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M.Sc. Computer Science and Engineering
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Usability Report



www.reply.com

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Abstract

The aim of this Usability Report is to describe the results of the usability assessment carried out on the Reply website. Specifically, the analysis is performed using first the inspection method and then the user testing method.

The first method involves expert evaluators examining the application interface and evaluating its compliance with recognized usability principles called heuristics. Specifically, the analysis is conducted with reference to the Nielsen and MILE heuristics.

The user testing method instead consists of the data collection and observation of how some representatives of real users interact with the system. Its goal is to discover the actual difficulties encountered by users when interacting with the website and to obtain systematic feedback on its effectiveness and use.

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1 Inspection

Usability inspection is the generic name for a category of methods based on having expert evaluators analytically examine UX-related aspects of an application. Typically, usability inspection is aimed at finding usability problems in a design, though some methods also address issues like the severity of the usability problems and the overall usability of an entire design. Here we focus on *Heuristic Evaluation*, an inspection method that involves evaluators examining the interface and judging its compliance with recognized usability principles (the "*heuristics*").

1.1 Inspection Design

1.1.1 Heuristics Definition

This section precisely defines the heuristics used to conduct the inspection. Specifically, the analysis refers to the principles outlined by the *Nielsen* and *MILE* heuristics.

1.1.1.1 Nielsen Heuristics

Jakob Nielsen's heuristics are the most used usability heuristics for user interface design. Released in 1994, they define the following principles:

- **Visibility of system status:** the design should always keep users informed about what is going on, through appropriate feedback within a reasonable amount of time.
- **Match between system and the real world:** the system should speak the users' language, with words, phrases and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order.
- **User control and freedom:** users often choose system functions by mistake and will need a clearly marked "emergency exit" to leave the unwanted state without having to go through an extended dialogue. Support undo and redo.
- **Consistency and standards:** users should not have to wonder whether different words, situations, or actions mean the same thing. Follow "platform" conventions.
- **Error prevention:** even better than good error messages is a careful design which prevents a problem from occurring in the first place. Either eliminate error-prone conditions or check for them and present users with a confirmation option before they commit to the action.
- **Recognition rather than recall:** minimize the user's memory load by making objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.
- **Flexibility and efficiency of use:** accelerators - unseen by the novice user - may often speed up the interaction for the expert user such that the system can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.
- **Aesthetic and minimalist design:** dialogues should not contain information which is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility.
- **Help users recognize, diagnose and recover from errors:** error messages should be expressed in plain language (no codes), precisely indicate the problem, and constructively suggest a solution.
- **Help and documentation:** even though it is better if the system can be used without documentation, it may be necessary to provide help and documentation. Any such

information should be easy to search, focused on the user's task, list concrete steps to be carried out, and not be too large.

1.1.1.2 MILE Heuristics

MILE is a scenario-based inspection technique that includes a large number of heuristics. For the execution of the analysis, only the following subset is considered:

Navigation heuristics

- **Interaction consistency:** do pages of the same type have the same links and interaction capability?
- **Group navigation:** is it easy to navigate from and among groups of “items”? E.g., from the “list of items” of a group to its “members” (and the other way around); among different “groups”; among members of the same group (next/previous).
- **Structural Navigation:** is it easy to navigate among the “components” (parts) of a topic?
- **Semantic Navigation:** is it easy to navigate from a topic to a related one (in both directions)?
- **Landmarks:** are “landmarks” useful to reach the key parts of the web site?

Content heuristics

- **Information overload:** is the information in a page too much/too little?

Presentation heuristics

- **Text layout:** is the text readable? Is font size appropriate?
- **Interaction placeholders-semiotics:** are textual or visual labels of interactive elements “expressive”? i.e., do they reflect the meaning of the interaction and its effects?
- **Interaction placeholders-consistency:** are textual or visual labels of interactive elements consistent in terms of wording, icon, position, etc.?
- **Spatial allocation:** is the on-screen allocation of contents and visual appropriate for their relevance? Are “semantically related” elements close and “semantically distant” element far away?
- **Consistency of Page Structure:** do pages of the same type have the same layout (same visual properties of each component and similar organization and layout of the various elements)?

1.1.2 Metrics Definition

The metrics used for the inspection are defined as follows:

Metric	Description
N/A	Not applicable.
0	The heuristic is NOT satisfied; severe violations have been detected.
1	The heuristic is partly satisfied, website is structured adequately according to the heuristics, but they are implemented in the wrong way.
2	The heuristic is partly satisfied but it can be massively improved.
3	The heuristic is almost satisfied. There are many imperfections.
4	The heuristic is almost fully satisfied but there are some imperfections.
5	The heuristic is FULLY satisfied; no violation has been detected.

1.1.3 Evaluation Process Definition

The inspection is carried out as specified in this section. First, each expert evaluator individually carries out an in-depth analysis of the website by referring to the previously defined heuristics and metrics. By doing this, a time of at least 15 minutes will be dedicated to each of the main sections. All the detailed reports of these analyses are given in the *Inspection Annex*. The results are then discussed among all the inspectors to reach a shared agreement on comments and scores.

The usability evaluation is carried out on the entire website, with particular attention to the following pages and sections:

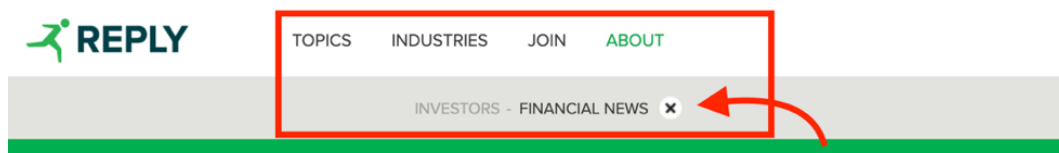
- *Homepage*
- *Topics Section*
- *Industries Section*
- *Careers Page (Join)*
- *About Page*
- *Investors Page*
- *Newsroom Page*
- *Personal Profile Page*
- *Search Page*

1.2 Inspection Execution

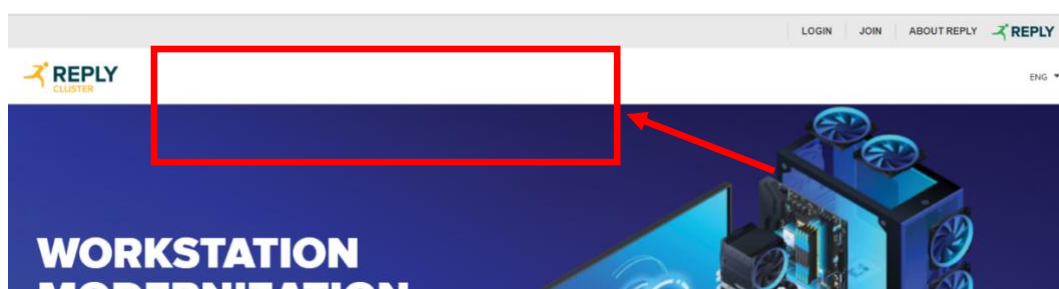
This section reports the results of the inspection process defined above with the precise details of any identified problem. In the following multiple explanatory screenshots of these criticalities are also provided.

Heuristic Type	Heuristic	Overall Score
Nielsen	Visibility of system status	1

The breadcrumb is visible on some pages so that the user can know where he/she is. However, it is badly implemented. The problem is that the breadcrumb is not effective: in each section it shows only the name of the current section and an 'X' icon, without giving further details about the top-level section (Screenshot 1). Furthermore, in certain pages the breadcrumb disappears completely, leaving the user with no information about the current state as can be seen from Screenshot 2.



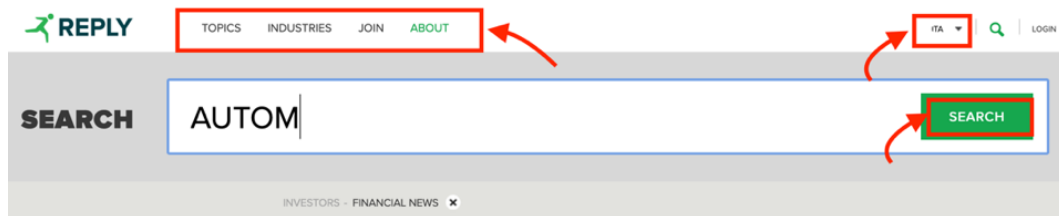
Screenshot 1: <https://www.reply.com/en/investors/news/>



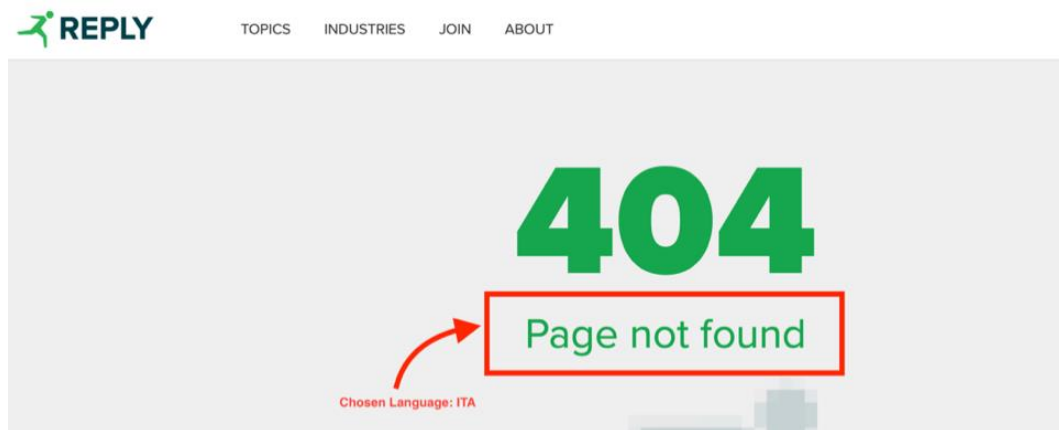
Screenshot 2: <https://www.reply.com/cluster-reply/en/drive-value-with-windows10-and-sccm>

Heuristic Type	Heuristic	Overall Score
Nielsen	Match between system and the real world	3

As highlighted in Screenshot 3 and Screenshot 4, the main problem with this heuristic is related to the partial translation of the website. Indeed, the navigation bar, the search bar and all the error messages are shown in English, even if the user chooses a different language.



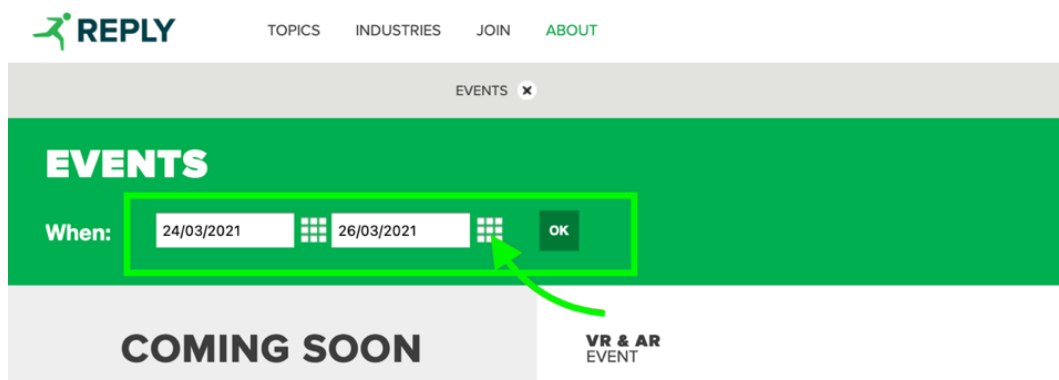
Screenshot 3: <https://www.reply.com/en/investors/news/>



Screenshot 4: <https://www.reply.com/en/filenotfound>

Heuristic Type	Heuristic	Overall Score
Nielsen	User control and freedom	5

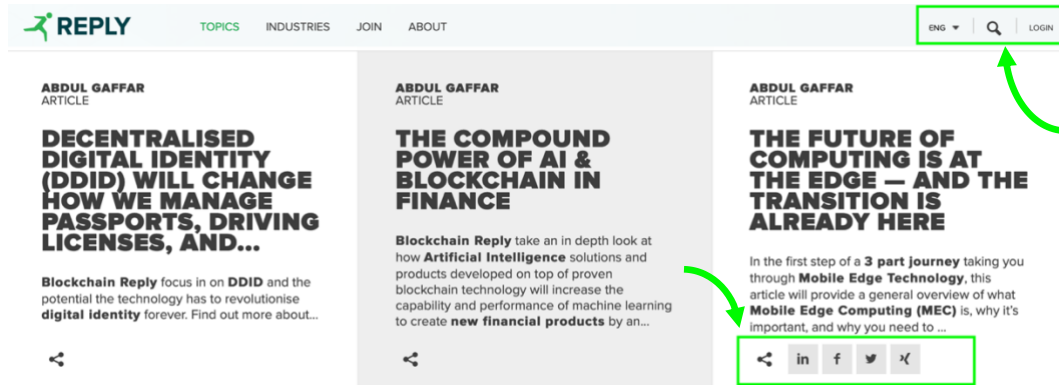
The heuristic is satisfied. Indeed, it is always possible to modify a previous choice without having to start over. For instance, when filtering the events by date, the user can edit the selected date range in any time, as shown in Screenshot 5. In addition, the user is freely able to navigate the website and leave the current page by means of the persistent header.



Screenshot 5: <https://www.reply.com/en/newsroom/events/>

Heuristic Type	Heuristic	Overall Score
Nielsen	Consistency and standards	5

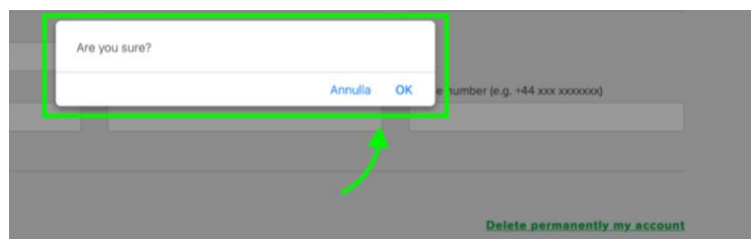
The basic standards are satisfied throughout the website. For example, as shown in the Screenshot 6, the position of the login button and that of the search icon is the standard one. Furthermore, the +/- icons in the footer and the arrow in the drop-down menu have the typical meaning. Moreover, the website is consistent in the terminology usage.



Screenshot 6: <https://www.reply.com/en/blockchain>

Heuristic Type	Heuristic	Overall Score
Nielsen	Error prevention	3

The system has some weaknesses with respect to this heuristic. For instance, as shown in Screenshot 8, when a new user goes through the registration process he/she has no way of knowing the password security requirements until after submitting the form. On the other hand, the system requests confirmation to carry out some operations that the user may incorrectly select, such as the deletion of the account (Screenshot 7).

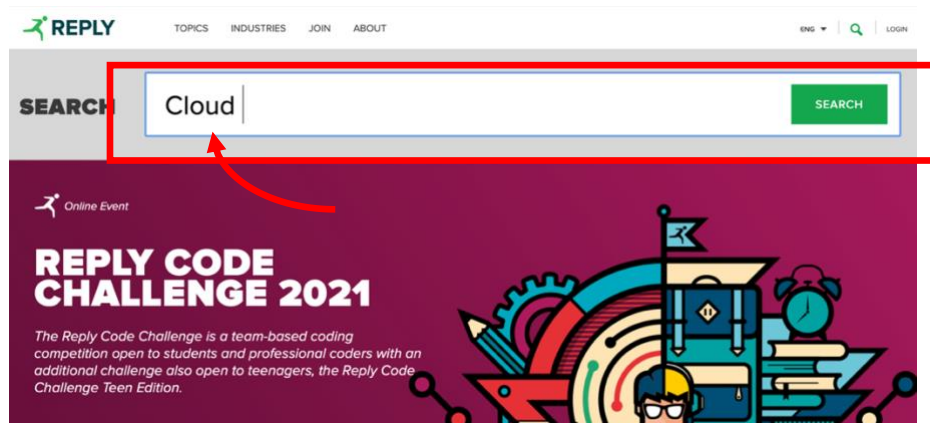


Screenshot 7: <https://www.reply.com/en/userprofile>

Screenshot 8: <https://www.reply.com/en/register>

Heuristic Type	Heuristic	Overall Score
Nielsen	Recognition rather than recall	2

As highlighted in Screenshot 9, the system does not provide any suggestion when a user tries to search something. Also, during the registration process, some fields could be implemented as a dropdown list instead of a plain text input (e.g., Role field). Despite this, in the Webinar section, a very effective live filtering search box has been implemented (every time the user types a letter, the system checks and shows only the matching results).

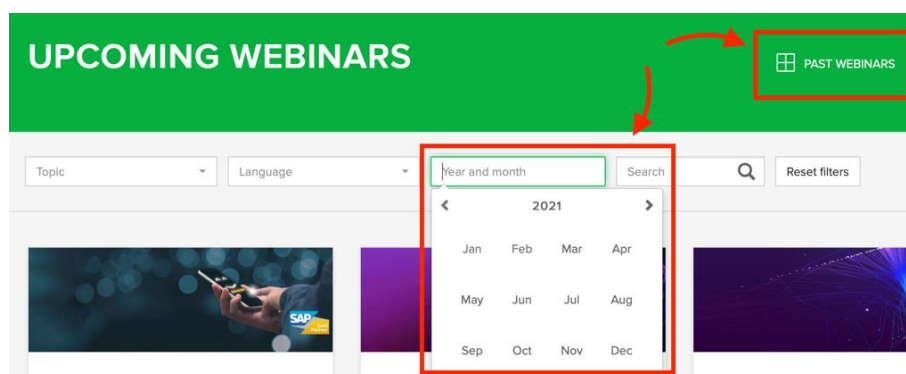


Screenshot 9: <https://www.reply.com/en>

Heuristic Type	Heuristic	Overall Score
Nielsen	Flexibility and efficiency of use	3

The navigating through the Topics menu in the header is chaotic and inefficient, the topics are all listed without further categorization or grouping. In addition, there are also some problems of flexibility. For example, as shown in Screenshot 10, when looking for a webinar the search form does not allow you to select past dates. To view previous webinars, you need to visit a different section, which is counterintuitive.

On the other hand, some accelerators are well implemented on the website. For example, as highlighted in Screenshot 11, the system allows the insertion of dates both through the text boxes (novice user) and through the calendar icon (accelerator for expert user).



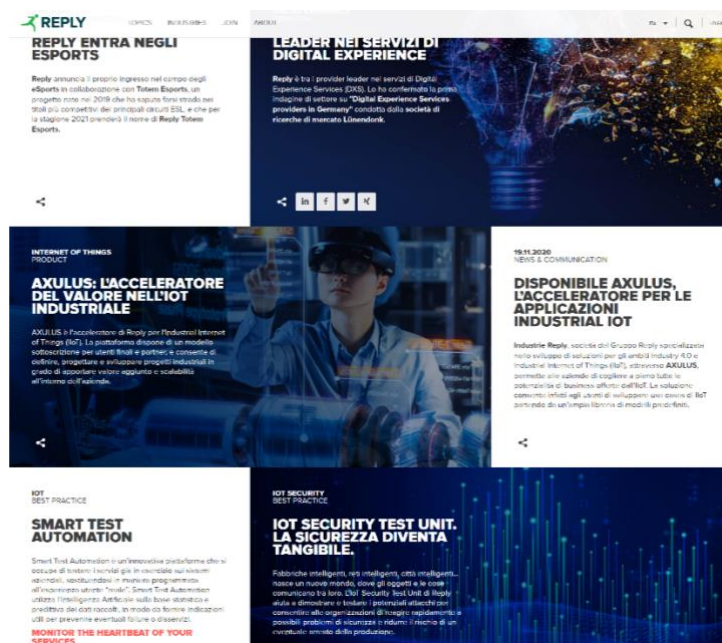
Screenshot 10: <https://webinars.reply.com>



Screenshot 11: <https://www.reply.com/en/newsroom/news/>

Heuristic Type	Heuristic	Overall Score
Nielsen	Aesthetic and minimalist design	2

The website is aesthetically good. Despite this, the style adopted does not match with the minimalist one. For instance, the homepage acts as a showcase with too many articles with very long descriptions. Moreover, as shown in Screenshot 12, the pages of the website are often crowded with images and other graphic elements. Everything is too compacted, leading to information explosion.

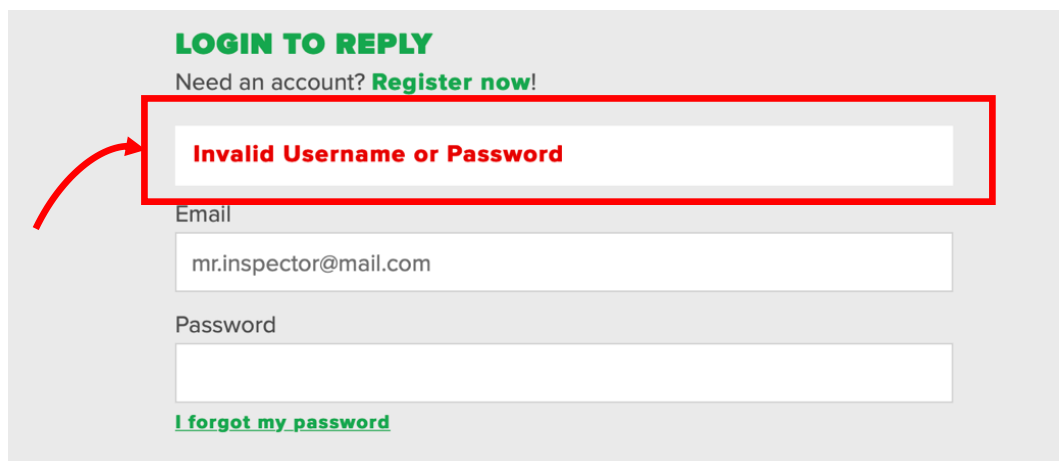


Screenshot 12: <https://www.reply.com/en/topics/internet-of-things/>

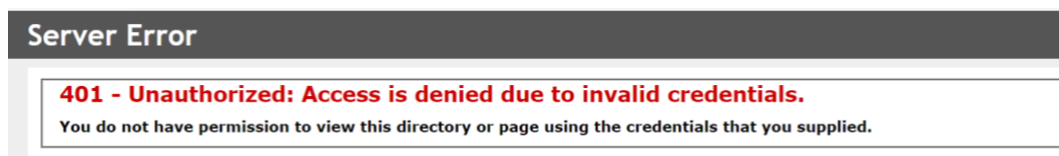
Heuristic Type	Heuristic	Overall Score
Nielsen	Help users recognize, diagnose and recover from errors	1

This heuristic is not satisfied in several cases. During the login process, if a user writes the wrong email or password, the system notifies him/her with a generic error message (Screenshot 13). Moreover, some errors, such as the Page Not Found one, are accompanied by a short explanation message, while others simply show a code and give no indication of what went wrong (Screenshot 14, Screenshot 15).

Despite that, it is possible to recover from some erroneous situations. For instance, as shown in Screenshot 16, if a user uses the search box and commits a typo, the system is able to detect it, even if it does not show directly the correct answers.



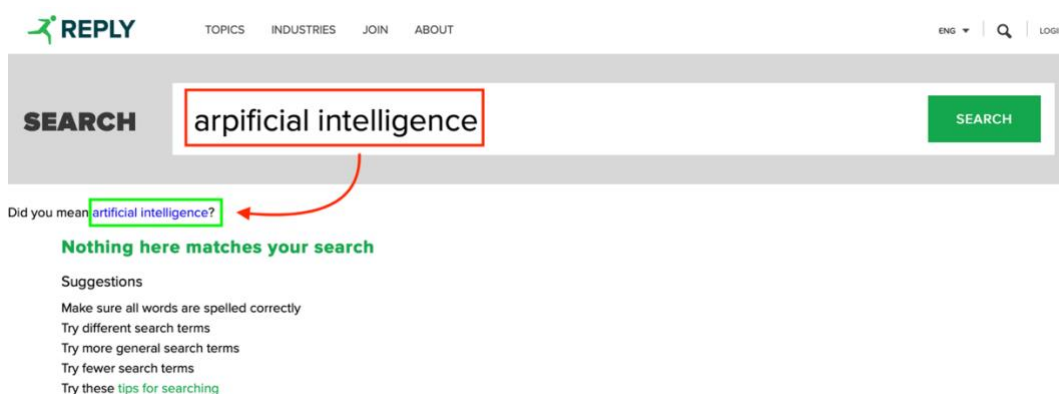
Screenshot 13: <https://www.reply.com/en>



Screenshot 14: <https://www.reply.com/en>



Screenshot 15: <https://www.reply.com/en>



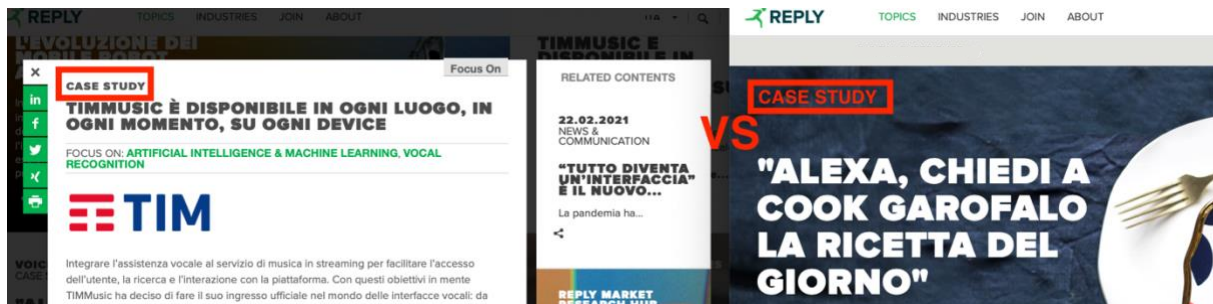
Screenshot 16: <https://www.reply.com/en>

Heuristic Type	Heuristic	Overall Score
Nielsen	Help and documentation	N/A

This heuristic does not apply to the system under consideration.

Heuristic Type	Heuristic	Overall Score
MILE Navigation	Interaction consistency	4

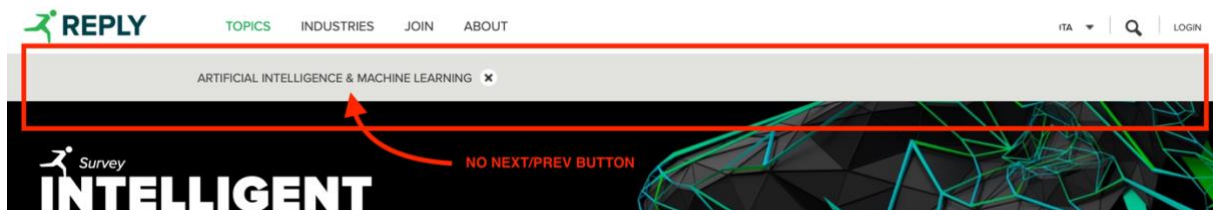
The heuristic is almost satisfied. However, some similar pages have not the same interaction capabilities. For example, as highlighted in Screenshot 17, some case study articles open as a pop-up, while others open as a new tab.



Screenshot 17: <https://www.reply.com/it/topics/artificial-intelligence-and-machine-learning>

Heuristic Type	Heuristic	Overall Score
MILE Navigation	Group navigation	0

The navigation flow is not smooth. As shown in Screenshot 18, the system does not provide any useful button to move between articles on the same topic. Indeed, the breadcrumb, when displayed, only allows user to return to the home page and not to reach intermediate pages.



Screenshot 18: <https://www.reply.com/it/topics/artificial-intelligence-and-machine-learning/>

Heuristic Type	Heuristic	Overall Score
MILE Navigation	Structural navigation	3

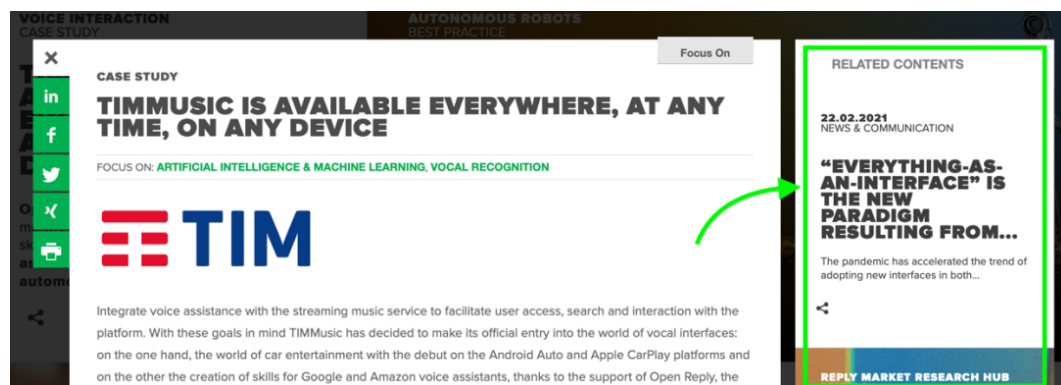
It is easy to navigate among all the parts of a topic since everything is displayed on a single page. However, this approach leads to a bit of confusion: too many elements make it difficult to find what you are really looking for. This problem is clearly visible from Screenshot 19.



Screenshot 19: <https://www.reply.com/en/investors/>

Heuristic Type	Heuristic	Overall Score
MILE Navigation	Semantic navigation	4

This heuristic is satisfied where applicable. Some articles come with a sidebar that shows related topics so that the user can easily access them (Screenshot 20). However, this useful function is not available for all the articles.



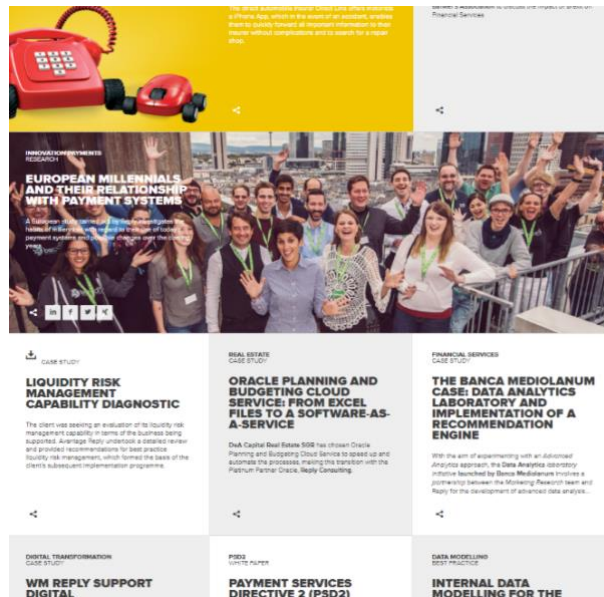
Screenshot 20: <https://www.reply.com/it/topics/artificial-intelligence-and-machine-learning/>

Heuristic Type	Heuristic	Overall Score
MILE Navigation	Landmarks	5

This heuristic is fully satisfied. Indeed, the landmarks are always available in the header of the website and they provide useful access points to the main functions and sections.

Heuristic Type	Heuristic	Overall Score
MILE Content	Information overload	1

Every page of the website is really crowded of information, which leads to an overload as can be seen in Screenshot 21. For instance, the home page contains dozens of articles with long descriptions, details on upcoming events and upcoming webinars, and also information on the latest press releases.



Screenshot 21: <https://www.reply.com/en/industries/financial-services/>

Heuristic Type	Heuristic	Overall Score
MILE Presentation	Text layout	5

Despite that in many cases the website uses an image as a background, the text is always clearly readable, and the font size is appropriate (Screenshot 22).



Screenshot 22: <https://www.reply.com/en/topics/supply-chain-management/>

Heuristic Type	Heuristic	Overall Score
MILE Presentation	Interaction placeholders-semiotics	5

The heuristic is fully satisfied. Indeed, the main used icons are the standardized ones and reflect the meaning of the interaction and its effects. For instance, the share icon and the search button result in actions that are what the user expects.

Heuristic Type	Heuristic	Overall Score
MILE Presentation	Interaction placeholders-consistency	5

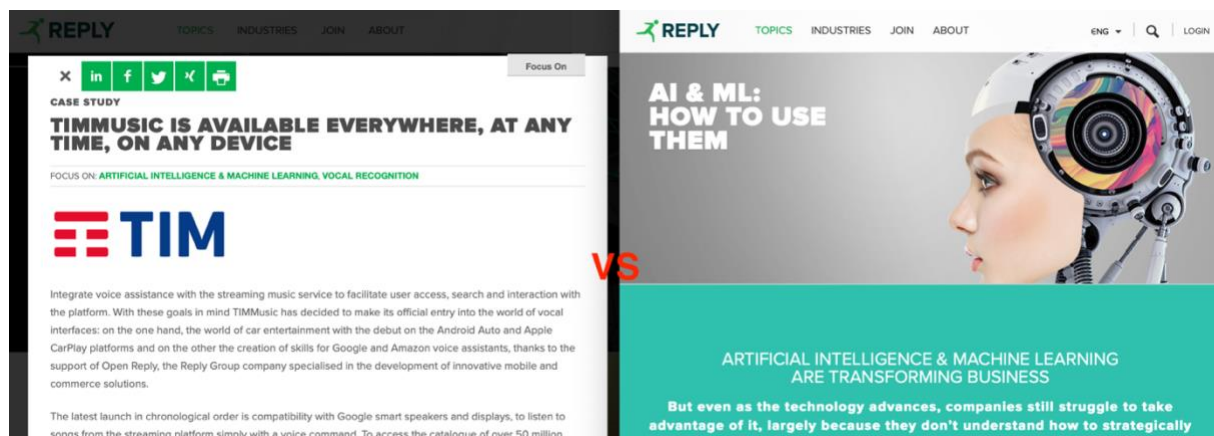
The placeholders are commonly shared across all the pages. Also, their position is always the same, in order to be easily reachable and recognisable for the users.

Heuristic Type	Heuristic	Overall Score
MILE Presentation	Spatial allocation	5

Pages have a simple but efficient layout, consisting of a header for navigation and search, a body with related articles and a footer with “contact us” information.

Heuristic Type	Heuristic	Overall Score
MILE Presentation	Consistency of Page Structure	3

Almost all the main pages of the website share the same basic structure. However, many articles often have totally different structures: some are shown as pop-ups, others as stand-alone pages despite dealing with the same type of information. The different structure (Screenshot 23) causes a sense of disorientation in the user.



Screenshot 23: <https://www.reply.com/it/topics/artificial-intelligence-and-machine-learning/>

A Inspection Annex

This chapter contains the complete individual reports of the inspections on the usability of the Reply website.

A.1 Individual Inspection 1

Inspector: Luca Leoni				
Heuristic Type	Heuristic	Score	Comment	Reference
Nielsen	Visibility of system status	1	Despite the website retains the information about the status, the breadcrumb is badly implemented. The user is not aware of the presence of it. Indeed, it is not clearly shown as a status bar. A kind of Location Based Breadcrumb is implemented, but not in an intuitive way.	Screenshot 1. 1



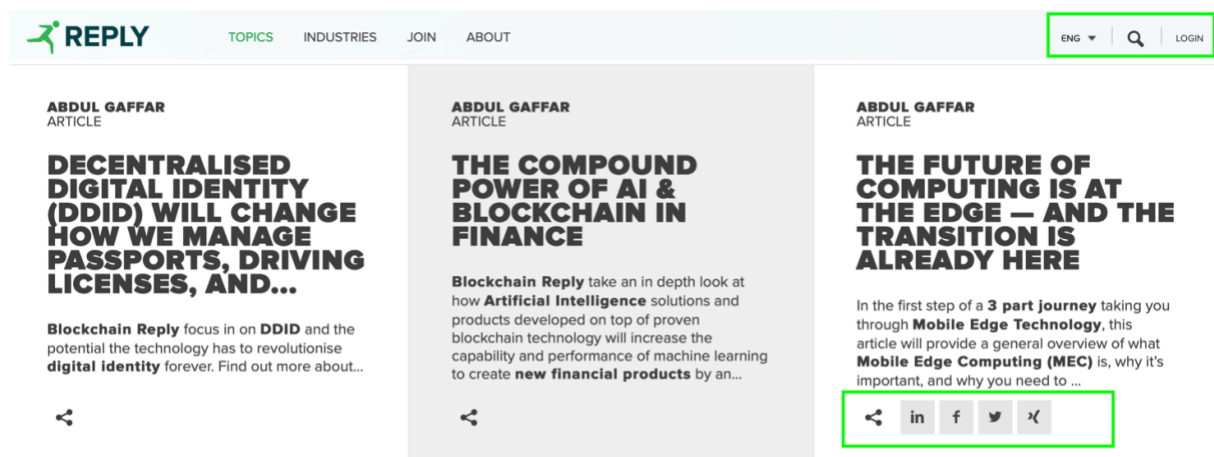
Screenshot 1. 1

Heuristic Type	Heuristic	Score	Comment	Reference
Nielsen	Match between system and the real world	4	The only problem is related to the partial translation of the principal labels. In fact, the main labels are only in English, so, they could not appear natural and logical to the users.	Screenshot 1. 2



Screenshot 1. 2

Heuristic Type	Heuristic	Score	Comment	Reference
Nielsen	User control and freedom	4	In the majority of the cases, you can at most perform 3 steps. From the Homepage to a specific showcase (you can go back through the x button) and from there to a specific page. In this case we have to differentiate the case in which a new panel is opened and the case in which appears a window. PANEL: you can go back simply by closing the panel. WINDOW: a x button will show and through that you can return to the previous page.	-
Nielsen	Consistency and standards	5	The essential standards are respected, such as login button, search box, exit button and share icons.	Screenshot 1. 3



Screenshot 1. 3

Heuristic Type	Heuristic	Score	Comment	Reference
Nielsen	Error prevention	3	The system presents some weaknesses. For instance, when a new user performs the Registration process, only after confirming the request, the system checks if the rules concerning password or email are followed.	Screenshot 1. 4

CREATE A NEW ACCOUNT
 Already registered? Please login [here](#)

Before filling out the registration form, please read the [Privacy notice](#) pursuant to Article 13 of EU Regulation 2016/679

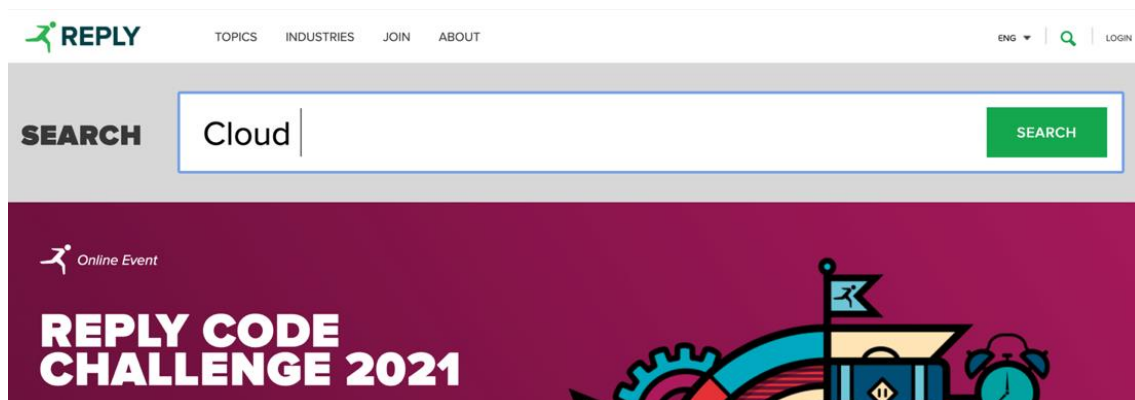
Your password length must be at least 8 characters and contain at least 1 number and 1 letter.

Name*

Surname*

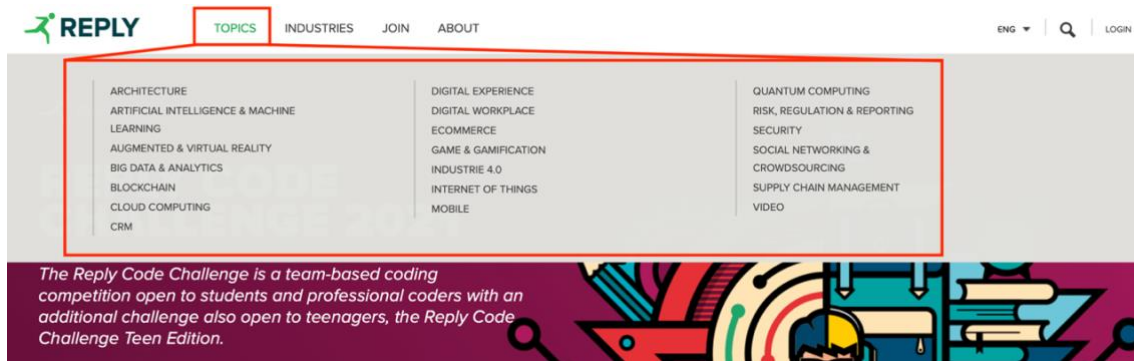
Screenshot 1. 4

Heuristic Type	Heuristic	Score	Comment	Reference
Nielsen	Recognition rather than recall	2	The system does not provide any suggestions when a user tries to search something. Despite that, in the Webinar section, it has been implemented a live filtering search box (every time the user types a letter, the system checks and shows only the matching results).	Screenshot 1. 5



Screenshot 1. 5

Heuristic Type	Heuristic	Score	Comment	Reference
Nielsen	Flexibility and efficiency of use	4	The landmarks are always available in each page of the website, but the search button disappear when the user enters the Webinar section	-
Nielsen	Aesthetic and minimalist design	0	The whole website is crowded of information. There are too many subcategories in each section. The Homepage acts as a showcase with all the articles of the website.	Screenshot 1. 6



Screenshot 1.6

Heuristic Type	Heuristic	Score	Comment	Reference
Nielsen	Help users recognize, diagnose and recover from errors	1	The heuristic is not satisfied in several cases. If a user searches through the search box and commits a typo the system is able to detect it, but it does not show the correct answers. Also, in the Webinar section happens the same. Furthermore, during the login process, if a user writes the wrong email or password, the system notifies the user with a generic error message.	Screenshot 1.7 Screenshot 1.8

Screenshot 1.7



Screenshot 1.8

Heuristic Type	Heuristic	Score	Comment	Reference
Nielsen	Help and documentation	N/A	-	-
MILE Navigation	Interaction consistency	5	The steps to be followed are always the same.	-
MILE Navigation	Group navigation	0	The flow is not stable. Indeed, due to the leak of bread crumbs, the user cannot navigate through the different pages without restarting from scratch.	Screenshot 1. 9

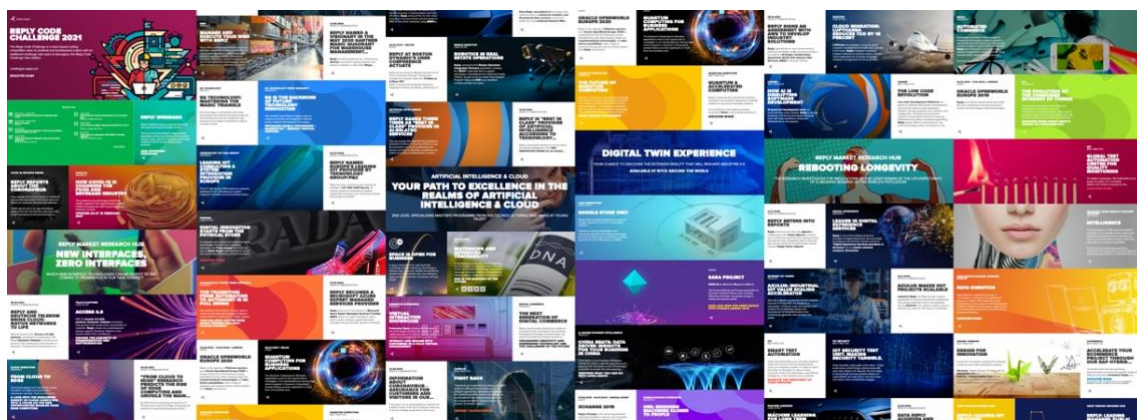


TOPICS INDUSTRIES JOIN ABOUT

RETAIL & CONSUMER PRODUCTS X

Screenshot 1. 9

Heuristic Type	Heuristic	Score	Comment	Reference
MILE Navigation	Structural Navigation	0	As said for the previous heuristic, the main problem relies on the absence of a proper bread crumb.	-
MILE Navigation	Semantic Navigation	N/A	Due to the fact that in the majority of the cases, the website opens a new panel.	-
MILE Navigation	Landmarks	4	The landmarks are always available. Despite that, they are full of information and sometimes the user does not know in advance exactly where he has to go to find an information.	-
MILE Content	Information overload	0	The Homepage is full of information. It contains all the articles posted on the website.	Screenshot 1. 10



Screenshot 1. 10

Heuristic Type	Heuristic	Score	Comment	Reference
MILE Presentation	Text layout	5	Despite that in many cases the website uses an image as a background, the text is readable.	Screenshot 1. 11

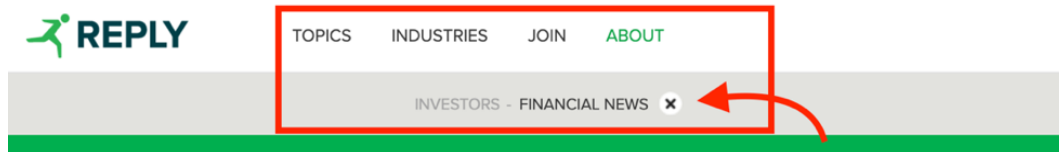


Screenshot 1. 11

Heuristic Type	Heuristic	Score	Comment	Reference
MILE Presentation	Interaction placeholders-semiotics	5	-	-
MILE Presentation	Interaction placeholders-consistency	5	-	-
MILE Presentation	Spatial allocation	5	-	-
MILE Presentation	Consistency of Page Structure	4	The heuristic is not satisfied just in the About section. Indeed, sometimes a new page appears as a pop-up window, while sometimes it is opened in a new panel.	URL

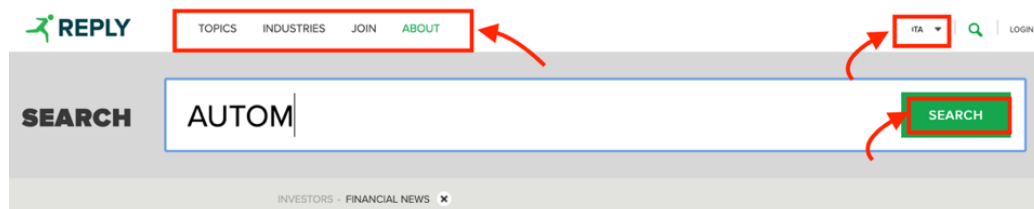
A.2 Individual Inspection 2

Inspector: Luca Minotti				
Heuristic Type	Heuristic	Score	Comment	References
Nielsen	Visibility of system status	1	Breadcrumbs do not clearly show where the user is in the website hierarchy. Their implementation is extremely counterintuitive.	Screenshot 2. 1

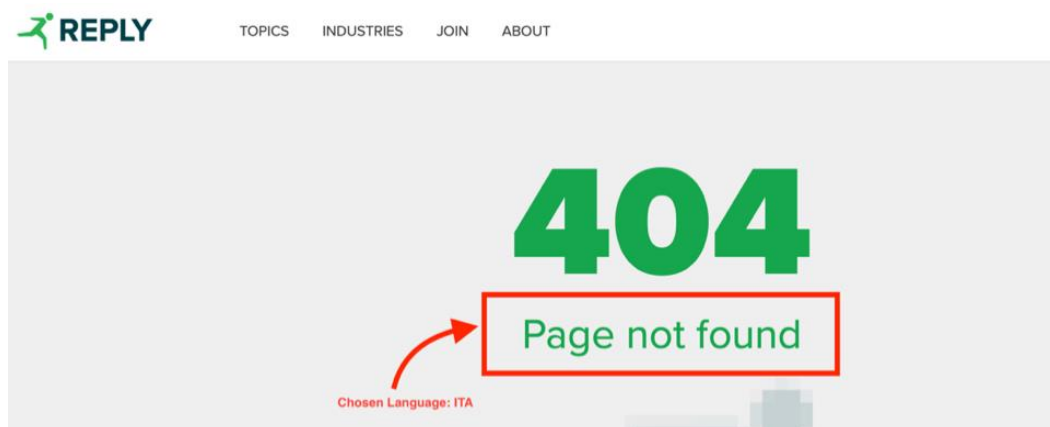


Screenshot 2. 1: <https://www.reply.com/en/investors/news>

Heuristic Type	Heuristic	Score	Comment	References
Nielsen	Match between system and the real world	3	The system mainly uses words familiar to the user. However, several pages of the website as well as the navigation bar, the search bar and error messages are shown in English regardless of the language chosen by the user.	Screenshot 2. 2 Screenshot 2. 3

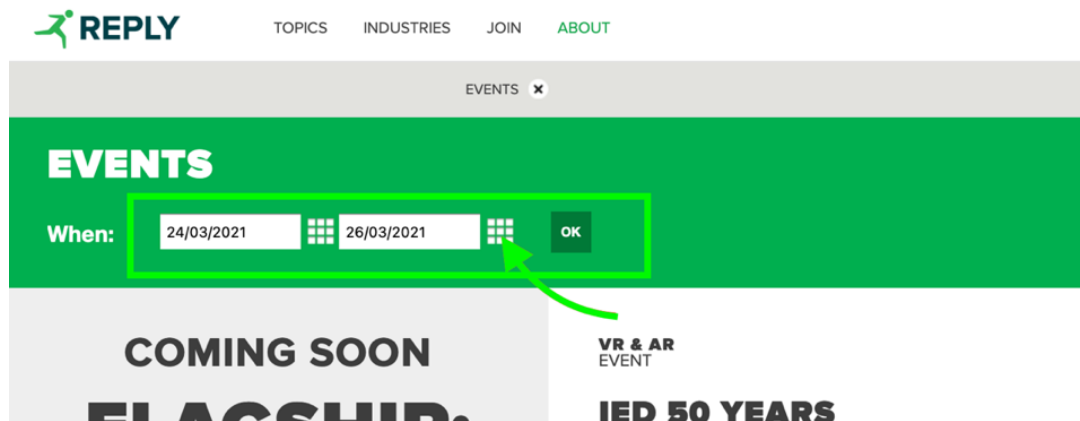


Screenshot 2. 2: <https://www.reply.com/it/investors/notizie>



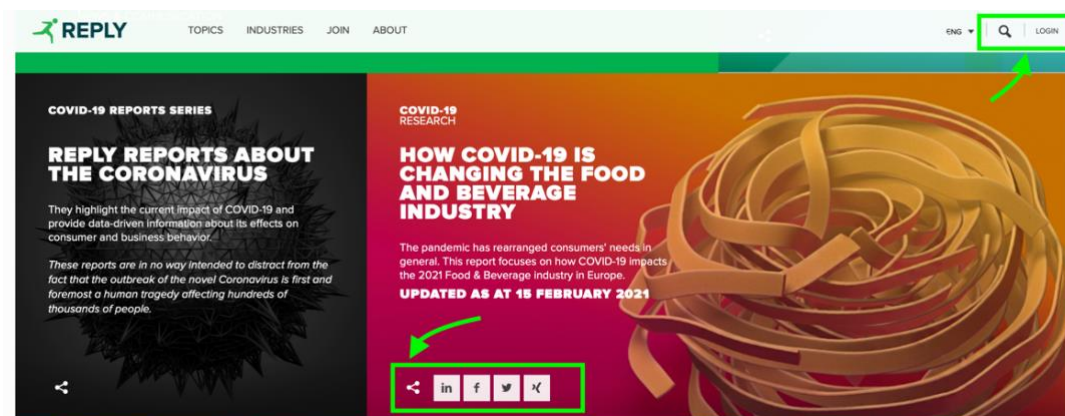
Screenshot 2. 3: <https://www.reply.com/it/filenotfound>

Heuristic Type	Heuristic	Score	Comment	References
Nielsen	User control and freedom	5	Where applicable, the user always has the possibility to modify a previous choice without having to start over. For example, when filtering the upcoming events, the user always has the possibility to modify a wrong choice of the date range.	Screenshot 2. 4



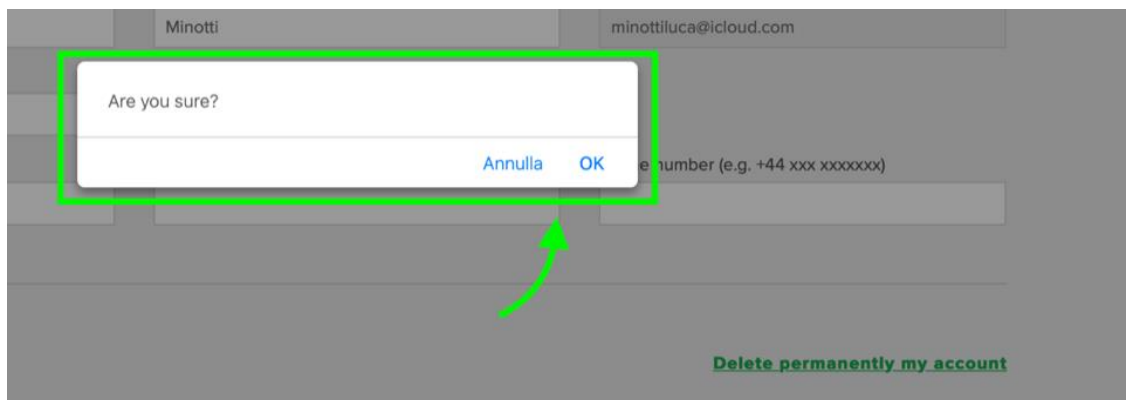
Screenshot 2. 4: <https://www.reply.com/en/newsroom/events>

Heuristic Type	Heuristic	Score	Comment	References
Nielsen	Consistency and standards	5	The website is consistent in the terminologies used and adheres to design standards (e.g., login button at the top right, standard icons for searching, sharing and closing pop-up windows, burger menu for the mobile version)	Screenshot 2. 5



Screenshot 2. 5: <https://www.reply.com>

Heuristic Type	Heuristic	Score	Comment	References
Nielsen	Error prevention	3	The system correctly requests confirmation to carry out some operations that the user may incorrectly select, such as deleting the account. However, sections such as the registration one need significant improvements (here the user has no way of knowing the password security requirements before submitting the form).	Screenshot 2. 6 Screenshot 2. 7

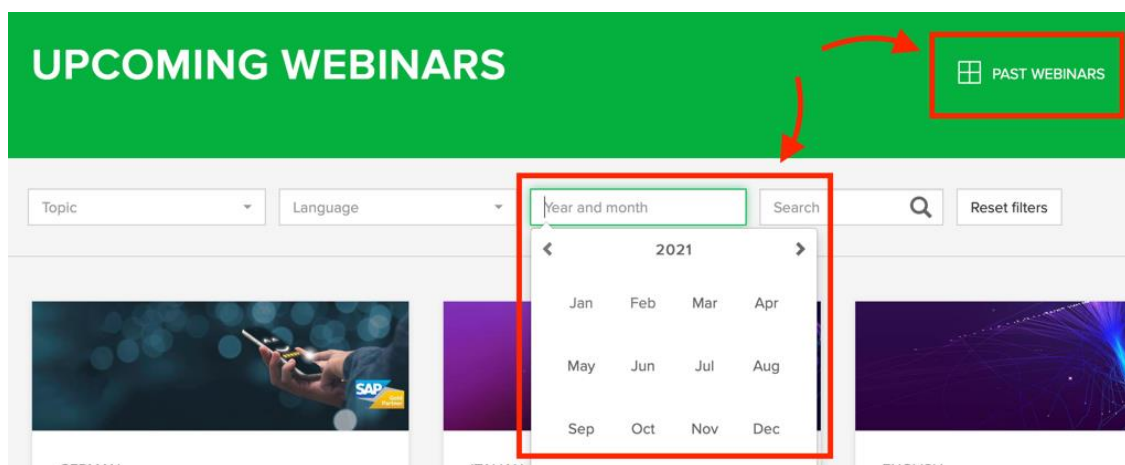


Screenshot 2. 6: <https://www.reply.com/en/userprofile>

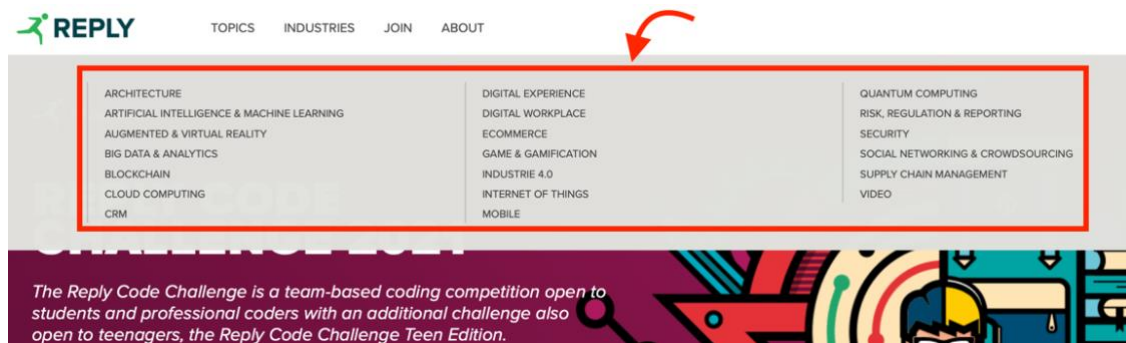
A screenshot of a registration form. At the top, a red-bordered box contains the text: "Your password length must be at least 8 characters and contain at least 1 number and 1 letter." Below this are four input fields: "Name*" (containing "Mario"), "Surname*" (containing "Rossi"), "Email*" (containing "Mario.rossi@polimi.it"), and "Password*" (containing red dots). A red arrow points from the "Password*" field to the red-bordered box.

Screenshot 2. 7: <https://www.reply.com/en/register>

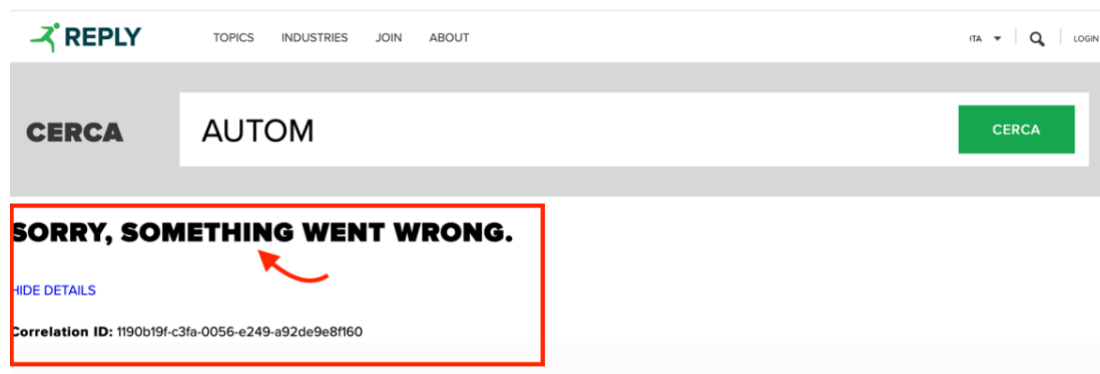
Heuristic Type	Heuristic	Score	Comment	References
Nielsen	Recognition rather than recall	2	The system does not provide any suggestions for filling in some fields during registration or when searching the site using the appropriate function.	-
Nielsen	Flexibility and efficiency of use	4	Heuristics satisfied when applicable. For example, the system allows the insertion of dates both through the text boxes (inexperienced user) and through the calendar icon (accelerator for expert user). However, some flexibility improvements can be made. For example, when searching for a webinar, the search form does not allow you to select dates in the past. To view past webinars you need to visit another section, which is counterintuitive.	Screenshot 2. 8 Screenshot 2. 9



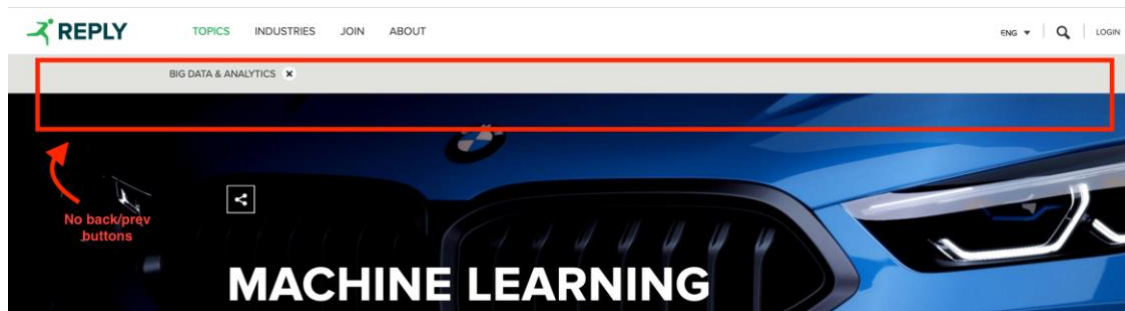
Heuristic Type	Heuristic	Score	Comment	References
Nielsen	Aesthetic and minimalist design	2	The homepage shows too much information making it difficult to find what you are interested in. Even the menu items (e.g., Topics) in the top bar are too many and are not organized into further sub-categories, causing confusion.	Screenshot 2. 10

Screenshot 2. 10: <https://www.reply.com/en/>

Heuristic Type	Heuristic	Score	Comment	References
Nielsen	Help users recognize, diagnose and recover from errors	1	Some errors such as the page not found error are accompanied by a short explanation message, while others simply show a code and give no indication of what went wrong.	Screenshot 2. 11

Screenshot 2. 11: <https://www.reply.com/en/search>

Heuristic Type	Heuristic	Score	Comment	References
Nielsen	Help and documentation	N/A	-	-
MILE Navigation	Interaction consistency	4	No anomaly <u>detected</u> .	-
MILE Navigation	Group navigation	0	To move from one article to another or from one topic to another, the user must start over, making navigation difficult. Bread crumbs also do not provide any useful action to go back.	Screenshot 2. 12



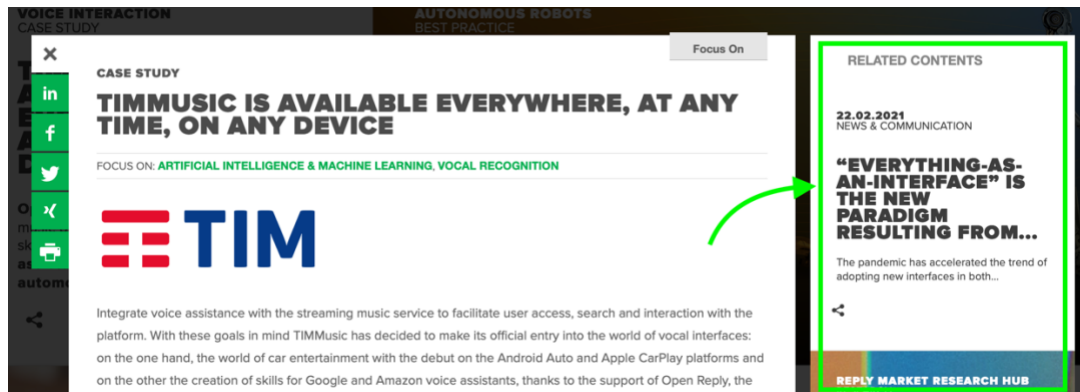
Screenshot 2. 12: <https://www.reply.com/en/topics/>

Heuristic Type	Heuristic	Score	Comment	References
MILE Navigation	Structural Navigation	3	The problems are concentrated in the homepage of the website and in the Investors section: too many components make it difficult to navigate between them and easily find what you are looking for.	Screenshot 2. 13



Screenshot 2. 13: <https://www.reply.com/en/investors/>

Heuristic Type	Heuristic	Score	Comment	References
MILE Navigation	Semantic Navigation	4	Some articles are accompanied by a sidebar that shows some related topics. However, this useful function is not available for all the articles.	Screenshot 2. 14



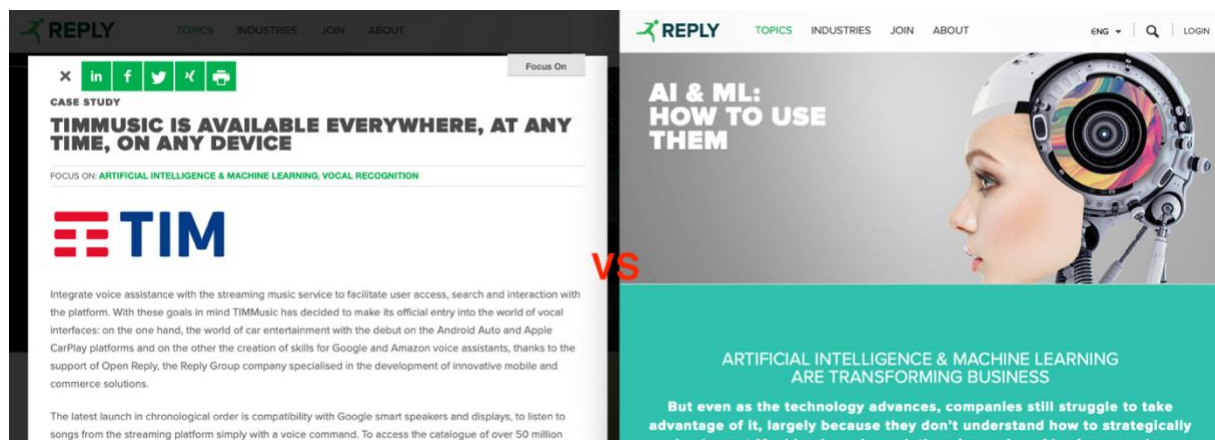
Screenshot 2. 14: <https://www.reply.com/en/content/timmusic-is-available-everywhere-at-any-time-on-any-device>

Heuristic Type	Heuristic	Score	Comment	References
MILE Navigation	Landmarks	5	Landmarks correctly provide useful access points to the main components of the website.	-
MILE Content	Information overload	1	The homepage and navigation drop-down menus show too much information making it easy to get lost. The information load is instead balanced in the various subsections (e.g., Topic).	Screenshot 2. 15



Screenshot 2. 15: <https://www.reply.com>

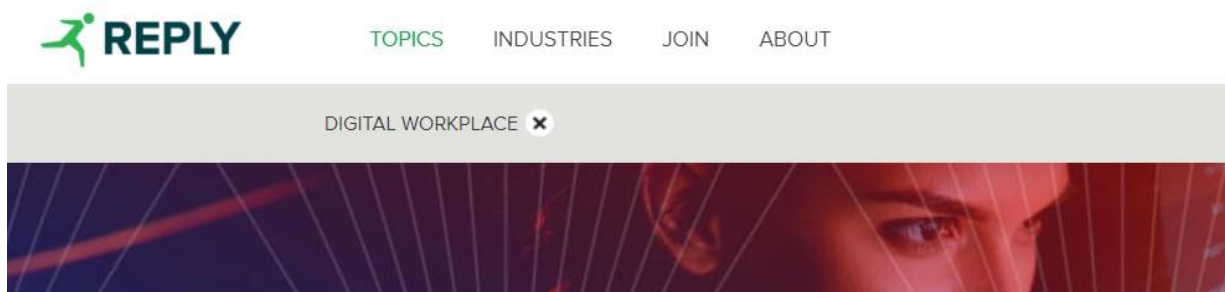
Heuristic Type	Heuristic	Score	Comment	References
MILE Presentation	Text layout	5	The text is always clearly readable.	-
MILE Presentation	Interaction placeholders-semiotics	5	No anomaly detected.	-
MILE Presentation	Interaction placeholders-consistency	5	No anomaly detected.	-
MILE Presentation	Spatial allocation	5	No anomaly detected: good spatial allocation.	-
MILE Presentation	Consistency of Page Structure	2	H.	Screenshot 2. 16



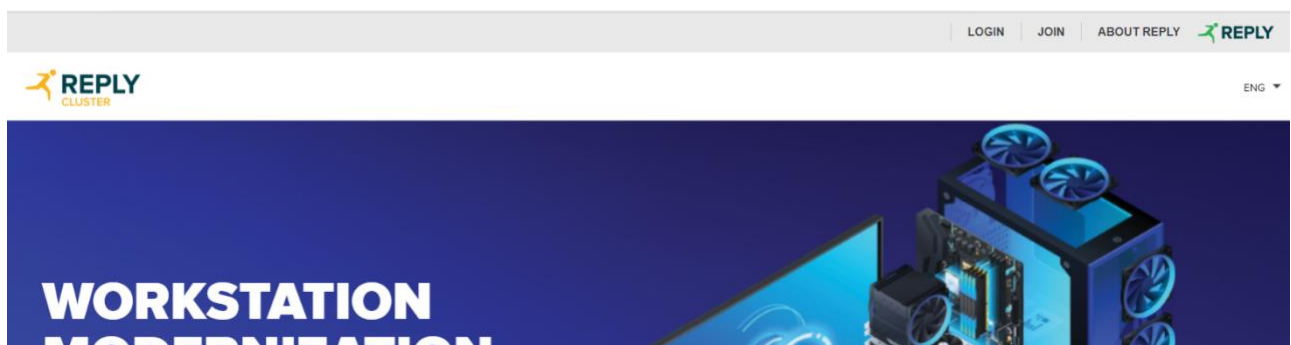
Screenshot 2. 16: <https://www.reply.com/en/topics/artificial-intelligence-and-machine-learning/>

A.3 Individual Inspection 3

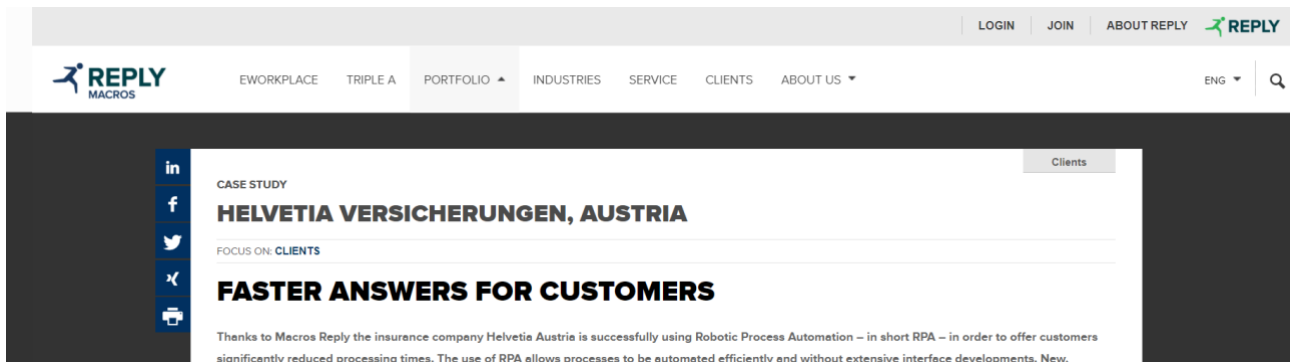
Inspector: Francesco Ratti				
URL	Heuristic Type	Heuristic	Score	Comment
Reply - Offering for Enterprise Architecture & SOA Reply - Smart Working and the Digital Workplace (almost any page)	Nielsen	1. Visibility of system status	1	Bread crump is visible in some pages, so user should be able to know where he/she is. The problem here is that the bread crump is not effective: in any section it shows just the current section name and an X. <i>Screenshot 3.1</i> X meaning isn't so clear. Moreover, when opening an article which takes us outside of the topic page, the bread crump disappears. <i>Screenshot 3.2, 3.3</i> In my opinion, bread crump should be fixed to the top of the viewport, so the user has not to scroll to the top of the page.



Screenshot 3.1



Screenshot 3.2



Screenshot 3.3

https://www.reply.com/		1. Match between system and the real world	2	Part of website is in destination language and part is still in English. Screenshot 3.4
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Screenshot 3.4

Big Data Analytics: consulting, Applications, Tools Reply		H3. User control and freedom	5	User is freely able to navigate the site and leave the current page by means of the persistent header on top of the viewport. Screenshot 3.5
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Screenshot 3.5

https://www.reply.com/		H4. Consistency and standards	5	Sharing icon coherent to standard ones (material design)
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				<p>Lens icon to search which is a standard and arrow to indicate a dropdown menu when choosing language. <i>Screenshot 3.6</i></p> <p>Plus (<i>screenshot 3.7</i>), minus to show more or less information and social network logos are consistent. <i>Screenshot 3.8</i></p>
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Screenshot 3.6



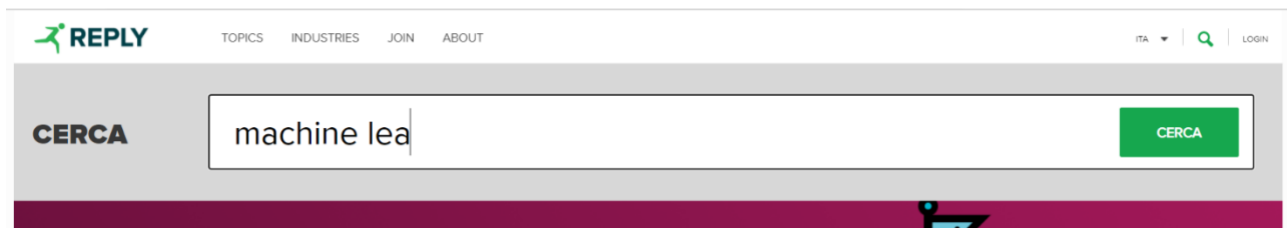
Screenshot 3.7



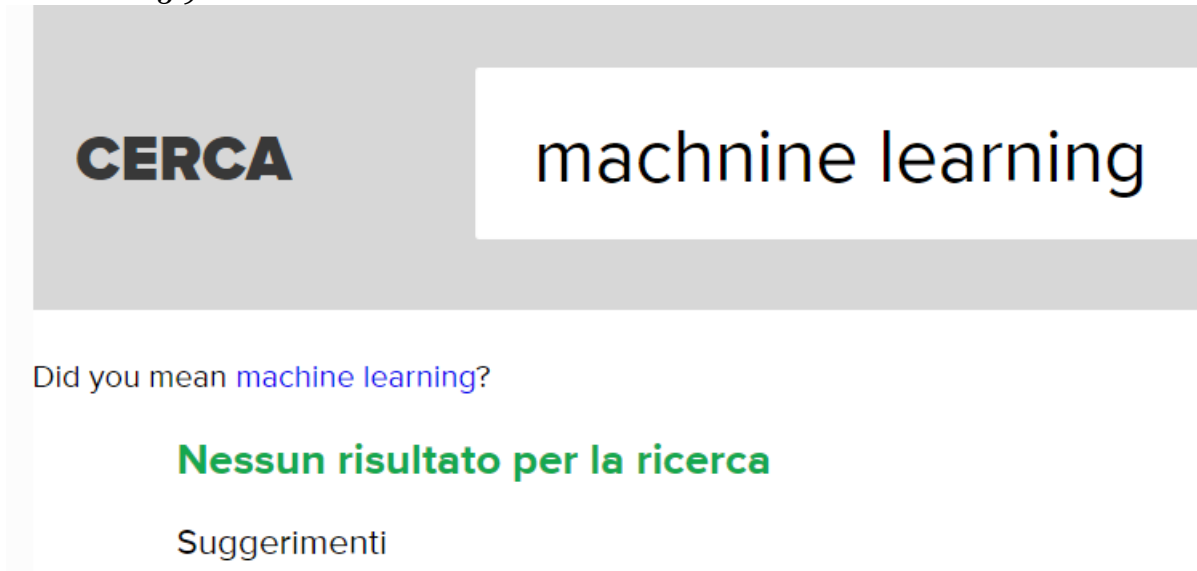
Screenshot 3.8

		H5 Error prevention	5	<p>Few simple items which allow to navigate: upper bar menu voices (<i>Screenshot 3.5</i>) and articles titles in the homepage topics: it is unambiguous that clicking on a title will lead the user to read the related article.</p>
--	--	---------------------	---	---

Big Data Analytics: consulting, Applications, Tools Reply Search (reply.com)		Recognition rather than recall	2	<p>No suggestion when typing, this is a major drawback in my opinion since user may don't know precisely what to search on the website (he/she doesn't know what kind of threads are there). <i>Screenshot 3.9</i></p> <p>If the user commits a typo the system suggests the right search key, which is a great thing. <i>Screenshot 3.10</i></p>
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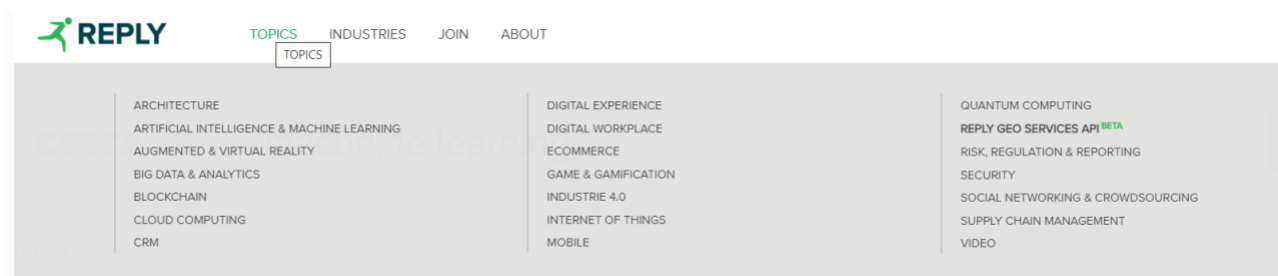


Screenshot 3.9



Screenshot 3.10

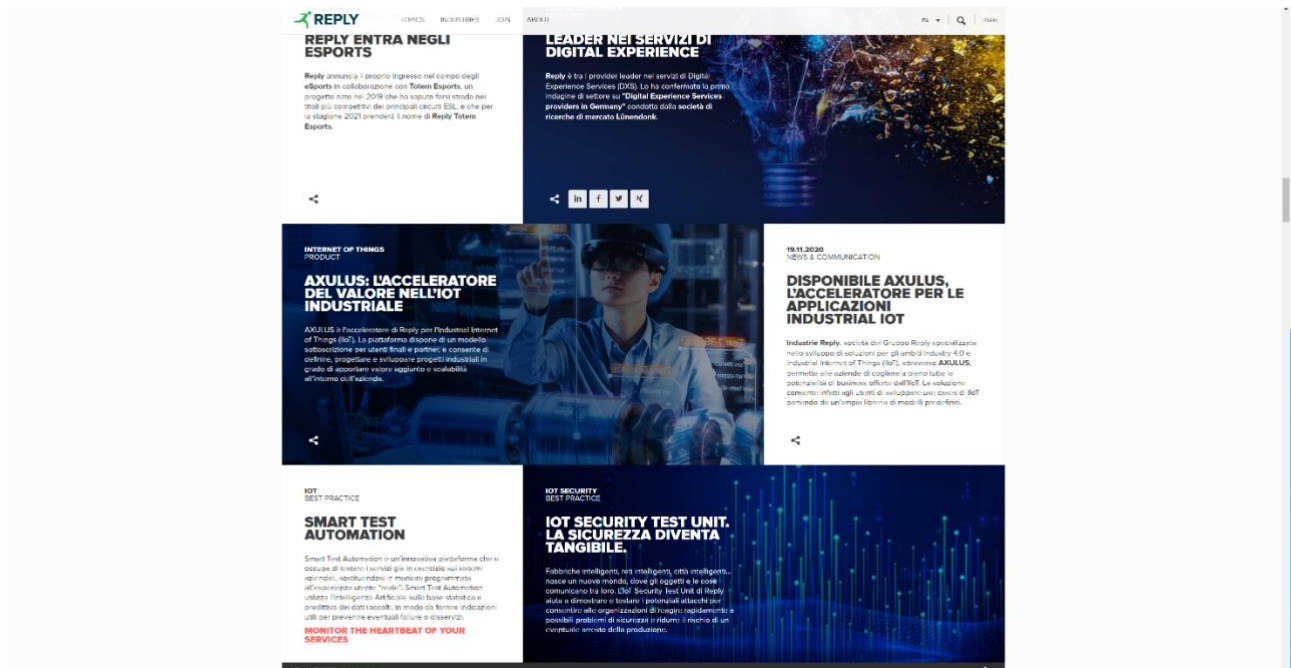
https://www.reply.com/		Flexibility and efficiency of use	2	Navigation through topics in the top bar menu is confusing: topics are listed and no categorisation or grouping between them. <i>Screenshot 3.11</i> No accelerators but may be not needed
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Screenshot 3.11

AI & ML - Reply Offering (any section and homepage)		1. Aesthetic and minimalist design	2	Too many items (articles) with long descriptions in a single page. Everything is a bit “compacted” leading to a little information
---	--	------------------------------------	---	--

			explosion. <i>Screenshot 3.12</i> Otherwise good design.
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Screenshot 3.12

ErrorPage		Help users recognize, diagnose and recover from errors	2	Login error message is expressed in plain language but does not suggest a solution neither offers a way to go back, an “insulated” page which is completely different from the previous one appears leading to disorientation in the user. <i>Screenshot 3.13</i>
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Server Error

401 - Unauthorized: Access is denied due to invalid credentials.

You do not have permission to view this directory or page using the credentials that you supplied.

Screenshot 3.13

		Help and documentation	NA	
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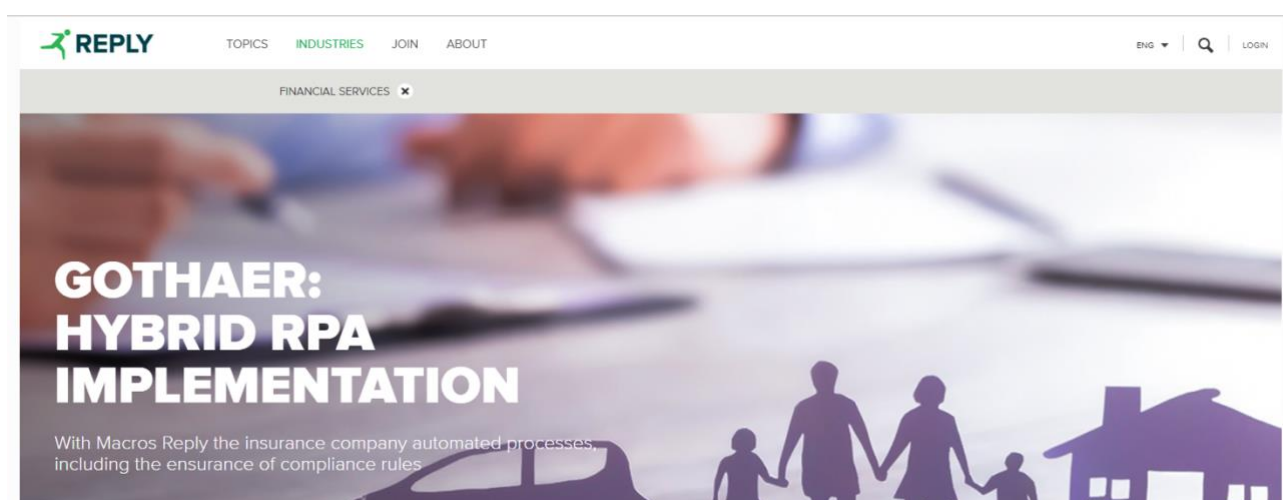
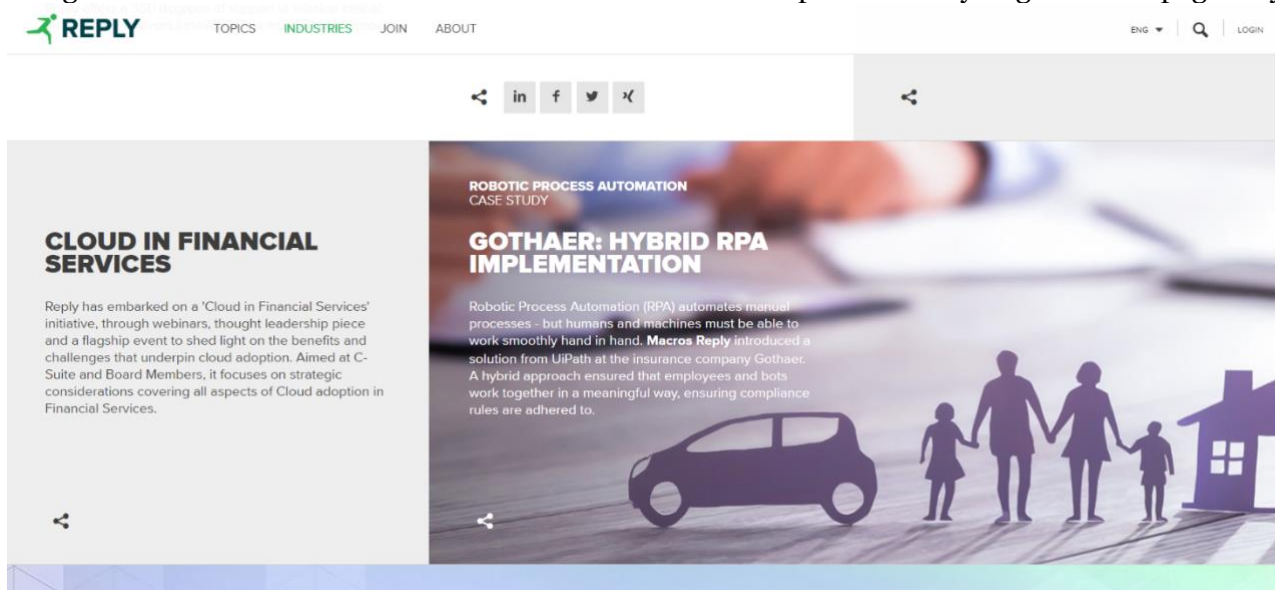
Heuristic Type	Heuristic	Overall Score
MILE Navigation	Interaction consistency	5

All topic and industries pages are structured according to same layout and interaction principles. All of them are articles preview container, which allow to read the full article when clicked.

Images

Heuristic Type	Heuristic	Overall Score
MILE Navigation	Group navigation	0

An article in open in a new tab and no “navigation button” to next or previous article of the topic we come from is shown in the bread crumbs. Moreover, there is no way to go back the previous page to navigate to the next article from the new tab. The bread crump offers a way to go to homepage only.



Heuristic Type	Heuristic	Overall Score
MILE Navigation	Structural navigation	4

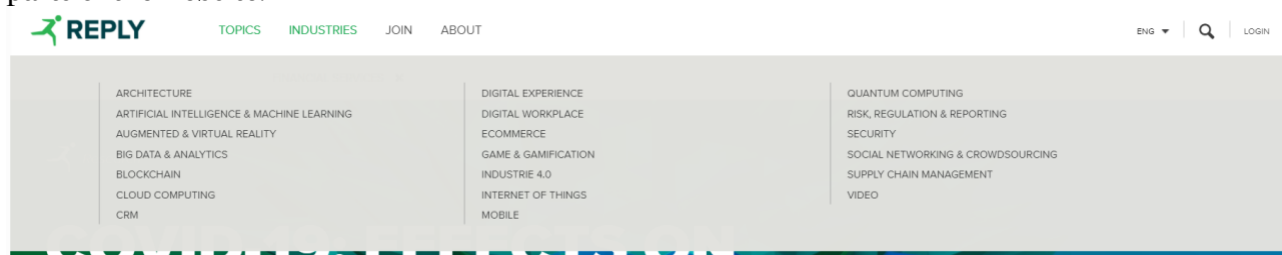
is it easy to navigate among the parts of a topic since everything is displayed on a single page. This leads to a bit of confusion.

Heuristic Type	Heuristic	Overall Score
MILE Navigation	Semantic navigation	0

An article in open in a new tab and there is no way to navigate to related articles or articles of the same topic. Each article is alone.

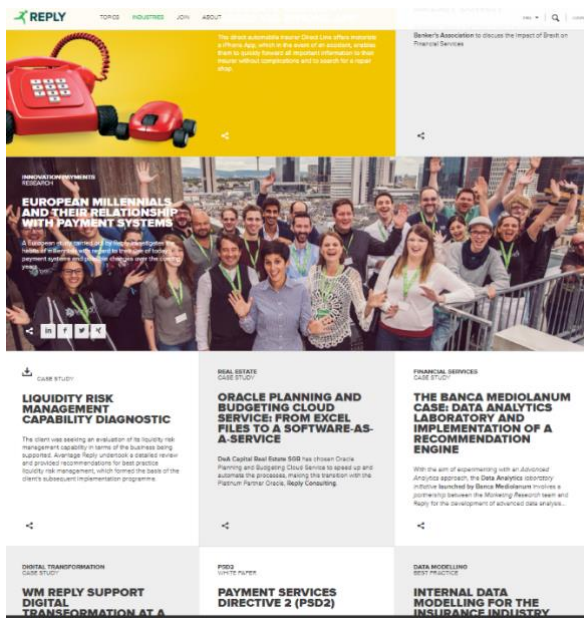
Heuristic Type	Heuristic	Overall Score
MILE Navigation	Landmarks	5

All the landmarks are located in the header. Items of the header allows us to navigate to important parts of the website.



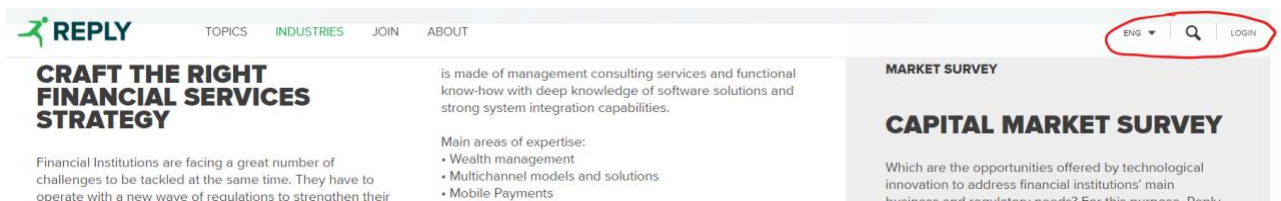
Heuristic Type	Heuristic	Overall Score
MILE Content	Information overload	0

Every page contains too many articles and text leading to an information overload in my opinion.



Heuristic Type	Heuristic	Overall Score
MILE Presentation	Text layout	4

Text is readable and font size is generally right. Only the header top right elements are a bit small.



Heuristic Type	Heuristic	Overall Score
MILE Presentation	Interaction placeholders-semiotics	4

Sharing icon coherent to standard ones (material design)

Lens icon to search which is a standard and arrow to indicate a dropdown menu when choosing language. *Screenshot 3.6*

Plus (*screenshot 3.7*), minus to show more or less information and social network logos are consistent. *Screenshot 3.8*

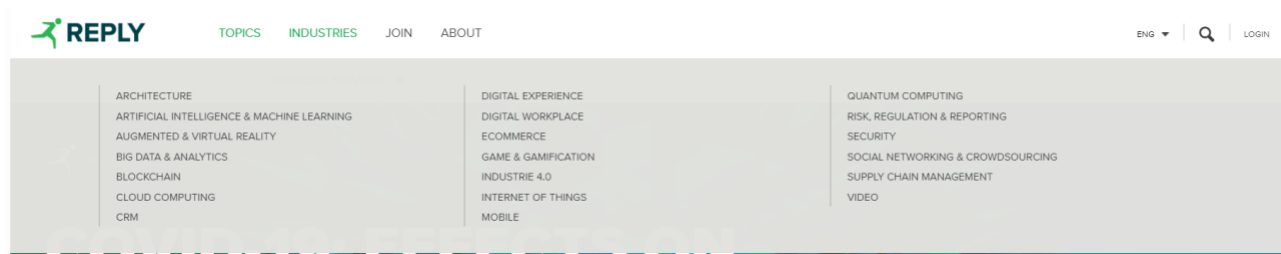
The only negative part is that the items in the header are simply listed as labels with no semiotic care (no “intuitive” icons to make the most important ones easily recognisable).

Heuristic Type	Heuristic	Overall Score
MILE Presentation	Interaction placeholders-consistency	3

All the navigation placeholders are placed in the header, so labels positioning is correct but the header is not fixed, so the user has to scroll to top of page every time.

Icons are consistent, as stated in “Interaction placeholders-semiotics” heuristic motivation.

All the topic landmarks are placed in the header in a clean label for each of them.



Heuristic Type	Heuristic	Overall Score
MILE Presentation	Spatial allocation	5

Pages have a simple layout, consisting in an header for navigation, a body with related articles by category and a footer with “contact us” information.

Heuristic Type	Heuristic	Overall Score
MILE Presentation	Consistency of Page Structure	5

All topics and industries pages are structured according to same layout principles, stated in the latter heuristic

2 User Testing

User testing consists of the data collection and observation of how some representatives of real users interact with the system. User behaviours are observed, recorded and then analysed. Its goal is to discover the actual difficulties encountered by users when interacting with the website and to obtain systematic feedback on its effectiveness and use.

2.1 User Testing Design

Due to the Covid-19 pandemic, the test has been designed according to some constraints. It will be held completely remotely, sharing the screen and recording the session. Test users are also encouraged to embrace the *Think Aloud* technique in order to overcome the problem of not being able to accurately analyse their behaviour. *Think Aloud* is a method invented by psychologist Édouard Claparède, which consists in externalise by voice what the user thinks and plans during task execution.

2.1.1 User Profile Definition

The definition of a standard user profile to test the web application allows to make the results comparable and to have a reliable feedback based on multiple experiences. Here, we focus on its characteristics and on the definition of an effective recruiting technique.

2.1.1.1 User Profile

Unfortunately, due to the Covid-19 pandemic and to the difficulty to physically reach people who have a proper workstation, it would have been impossible to set the user profile as the typical person who might be interested in the website. Therefore, the decision fell on *university students* or *recent graduates* between 22 and 27 years old who are *passionate about technology* and who have the minimum necessary computer skills.

Indeed, the targeted users will actually need this type of website in the near future or are familiar with this kind of application. Possible goals for them are, for example, applying for a job or keeping themselves updated on the efforts of Reply in the technological field.

2.1.1.2 Recruitment strategy

The test users will be mainly selected among recent graduates or university students of the following disciplines: computer science, telecommunications and electronics. In this way the adherence to the profile described above and the homogeneity of the sample will be guaranteed.

During the selection it will also be essential to analyse the technological equipment available to them. Indeed, the test users must have a computer, a microphone, a webcam, an internet connection and the possibility to share the screen with their interviewers.

2.1.2 Usability Variables Definition

Some variables have been chosen to be measured during the execution of the tasks and by a subsequent survey for the testers. The usability variables include both quantitative and qualitative indicators and are reported in the following table.

Usability Variable		Description
V1	Effectiveness	Task success rate
V2	Efficiency	Time needed to complete the task
V3	Errors	Wrong paths or actions while completing the task

V4	<i>Satisfaction</i>	Users' feelings about the navigation experience
V5	<i>Disorientation</i>	Difficulty in understanding how to move between the shown contents
V6	<i>Wandering periods</i>	Difficulty to realize the next steps
V7	<i>Confidence with the design</i>	Difficulty in understanding what is the next step to take

Table 1: Usability Variables

2.1.3 Tasks Definition

Six tasks have been created for the users to evaluate the usability of Reply website.

To minimise the learning effect on them during the computation of effectiveness and efficiency, they have been randomised.

Since the website acts as a showcase for the company, the tasks have a medium-low difficulty and have been defined according to the user profile previously described. Indeed, these activities reflect the real possible scenarios of use for the system under consideration.

The tasks selected are detailed in the following table.

Task		Description
T1	<i>Register to a Webinar</i>	You are very passionate about the world of artificial intelligence. Look for information on the latest webinar related to artificial intelligence that took place in the past. What you read will make you want to know even more, so you will decide to register for the next webinar related to this topic which will be held in Italian.
T2	<i>Locate the Milan Office</i>	You are interested in finding out more information about the Reply offices in Milan. In particular, you want to know the address and telephone number of the office closest to the centre of Milan.
T3	<i>Retrieve information about a game</i>	You are a master student with a passion for gaming and virtual reality. You have heard of a game called Theseus developed by Reply and would like to know more information about the game and the platforms for which it is available for the thesis you are writing on VR.
T4	<i>Retrieve information about a collaboration</i>	You are an American student graduated at University of Illinois at Chicago in Computer Science and Engineering. You are looking for a seat in Reply. Search a job opportunity and discover which benefits it offers.
T5	<i>Event discovery</i>	Your little sister is interested in computer science. Find if Reply offers some opportunities for children. You also want to stay updated about the upcoming opportunities by means of social networks.
T6	<i>Financial Report</i>	For the optional project of Accounting and Financing, you are asked to analyse in depth several companies. One of them is Reply. Find the information about the share of the company. Furthermore, find the contact information of the INTESA SANPAOLO analyst.

Table 2: Tasks Definitions

2.1.4 Pilot Test

Before submitting the test to the recruited users, it has been simulated among the group members and through a candidate user. This candidate user did not take part in the test in order not to generate bias. In this way, it has been possible to minimise the misunderstandings and prevent any errors in the formulation of the test from impacting the results of the study.

2.2 User Testing Execution

As previously described, the goal of the study is to observe the actual usage of the website in order to evaluate its usability. In the following chapters the test and its execution are explained in a more detailed way, with a section dedicated to the data gathered, their meaning, interpretation and results.

2.2.1 Execution

Seven users have been recruited for the test, according to the User Profile previously defined. The purpose of the test and its structure have been clearly explained to them. Furthermore, the users know that they are free to quit at any time, without any repercussion.

The testers are aware that the examination concerns the website. They are the mean through which it is possible to discover some leaks.

Since the session would be online, the users are asked to share their screen, open the microphone and the webcam. All the sessions have been recorded to analyse them also in a second moment.

Furthermore, the testers are recommended to apply the Think Aloud technique. A PDF file containing all the relevant information concerning the test session has been sent to the tester.

The order of the tasks has been randomised for each user to minimise the learning effect.

Every session starts from the Homepage of the website.

During the execution, the observer kept track of the time to accomplish each task, took notes and was available for any further question by the user.

At the end of the Task Phase, the users are asked to fulfil a brief survey about the experience.

2.2.2 Data

2.2.3 Results

3 Final Conclusions

This chapter contains the conclusions of the usability report relating to the Reply website. The considerations made in the following sections represent the basis on which the system can be improved to provide a better user experience for end users.

3.1 Comments on the results

3.2 Suggestion for Improvements

In this section are presented some possible improvements that can be implemented in order to address the usability gaps identified on the website.

B Additional Materials

B.1 Information for Test Users

Link(?) to the PDF provided to each tester