**Immagine che contiene testo, Carattere, Elementi grafici, logo

Descrizione generata automaticamente**

**Master’s Degree in Computer Science**

**Academic year 2023/2024**

**WEB INFORMATION MANAGEMENT**

Usability analysis of

[**https://www.rottentomatoes.com/**](https://www.rottentomatoes.com/)

website



Author: **Michael Amista’**

Student ID: **2122865**

Period of analysis: **January-February 2024**

**Contents**

[**1 Introduction** 4](#_Toc157287787)

[**2 Rotten Tomatoes** 4](#_Toc157287788)

[**2.1 What is Rotten Tomatoes?** 4](#_Toc157287789)

[**2.2 Domain name** 5](#_Toc157287790)

[**2.3 SERP positioning** 5](#_Toc157287791)

[**3 Homepage** 7](#_Toc157287792)

[**3.1 Informative axes** 7](#_Toc157287793)

[**3.1.1 WHERE did the user arrive?** 8](#_Toc157287794)

[**3.1.2 WHO is behind the website?** 8](#_Toc157287795)

[**3.1.3 WHY should the user stay?** 9](#_Toc157287796)

[**3.1.4 WHAT does the site offer?** 9](#_Toc157287797)

[**3.1.5 WHEN? Is the website up to date?** 10](#_Toc157287798)

[**3.1.6 HOW does the user arrive where he wants?** 10](#_Toc157287799)

[**3.2 Menu** 11](#_Toc157287800)

[**3.3 Searching** 12](#_Toc157287801)

[**3.4 F-shape scanning** 14](#_Toc157287802)

[**3.5 Scrolling** 16](#_Toc157287803)

[**3.6 Text** 17](#_Toc157287804)

[**3.7 Visual metaphors** 17](#_Toc157287805)

[**3.8 Asking for personal data** 19](#_Toc157287806)

[**4. Internal pages** 19](#_Toc157287807)

[**4.1 Movies** 19](#_Toc157287808)

[**4.1.1 Informative axes** 19](#_Toc157287809)

[**4.1.2 Structure** 19](#_Toc157287810)

[**4.1.3 Visual metaphors** 19](#_Toc157287811)

[**4.2 TV shows** 19](#_Toc157287812)

[**4.2.1 Informative axes** 19](#_Toc157287813)

[**4.2.2 Structure** 19](#_Toc157287814)

[**4.2.3 Visual metaphors** 20](#_Toc157287815)

[**4.3 More trivia** 20](#_Toc157287816)

[**4.3.1 Informative axes** 20](#_Toc157287817)

[**4.3.2 Structure** 20](#_Toc157287818)

[**4.4 News** 20](#_Toc157287819)

[**4.4.1 Informative axes** 20](#_Toc157287820)

[**4.4.2 Structure** 20](#_Toc157287821)

[**4.5 Search results** 20](#_Toc157287822)

[**4.5.1 Informative axes** 20](#_Toc157287823)

[**4.5.2 Structure** 20](#_Toc157287824)

[**4.6 Handle of 404 error** 20](#_Toc157287825)

[**4.6.1 Informative axes** 20](#_Toc157287826)

[**4.6.2 Structure** 20](#_Toc157287827)

[**5. Final evaluation** 20](#_Toc157287828)

**Figures**

[Figure 1: SERP overview for "rotten" (22/01/2024) 6](#_Toc157287829)

[Figure 2: Homepage 7](#_Toc157287830)

[Figure 3: Footer component 8](#_Toc157287831)

[Figure 4: Homepage news section 10](#_Toc157287832)

[Figure 5: Menu 11](#_Toc157287833)

[Figure 6: Usability problem in the menu 11](#_Toc157287834)

[Figure 7: Search functionality 13](#_Toc157287835)

[Figure 8: Search functionality of NEWS section 13](#_Toc157287836)

[Figure 9: F-shape scanning on the homepage 15](#_Toc157287837)

[Figure 10: Instance of visual metaphors 18](#_Toc157287838)

# **1 Introduction**

Over the years Internet has become a powerful and useful tool able to connect information from different sources and providing it to everyone. The number of websites is consistently increasing day by day due to the high demand for information and services, but this information is not always simple to get.

There are many examples of websites with great purposes but badly designed which increase the users’ computational effort and make the navigation experience heavy. For all these reasons it’s important to study the usability of websites, a concept remarked in the following definition.

“Web usability is the discipline that studies how to design and then create a usable website.

A website is usable if it is easy to access and navigate, and if it satisfies the information needs of its users.”

The aim of the document is to analyse a real website to understand if it respects the usability principles that are so much important in the modern web. In this case the analysis is based on the Rotten Tomatoes website; for this study just the desktop version has been taken into consideration.

# **2 Rotten Tomatoes**

This section presents the Rotten Tomatoes website in terms of its purposes and share of information. It is also discussed about the choice of its apparently strange name and its SERP positioning.

## **2.1 What is Rotten Tomatoes?**

Rotten Tomatoes is a popular American review website for film and television. The website compiles reviews and ratings from critics and audiences to provide a consensus score for movies and TV shows.

The Tomato meter is the primary metric used by Rotten Tomatoes to represent the percentage of positive reviews given by critics.

In addition to the Tomato meter, Rotten Tomatoes also provides an Audience Score, which reflects the percentage of audience members who enjoyed the movie or TV show.

Rotten Tomatoes is presented as a useful tool for measure the overall reception of a film or TV show.

## **2.2 Domain name**

On average, the name of a website increases users’ satisfaction by 10% - 20%; so, a website name must be chosen appropriately, following some rules.

Even if “rottentomatoes.com” seems to be a strange domain name for a website, it works because it respects the main principles of a good name:

* it is short and so, it is easy to memorize and write;
* it is unique;
* it is formed by real words (“*rotten*” and “*tomatoes*”);
* it sounds well;
* it takes the “.com”, which is the top-level domain that a site can use.

An interesting fact is related to the origin of this name. The name "Rotten Tomatoes" is a reference to the tradition of throwing rotten tomatoes at a stage performer who delivers a poor performance.

Beyond these considerations it is also true that the name doesn’t represent the content of the site, probably because the website relies on its fame through the television community. Anyway, a general user, who does not know Rotten Tomatoes, cannot understand that it is a review website for film and television.

## **2.3 SERP positioning**

To study the SERP (Search Engine Results Page) positioning of the Rotten Tomatoes website it has been used the online and freely available tool: <https://ahrefs.com/serp-checker> which simulates search engines behaviour over given keywords in different countries. For this test the selected country was “United States” since there have been considered, as possible searches, also the single words “***rotten***” and “***tomatoes***” which are common English/American terms not necessarily related to this website.

Several tests have been conducted over more specific and less specific keywords and the observed results are interesting. For instance, searching for the specific name “**rotten tomatoes**” returns the website in first position; nothing surprising since the website has been searched by its own name.

If the website is searched just by “***rotten***” (**Figure 1**), which is a common English word, the website is yet in the first position, also higher than the vocabulary definition for that word, this shows the power of the site indexing.

Immagine che contiene testo, schermata, Carattere, numero

Descrizione generata automaticamente

Figure 1: SERP overview for "rotten" (22/01/2024)

If the website is searched just by “***tomatoes***” (which is again a common English word) the website is in sixth position; not bad since the website has been searched by just a common word.

Then the website has been searched with other keywords that represent the content provided by Rotten Tomatoes website. These searched keywords (with the relative position in SERP) were:

* “***film reviews***”: 2nd
* “***TV show reviews***”: 3rd
* “***best film***”: 3rd
* “***latest movies***”: 4th
* “***most popular TV shows***”: 8th
* “***matrix reloaded***”: 5th (tested with a real movie name)
* “***the big bang theory***”: 8th (tested with a real movie name)
* “***movies in theaters***”: 5th
* all the tried combinations with the keyword “***news***” never returned the website in the top ten of SERP.

Overall, the website is well indexed in the SERP and more time the website holds these positions more users’ flow it has.

# **3 Homepage**

There is a parallelism between a shop and a website, both tries to impress people by showing what they offer in their big windows.

A shop fails if it is not able to capture the curiosity of potential customers and so its flow is not great. This is similar on what happens on the web.

The homepage of a good website should attract people, it’s the window of the shop and if the first visit goes not so well the website has failed and users’ return rate goes down. This is the reason why the homepage is so important for websites.

This section critically analyses the homepage of Rotten Tomatoes website (**Figure 2**) considering different usability factors.

Immagine che contiene testo, Viso umano, schermata, persona

Descrizione generata automaticamente

Figure 2: Homepage

## **3.1 Informative axes**

The informative axes provide a way to understand if the main information is clearly presented in the homepage of websites.

In fact, users try to extract this information from the homepage of a new website and if they are not able to get it, they generally prefer to go away. If a user chooses to stay or not only depends on how simple the page is to read.

The informative axes are six: WHERE, WHO, WHY, WHAT, WHEN and HOW. Each of the following sections critically analyse each of them.

### **3.1.1 WHERE did the user arrive?**

There are several voices in the menu, section titles and news (visible in **Figure 2**) which remarked that a user is arrived in a website that talks about movies and TV shows. This is good because a user can easily understand in which kind of website he is.

A user should also be conscious about his relative position on the website and it’s for this reason that a breadcrumb should always be present. In the homepage there is no breadcrumb, this could be acceptable since the homepage represents the first page of a website but in the deep linking scenario this is crucially important. In the internal pages analysis this fact has been considered deeply.

### **3.1.2 WHO is behind the website?**

Knowing the author of a website increases the users trust factor and this is not a superficial element, websites must consider it.

In the first part of the homepage (**Figure 2**), apparently, there are no information about the authors of the site. There is a voice that contains this information, which is the top right link “What’s the Tomatometer®?”; a bad choice because new users, that never really heard about Rotten Tomatoes, cannot know what the “Tomatometer®” is. Since the time is limited and precious, users do not try to get the WHO axis by a link that seems to not represent what they are looking for. Common users try to get this information searching in other zones of the homepage and, if the homepage is scrolled until the end, the WHO axis is placed in the footer (**Figure 3**).

Immagine che contiene testo, schermata, Carattere

Descrizione generata automaticamente

Figure 3: Footer component

The highlighted box in **Figure 3** shows where the WHO axis is exactly placed, in the footer on the voice “About Rotten Tomatoes”.

Typically, new users scroll the homepage by 23% of its size so they typically never arrive to this information which is badly placed.

It is also possible to note that clicking on that link a user arrives exactly in the same page of the link “What is the Tomatometer®?” placed at the beginning of the homepage and previously discussed. In fact, this link points to another section of the same page of “About Rotten Tomatoes” link.

Apparently, authors give more importance to make clear which is their measure of judgment instead of explaining who Rotten Tomatoes is. This behaviour can be related to the fame of the website, but this in fact disadvantages new users.

### **3.1.3 WHY should the user stay?**

A well-designed homepage should persuade new users to stay in the website by showing them the advantages they would obtain continuing the navigation in the website.

Watching the homepage with and without scrolling this information seems to be missing. The homepage provides different ways to get information about movies, TV shows and news about them but there is no written motivation by which a user should stay on the website. Again, this can be related to the fame of Rotten Tomatoes and so authors may think it is not necessary to explain, for instance, why their movies/TV reviews are the best ones. In fact, this disadvantages new users, who never heard about Rotten Tomatoes, since they do not have any reason to stay.

### **3.1.4 WHAT does the site offer?**

From the homepage (**Figure 2**), particularly from the menu placed in the top part of the page, it is clear what the website is offering to users. Rotten Tomatoes provides information about movies, TV shows and news related to the cinema world.

Beyond the menu (which is deeper discussed in **3.2 Menu**), the WHAT axis can be also recovered by the main section titles of the homepage (“New & Upcoming movies in theatres”, “Popular streaming movies”, “New TV this week” and so on) and by the latest news carousel placed on the left.

Users who stay on the website will be able to know about the past and upcoming movies, TV shows and all the latest news.

### **3.1.5 WHEN? Is the website up to date?**

A user should always be able to understand if a website is up to date or not. The WHEN axis gives an answer to this question: a website should always provide latest news/contents.

Immagine che contiene testo, Viso umano, persona, vestiti

Descrizione generata automaticamente

Figure 4: Homepage news section

The homepage provides two different ways to get the WHEN axis:

* **an entire part of the homepage itself** (**Figure 4**) that shows to users the latest news uploaded on the website. The single news is formed by an image, a title and a blurb (a small summary of the news itself); all these parts are clickable and, if clicked, redirect user to the relative article page where he can get more information about the selected news.
* **the menu voice “NEWS”** which redirect users to the dedicated news section of the website.

### **3.1.6 HOW does the user arrive where he wants?**

A user should always be able to easily navigate on the website and collect all the information provided by the website itself.

All the Rotten Tomatoes reachable pages are provided by the top menu which a user can use to easily move on the website.

There is also a search functionality which users can use to obtain information in a simpler and fast way. The search functionality provided by Rotten Tomatoes can find information about movies, TV and celebrities without searching manually for them; the search-bar, if provided, highly reduces the users’ computational effort to obtain information and for this it’s really appreciated tool. The search functionality is deeper discussed in **3.3 Searching**.

## **3.2 Menu**

The purpose of a menu is to show to users all the possible destinations, all the reachable pages of the website which a user can visit to collect different type of information.

Rotten Tomatoes provides a menu which is placed in the top part of the homepage, as show in **Figure 5**. The menu is correctly placed since it is immediately visible from users who land on the website.

Immagine che contiene testo, schermata, Sito Web, Pagina Web

Descrizione generata automaticamente

Figure 5: Menu

The menu is formed by five voices: “Movies”, “TV Shows”, “Shop”, “News” and “Showtimes”. Each menu voice represents one of the five macro areas of the website, then each area is a collection of pages related to the higher level of the tree shape of the website.

Excluding the menu voices “Shop” and “Showtimes”, if a user points the mouse cursor over one of the other menu voices a new area is displayed, as shown in **Figure 5**. This kind of sub-menu shows a small preview of the contents provided by the menu link on which the user is landed with the mouse cursor.

This is implementation is interesting because a user can get a preview of other webpages contents before visiting them and, eventually, he can directly visit deeper pages provided by this new sub-menu.

Immagine che contiene testo, schermata, Sito Web, Pagina Web

Descrizione generata automaticamente

Figure 6: Usability problem in the menu

Anyway, this sub-menu has a usability problem that can annoying users. In fact, if a user is interested in one of the links provided by this new menu he follows the fastest path (represented by all the red lines in **Figure 6**) to reach what he wants. In this way the links positioned on the centre/right area has no problems (normal red lines) but the more left positioned links (represented by the dashed red lines) are never reached because the sub-menu will close itself before reaching the link.

This happens because, to keep the sub-menu opened, the user should move down the mouse cursor until he reaches the beginning of the new menu area and then, if he remains inside this area, he can follow whatever direction he wants to reach the links.

This behaviour increases users’ computational effort to use the menu and it is known that users prefer easy things, represented by the red line ideal paths already discussed.

Another aspect badly handed is related to the “SHOWTIMES” menu voice, which enables users to book cinema tickets. This feature is only available in the United States so users who try to access to that feature outside the United States will see an error page that tell them about the problem. This is not good because user expectations are broken and if a functionality is available in just few countries, it must appear just on users who navigate in those countries!

## **3.3 Searching**

As already mentioned before, Rotten Tomatoes provides a search functionality which is much appreciated by users because they can collect information just searching for what they want without go through many pages. The search-bar is well placed in the top part of the homepage (**Figure 2**), in this way it is immediately visible by incoming users.

Anyway, it is possible to observe that the search-bar does not respect the web standard which corresponds to a “search” label on the left and a search button (typically an icon) on the right. In fact, the search button on the left, as in this case, creates a delay of 2 seconds and on the web every second is precious. For this reason, the choice of design used here is not so effective.

Immagine che contiene testo, schermata, Sito Web, Pagina Web

Descrizione generata automaticamente

Figure 7: Search functionality

In particular, the functionality provided in the homepage enables users to search for movies, TV shows and actor/actress. While the user is typing on the search-bar there are displayed partial results corresponding to what the user has digited until that moment (dynamic search); this is appreciated since it helps users to find what they are looking for. So, users can click on the suggested links (both image and text are clickable) or they can press the search button to search what they want.

A curious observation is that the search functionality is available in every page which is appreciated by users because they can use it wherever they are, but the search-bar design and behaviour is not equal in all the Rotten Tomatoes webpages. In fact, the provided search-bar in the “NEWS” page and all its subpages is completely different, as it is shown in the **Figure 8**.

Immagine che contiene testo, schermata, Carattere, logo

Descrizione generata automaticamente

Figure 8: Search functionality of NEWS section

As it is possible to observe, this other search-bar respects the web standard compared to previous discussed version which is provided in all the other pages that are not under the NEWS area.

On the other hand, this second version does not provide any suggested link mechanism with partial information digited (static search) and this is bad: it has an upgraded design but a downgraded behaviour. The main question about this choice is just “why?”. Also note that the purpose of the search is the same of the homepage version: search for movies, TV shows and actor/actress. There are no valid reasons to provide the same functionality which is presented in different ways and with a different behaviour. This just confuses and disorientates users. A bad choice of implementation.

Talking about the search-box, the recommended average length is 30 characters, in fact this measure satisfies 90% of users. Over the years the number of keywords entered by users to search for something is increased; so, websites that provide a search functionality must be careful about the length of the search-box which is not a random number.

The dynamic version of the search (**Figure 7**) has a length of 42 characters while the static version (**Figure 8**) has a length of 37. Both versions provide a good length and this is appreciated by users. Beyond these numbers, the digited content is not entirely visible and users must scroll to see what they have written in the hidden part; since the two lengths follows the average search-box length this is not consider as a problem.

The output page provided by the search functionality is discussed in **4.5 Search results** as it has been considered as an internal page to analyse deeply.

## **3.4 F-shape scanning**

The F-shape pattern refers to the typical eye movement pattern that users exhibit when scanning a webpage. The pattern is characterized by users scanning the content in a manner that resembles the letter "F".

The webpage is scanned in the following order:

1. First, users move their gaze in a horizontal direction to the top of the content area. They thus create the upper bar of the F.
2. The second step is to move vertically by scrolling the page, stop at a point of attraction and continue reading horizontally for a shorter stretch than the first. Here is the second bar of the F.
3. User concentration remains focused on the left side, searching for possible points of attraction which are scanned in a horizontal movement that covers a shorter area than the previous horizontal scan.

The F-shape pattern highlights the importance of placing crucial information in the most viewed areas of the webpage to capture the users’ attention quickly.

Immagine che contiene testo, Viso umano, schermata, persona

Descrizione generata automaticamente

**3**

**2**

**1**

Figure 9: F-shape scanning on the homepage

The **Figure 9** provides a simulation of the F-shape reading pattern on the homepage of Rotten Tomatoes.

Users start to scan the homepage from the top-left corner (the typical entry point of a website) where the Rotten Tomatoes logo is placed; this is important because the logo of a website represents its identity and it should be the first thing that a user sees when he lands on a website. Beyond the logo users scan the entire top area of the page so it is important to choose appropriately the information to place here. Rotten Tomatoes does it by placing the search-bar, the menu and other interesting links on the top area. In this way, by the first horizontal line of scan, a user obtains the identity of the website, the presence of a search functionality (that can help him) and the structure of the website menu.

More the user moves down on the page less long the horizontal reading lines become; so, it is crucial to place the information in a way where the most important parts are always reached.

In the case of the homepage a user can capture the main information also with a less long horizontal line. In fact, it is possible to observe that the second and third horizontal lines can capture the main content of the relative areas. From the second horizontal line a user can get almost the whole WHEN information and with the third one a user can get the relative section title and the first part of its content.

When the first part of the homepage has been entirely scanned, the user can scroll the homepage to reach the remaining parts. Every new scroll leads to a new F-shape which reiterates the whole procedure.

Overall, the entire homepage content follows the F-shape reading pattern and this is appreciated since the arrangement of content has been based on one of the most used reading patterns by users on the web.

## **3.5 Scrolling**

Another usability problem is related to the scrolling. In fact, this operation requires computational effort and for this reason it is better having not so much scroll on the provided pages. On average, users are used to scroll 1.3 “screens”, they hardly see what there is beyond.

There are two types of scrolling: vertical and horizontal. The vertical one is the best one since it is the commonly used in the web navigation. The horizontal scrolling is to avoid at all costs because it is uncommon; in fact, it introduces a new axis to manage and this leads to more computational effort requested by users.

The Rotten Tomatoes homepage requires 8-10 vertical scrolls to be entirely seen; this is not so effective since the homepage is long and the computational effort required to see it entirely is high. The problem is not about big images that occupy great portions of the screen, which is a persistent problem on the web, but on the quantity of content that the homepage provides. It is also true that a user can obtain the main information of the homepage by the first 2-3 scrolls and then it is his choice to continue or not the inspection. The homepage in fact is just a big summary of the internal pages, with different lists of movies and TV shows in tendency in that moment; for instance, a list of movies currently available in theatres, a list of TV shows available on a specific streaming platform and so on. This “lost” information, over the 2-3 scrolls, can be recovered inspecting internal pages where users generally scroll more, on average about the 42% compared to the 23% of the homepage.

In the maximized browser window there is no evidence of the horizontal scroll but if the window is reduced then the horizontal scroll appears (for instance with 980px x 700px). This is bad because users who works on the web with a not maximized browser window has to manage a bidimensional space to see what there is beyond the frizzed horizontal part.

## **3.6 Text**

The text is another important aspect to consider when talking about usability of a website. The provided text should not be too much in term of quantity since users have not the time to read walls of text and it should be readable and clear.

The Rotten Tomatoes homepage does not provide so much text, so in term of quantity this is respected. The text is readable since it is well written and the font used is quite good.

The text is not resizable, in fact this can disadvantages some users who are not comfortable with the provided size.

The contrast is quite good, in fact there is a classic black text over a white background so users should be able to easily read it.

## **3.7 Visual metaphors**

The visual metaphors problem is related to some website elements on which a user has not expectations since he is not able to understand their meaning or functionalities; in fact, these elements cannot provide any useful information because they are not understood by users.

Rotten Tomatoes has some visual metaphors which are not directly explained where they are present; in fact, the most important information which Rotten Tomatoes website provides becomes useless.

Immagine che contiene testo, schermata, software, Software multimediale

Descrizione generata automaticamente

Figure 10: Instance of visual metaphors

The **Figure 10**, extracted by the homepage, shows the nature of the problem. It is possible to note that every product reviewed by Rotten Tomatoes, a movie or a TV show, is associated to a specific percentage with a relative icon. This number surely has some meaning since it has been inserted in the content of the page; so, the question that a user who never heard about Rotten Tomatoes make itself is “What does this information means? What is it?”. Users try to search around for some explanation without finding anything.

The answer is provided by a link inserted in the top of the page called [“What is the Tomatometer®?”](https://www.rottentomatoes.com/about#whatisthetomatometer) (visible in **Figure 5**). If a user clicks on this link, he discovers the meaning behind these mysterious icons. In synthesis these images represent the quality of a product in Rotten Tomatoes’ opinion by showing a red tomato when a product is sufficient and a rotten tomato when the product is disappointing. It sounds great, finally the explanation appeared, but it is not so great.

In fact, users who have never heard about this website and so about the famous “Tomatometer®”, typically do not click on this link because, as discussed in “**3.1.2 WHO is behind the website?**”, the text of the link is not much expressive about its content and since the time on the web is limited and precious users do not spend time over a link voice that seems to be useless.

There is also to note the crucial importance of the page “What is the Tomatometer®?”. In fact, this page provides precious explaination to better understand the content of the site, with much more icons used in the website compared with the ones shown in **Figure 10**; so, if this page is skipped, it creates a chain reaction that can lead to a losses of new potentially users.

Again, this behaviour can be related to the fame of the website but in fact new users are clearly disadvantaged.

## **3.8 Asking for personal data**

Apart the login, signup and newsletter functionality, for which the user is free to choose, the Rotten Tomatoes website does not ask for personal data insistently with invasive and oversize pop-ups like many websites does.

The login is useful to unlock functionalities like the one provided by the “+ WATCHLIST” button in **Figure 10** which enables users to create their own personal watchlist with movies and TV shows present on the website.

Another interesting functionality provided by the login is the possibility to write your personal review of a specific Rotten Tomatoes product. This personal review is averaged with all the other users reviews to create the so-called “Audience Score”. Rotten Tomatoes found an effective way to involve users creating always new website content.

# **4.** **Internal pages**

## **4.1 Movies**

### **4.1.1 Informative axes**

### **4.1.2 Structure**

### **4.1.3 Visual metaphors**

## **4.2 TV shows**

### **4.2.1 Informative axes**

### **4.2.2 Structure**

### **4.2.3 Visual metaphors**

## **4.3 More trivia**

### **4.3.1 Informative axes**

### **4.3.2 Structure**

## **4.4 News**

### **4.4.1 Informative axes**

### **4.4.2 Structure**

## **4.5 Search results**

### **4.5.1 Informative axes**

### **4.5.2 Structure**

## **4.6 Handle of 404 error**

### **4.6.1 Informative axes**

### **4.6.2 Structure**

# **5. Final evaluation**