities (ERT), once these organizations are responsible for regional tourism development, in line with the national guidelines for tourism. Thus, the selected websites, out of a total of 19, were those of *Turismo do Porto and Norte de Portugal*, based in Viana do Castelo; Tourism of the Centre of Portugal, headquartered in Aveiro; the Regional Entity of Tourism of the Lisbon Region, based in Lisbon; the Tourism of Alentejo and Ribatejo, that is based in Beja and has two websites, one relating to the geographical area of Alentejo and another to Ribatejo; and the Algarve Tourist Region, headquartered in Faro.

Regarding the islands, these Regional Tourist Offices depend on the Regional Secretariats of the Azores and Madeira. Madeira is headquartered in Funchal and Azores in the city of Horta, on the island of Faial.

Also included in the study were the websites of the municipal entities of the largest Portuguese cities, such as Porto and Lisbon, and the websites made available to these cities by *Turismo de Portugal* itself.

Of course, the focus were the websites directly related to accessible tourism, such as the private non-profit Accessible Portugal, complemented by *TOUR4ALL* and the private *TOURISM FOR ALL*.



**Fig. 1** *AcessMonitor* indexes of the websites analysed. Source: Author's own figure

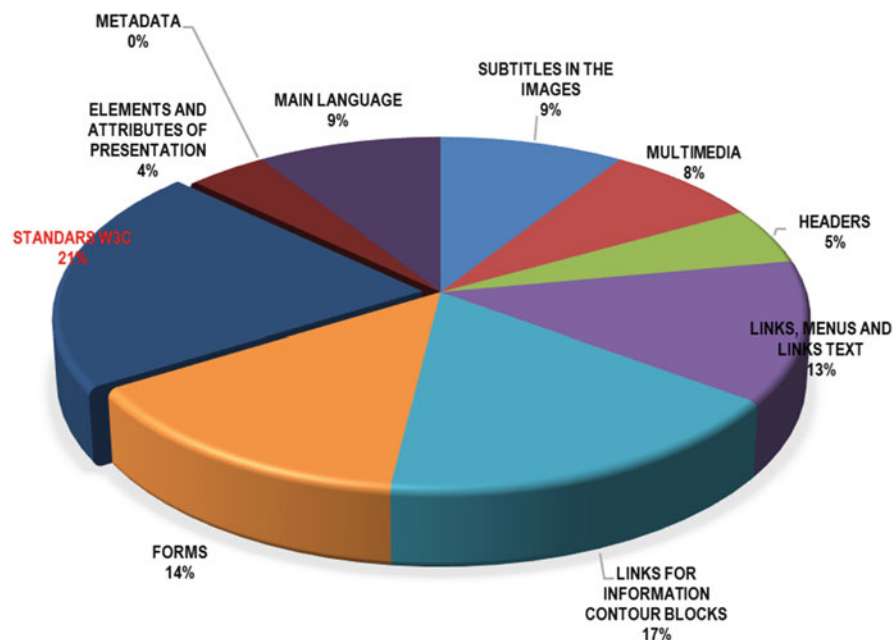
All the results of the analyses were compiled between March 26 and April 6, 2019. This data is important, since the websites are constantly updated, so the validity of analysis is relatively short.

The compliance of the analysed websites with the different levels is very variable (Fig. 1), although none reaches the desired value of 10 and very few approaches.

## 8 Quantitative Analysis

The quantitative analysis of the results has led to some conclusions on accessibility (Fig. 2). Unfortunately, as we have seen, the results denounce a still very weak accessibility for anyone other than a computer technician. Moreover, when the target audience of our study is the ordinary people, potential tourists, with or without special needs, but in many of the analysed websites will have several difficulties in finding and subsequently apprehending the information they need.

Of course, these difficulties are compounded when accessibility problems are of a physical nature.



**Fig. 2** Percentage of level A errors presented in the websites analysed. Source: Author's own figure

We can thus verify that 10% of the website's present errors in the subtitling of the images, making it difficult to understand. In addition to these errors there are still some inaccuracies reported in the warnings. By principle, all images must have a subtitle, which does not happen.

Only one of the websites allows you to change the size of the letters, as well as to adapt the brightness. Also, what should not occur, is the existence of errors in the presentation of the main language, in the order of 10%.

The marking of headers presents errors in the order of 5%, which makes it difficult to understand, since the subjects treated are not "announced", being more difficult the search for the subjects and their subsequent reading, since in a great spot attention is lost.

As we can see from Fig. 2, 13% of the web sites do not show clearly the structure of the document, mixing styles, which also makes accessibility difficult. In terms of content presentation elements and attributes, errors are less significant, with a percentage of only 4%.

The largest number of errors occurs on websites that provide forms, which is 15% of the total. That is, information is not presented to contextualizes the subjects and to explain what should be filled. This creates a further obstacle, especially for people using assistive technologies, because they do not even have access to the explanation of what they must fill.

Other errors, in the order of 18%, are those in which links are presented to outline blocks of information, either by repeating often what has already been said or by being so extensive that users do not read them.

Websites with multimedia solutions present errors in 8% of cases, and there is no error in the metadata.

Most errors, 21% of the sample, are concentrated on the W3C standards—which, of course, leads to low compliance rates.

The analysis of the results of the “AA” and “AAA” level tests carried out presents fewer mistakes but a lot of warnings.

We find it tedious and unhelpful to re-enunciate all the percentages for which errors have been presented in relation to the “AA” and “AAA” level tests.

So, to sum up, we can mention that in terms of compliance tests at level “AA”, the analysis of the 19 websites returned errors in a total of six errors concerning four websites.

Concerning the warnings, they are presented in relation to 15 Web sites, but in a rather high number of 36 alerts or calls for attention to possibilities for improvement—warnings.

Regarding the “AAA” level of compliance tests, which is considered to be the highest, the analysis of the 19 websites revealed errors in a total of 22 relating to 17 websites.

Regarding the warnings, these are presented in relation to 17 websites, numbering 23, concerning situations that may be subject to improvement.

All values here are revealing the problems that treated all web sites, although some more than others reveal, in terms of compliance with what is considered an accessible, all-purpose website. There is, therefore, a great path to be taken in terms of improvements.

## 9 Qualitative Analysis

Although the results may be acceptable at this time, because they are not yet ready to comply with the guidelines of the new legislation, they are surprising, given that they are the main means of dissemination and information of Portuguese tourism. The market niche for Accessible Tourism and its various valences does not yet deserve official attention.

Even in the situation of the two cases—Algarve Tourism Region, through the page Accessibility for People with Special Needs—Visit Algarve and the Regional Secretariat for Energy, Environment and Tourism of the Azores, through the page Accessible Tourism Visit Azores—, where the official websites already have pages built for people who have some kind of special needs, permanent or temporary, and which are the Portuguese showcase of accessible tourism, they have some errors.

It stands out for the positive, although it is expected, the scores of the websites Accessible Portugal and Tourism for All almost reaching the totality of the conformity.

Given that our goal is a qualitative analysis from the user/consumer perspective and it is practically impossible to present a study that involves the 61 success criteria that make up the WCAG 2.0, we will analyse only some of those that we consider more important for accessible tourism.

The elements chosen for the qualitative analysis were the captions of the images, the graphic buttons, the image maps, the multimedia use, the size of the letter, the forms, the menus, the headings and the indication of the main language. Also, here some of them are observed (Table 1).

We will begin to make an analysis of some of the best websites and, subsequently, a generalized one.

The company *TOURISMFORALL*, based in the Lisbon area, and member of *ENAT* (European Network for Accessible Tourism), explains on the homepage that intends to “Provide quality services to our clients, meeting their needs and expectations, regardless of their health condition, who wish traveling in or to Portugal, in comfort, safety, leisure, accessibility and continuity of their treatments to ensure their wellbeing”.

This is an easy-to-use site that allows you to search. It is available in Portuguese, English, Spanish, French, German and Chinese. In some of the languages the information is not, however, complete. It also presents several brochures that can be downloaded in 19 languages on accessible tourism and shows almost complete compliance with the tests carried out, reaching the 9.0 index.

The private non-profit association *ACCESSIBLE PORTUGAL* was founded in 2006, also in Lisbon, and aims to promote Accessible Tourism for All in Portugal. It reaches the highest index of 9.9.

At the top of the page it allows you to quickly access the site map, which greatly facilitates access to, and is the only one of the 19 analysed which allows to increase or decrease the size of the letter and adjust the contrast, being essential elements to allow accessibility. It does not provide direct information in other languages or search possibilities for words. Also, it does not have the site symbol accessible.

This Association offers the *TOUR4ALL PORTUGAL* website (associated with *TOUR4ALL SPAIN*) and a mobile application *APP Tour4All*. Given that it is a page in permanent construction, its level of accessibility at the time of analysis was 6.6.

In these areas it is possible to access various information on accessible destinations, to look for accessible tourist resources and accessible experiences. You can also choose different activities in different countries, according to the accessibility criteria chosen by each user.

It has a simple and accessible language, allowing the insertion of new accessible tourism proposals, later validated regarding its degree of accessibility. It also provides information on various training actions.

The *TURISMO DE PORTUGAL* (Portugal Tourism) website, although it has a language and easy access, has a lot of information and many subjects, which makes it very complex.

It is only available in Portuguese and does not allow the search of subjects on the homepage.

In the site map you can more easily understand which areas and subjects can be found.

**Table 1** Characterization of some elements of the websites analysed

Websites home page	Accessmonitor index	Posting of accessibility symbol	Languages available	Photo subtitling	Research functionality	Reference to accessibility or accessible tourism
Tourism for all	9.0	No	6	Yes	Yes	Yes
Accessible Portugal	9.9	No	1	Yes	Yes	Yes
Tour4all	6.6	No	1	Yes	Yes	Yes
Turismo de Portugal	5.4	Yes	1	No	No	Yes
Visitportugal	5.9	No	10	Yes	Yes	Yes
Entidade Regional de Turismo da Região de Lisboa	4.5	No	5	No	Yes	No
Lisboa official site	4.7	No	6	No	Yes	No
Turismo da Câmara Municipal de Lisboa	6.3	No	2	Yes	Yes	No
Turismo do Porto e Norte de Portugal	4.8	No	3	No	Yes	No
Turismo da Câmara Municipal do Porto	4.2	No	1	Yes	Yes	No
Turismo do Porto	5.6	No	10	No	Yes	No
Turismo do Centro de Portugal	3.6	No	4	No	Yes	No
Turismo do Alentejo e do Ribatejo, E.R.T. (RIBATEJO)	3.6	No	1	No	Yes	No
Turismo do Alentejo e do Ribatejo, E.R.T. (ALENTEJO)	3.9	No	5	No	Yes	No
Região de Turismo do Algarve	9.0	No	5	Yes	Yes	Yes
Accesibilidade para Portadores de Necessidades Especiais/Visit Algarve	7.3	No	5	No	Yes	Yes
Secretaria Regional da Economia, Turismo e Cultura da Madeira	6.0	No	5	Yes	Yes	Yes
Secretaria Regional da Energia, Ambiente e Turismo dos Açores	5.9	No	5	Yes	Yes	Yes
Turismo Acessível/Visit Azores	6.7	No	5	No	No	Yes

Source: Author's own table



It has an accessibility button explaining the criteria and the degree of compatibility, using the TAW 3 validation program, which allows it to be considered an accessible website. However, through the program we used it only reaches index 5.4.

It includes the *VISITPORTUGAL* website, which is already presented in ten languages. It has links to all the websites related to Portuguese tourism and its various regions, which we also study here. It has a page with some, but few, information aimed at accessible tourism (index of 4.6) such as: beaches, lodging and accessible transportation. It offers a video with Portuguese and English subtitles and audio description only in German.

The *REGIÃO DE TURISMO DO ALGARVE* (Algarve Tourist Region) is the institutional website that shows the highest compliance, presenting the 9.0 index. It also associates a page directed to the Users of Accessible Tourism, designated *Accessibility for People with Special Needs|Visit Algarve*, with an index of 7.3.

This promotional website of the Algarve makes explicit reference to the compliance with the accessibility guidelines for web content defined by the W3C. It indicates that the portal conforms to Level A of accessibility and has been certified through automatic assessments (TAW 3).

Although not achieving a substantial compliance index, the *SECRETARIA REGIONAL DA ENERGIA, AMBIENTE E TURISMO DOS AÇORES* (Regional Secretariat for Energy, Environment and Tourism of the Azores), (5.9) provides a page also directed to the needs of accessible tourism designated *Accessible Tourism| Visit Azores* (6.7).

We note from these entities a concern for this niche of tourism that, hopefully, will soon be able to count on improvements in the various Web sites so that they can be considered fully accessible.

All the other websites analysed present several errors and absences from fundamental criteria in order to be considered accessible. Many of them have no mention of this type of tourism (Table 1).

In the case of the two sites under the responsibility of City Halls, as confirmed by the *AcessMonitor* indexes, not being webpages geared to tourism, the information is not very accessible and clear. The concern of the Lisbon Municipality to provide an indication of the parking places for vehicles of disabled people is positive. In the case of Porto, there is a real-time chat available that can help answering questions. It also allows reading out loud texts relating, for example, to the city's heritage.

Some websites offer several brochures, with the possibility of being downloaded in several languages—for example, Porto and the Azores one. The latter has 20 brochures, being the one relative to the island of S. Miguel the most accessible.

The website of the Madeira archipelago also allows access to the island of Porto Santo website. It presents similar characteristics, but with a lower validation index (5.5) since it presents more errors (6), so we do not analyse it in detail.

Access is also available to the very recent website referring to the celebrations of the 600th anniversary of the Discovery of the Islands of Madeira and Porto Santo (discovered, respectively, in 1419 and 1418) which presents the index 5.0. This fact leads us to consider that the current website construction does not comply with the accessibility objectives and criteria that Portuguese law imposes.

Regarding the site of the Azores this is only one, although it provides diverse information on the nine islands of the archipelago.

Like other positive situations, in general terms, we can refer to the existence of the site map, which helps the search for information in situations where the website is not very intuitive.

As some negative points we can mention the occurrence, with some frequency, of the impossibility of an easier search, through search of words or concepts; some maps that do not exist or do not load; videos that, although advertised, do not exist or are not subtitled, nor do they allow the audio description; some photographs do not have subtitles, although we have, in general terms in the table presented, considered as having this functionality.

## 10 Final Reflections

The existence of international and national standards and their universal acceptance is a significant step on the road to a more accessible Internet.

This theme on the impacts of accessibility and accessible tourism, including all types of physical, informative, and communicational accessibility has been the object of several studies that we have undertaken (Silva & Borges, 2018, 2019a, 2019b) so we consider it fundamental to analyse the compliance of Portuguese institutional websites in the area of tourism, with the new European directives and with Portuguese legislation.

In this sense, the main objective of this chapter was to understand how the institutional Web content related to Portuguese tourism meets the accessibility requirements of the Web Content Accessibility Guidelines 2.0 (WCAG 2.0), of the World Wide Web Consortium (W3C).

Overall, regarding accessibility practices, it is possible to conclude that none of the analysed websites reaches the total level of conformity of WCAG 2.0 with the index 10.

The results point to an inequality in the dynamics and development of the Portuguese territory, at various levels, also with a substantial reflection in terms of informational, communicational and digital accessibility of different types of tourists.

Despite the substantial increase in solutions, the constant bet on digital innovation results have not reached the goals. We can say that to comply with decree-law n.º 83/2018, of October 19, which stipulates that all sites must comply with certain rules and implement them by September 2019, Portugal has a long way to go.

Living with a special need involves challenges but, on the other hand, it allows the possibility of unique experiences. The citizens access to these new potentialities of the Internet must be safeguarded and guaranteed. It is essential to provide equal access, equal opportunities to all, fighting all forms of info-exclusion.

A society of the knowledge age must trigger a change of mentalities where there is full participation, where the diversity of human and functional possibilities is respected and valued. An accessible Internet allows all people with or without special needs to participate more actively in society.

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