



## **Deployment and Maintenance of Europeana DSI core services - SMART 2016/1019**

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**DELIVERABLE**

### **C.2 Usage pattern report M12**

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## REVISION HISTORY AND STATEMENT OF ORIGINALITY

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#### Statement of originality:

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## Executive summary

This report highlights the main development and user research activities that we undertook in the period between April and July 2018.

It describes the functionalities we developed to browse and consume the newspaper data. This type of data is very different from our other data and requires custom functionalities to consume it. It is text heavy and its value is in the content of the newspaper, not the image, title, and metadata which is true for our other data.

The document also mentions some of the user research activities we initiated in this reporting period with the aim to understand the needs and motivations of our users better and to emphasize on these when designing and developing Europeana Collections.

We also report on some metrics that showed to correlate with an aspect of users' satisfaction (i.e., users' perceived success of Europeana).

# 1 Introduction

This document describes how Europeana determines where and how users experience difficulties with the use of the Platform and the actions we take to overcome such difficulties with systematic improvements over time. The report refers to our end-user product Europeana Collections.

In December 2017, we defined objectives for Europeana Collections derived from the key performance indicators stated in Europeana DSI-3, or an already known user issue, as indicated by user research or Commission Services. In general, development of a new feature or a design change is based on either or both of these.

Our most common methodologies to collect user feedback are: surveys, heatmaps, nps scores, and feedback buttons. We also continuously experiment with other methodologies on how to best evaluate where users are experiencing difficulties with the user-facing products and thus be able to improve the service.

This deliverable should be read in combination with Deliverable C.3 Data Access Pattern Report (updated January 2017, April 2018 and August 2018)<sup>1</sup>, which describes how users access and engage with Europeana data.

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<sup>1</sup> The reports can be found in the section 'project documentation' on the Europeana DSI-3 project page. View at <https://pro.europeana.eu/project/europeana-dsi-3>

## 2 Development on Europeana Collections from April to July 2018

### 2.1 Finalizing work on the Newspapers thematic collection

In Europeana DSI-3 we committed ourselves to develop a Newspapers thematic collection on Europeana Collections that was previously accessible through The European Library portal. This newspaper collection is the biggest collection of newspapers in Europe.

Newspapers is a new type of content for us that demands functionalities that were not present on Europeana Collections before. For instance, the IIIF viewer that enables users to read the digitised newspapers online by zooming in on the text, and the full-text search functionality that enables users to search within the text of the newspaper issue.

#### Newspaper Browse Pages

In order to facilitate that users have quick access to all of the titles available in our rich collection of Newspapers, we have created browse pages that allow users to see all available titles. This is described in more detail under the section for [Browse Pages \(1.4\)](#).

#### Newspaper IIIF Viewer

To provide the best possible experience across different screen sizes and to take advantage of our new item page we did significant development work on the Leaflet.js IIIF player. We have extended it to account for the following:

- Ability to expand it to fill the width of the item page;
- Improved handling of full-text content making better use of the screen area;
- Ensuring it works with our own Newspaper APIs;

### 2.2 Further development of UGC functionality

To collect and display quality migration content, we continued to further develop a User Generated Content (UGC) functionality for the platform. The main highlights were:

- Currently, galleries will only show one image for each record. The main image (EDM:isShownBy). This meant that for a record with five images, we could only show the first. We updated this so that now all of the individual images (EDM:hasView) can be used in the galleries, improving the galleries experience.
- We allow contributors to add as many individual locations and topics that associate with their story as they wish. This improves the findability of the UGC content, and improves results for overall search queries as better content is now easier surfaced.

- In the portal, it is now possible to filter by UGC content in the Migration collection through use of a facet.

## 2.3 oEmbed functionality for Europeana Collections item pages

We want to make it easy for people to share items available on Europeana Collections on external platforms such as in blog posts. At the same time, we want to educate people on how to correctly share items on the web with respect to the original creator and the contributing institution.

During the summer, we started to develop the oEmbed functionality that enables anyone to showcase the thumbnail image of an item on their website by embedding it into the body text. The embed functionality will display the thumbnail image of the item with the relevant attribution which includes the title, creator, time period, providing institution, copyright information and a link back to the item on Europeana Collections.



*Display of item page thumbnail with attribution on third party websites*



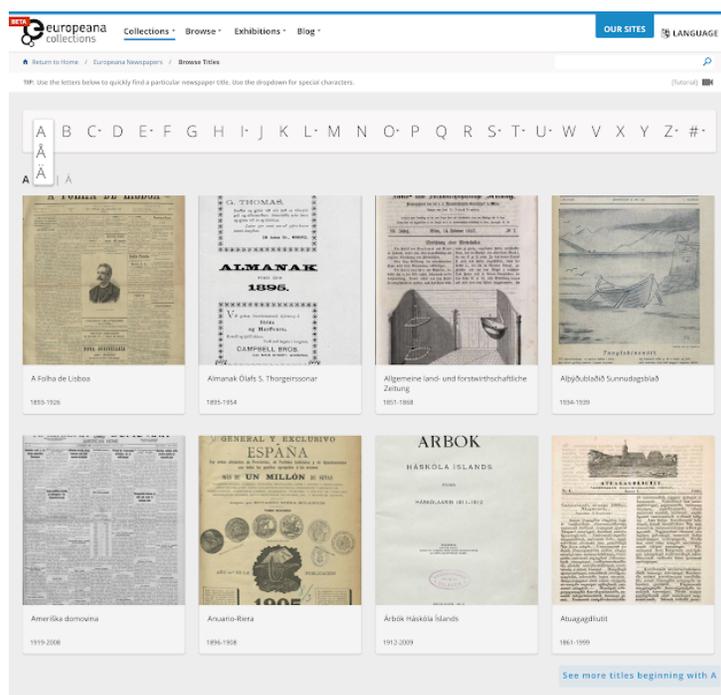
*Attribution is displayed when a user hovers with the mouse cursor over the "i" attribution icon*

This functionality is currently under development and will be released on Europeana Collections in February 2019. In further iterations, we will look into expanding this functionality to thematic collections and entity pages.

## 2.4 Browse Pages

### Needs of the Newspaper Collection

In order to fulfill the needs of the Newspaper Collection we developed the browse pages. Browse pages are ways of editorially grouping content for faster browsing by the end user. The Newspaper collection requires this, as Europeana currently does not have a way of exploring organised content outside of the search. Anticipating the future needs of other areas of the website, we abstracted the functionality so that it could also be used to develop other browse pages on other thematic collections.



*Example of browse page for newspapers*

Above is an example of a browse page for newspapers. On this page, we offer a user the ability to browse all the newspaper titles available in the newspaper collection by title. We opted to present the newspaper titles in alphabetical order a to z to give users a way of searching for Newspaper titles beginning with certain letters of the alphabet. We have chosen to showcase our most populous newspaper titles by each letter of the alphabet, with the ability to continue exploring newspapers by letter of the alphabet through a hyperlink below each section. The generic functionality is covered in more depth below.

## Curation of browse pages

The screenshot shows the 'Edit Record Sets Browse Page' interface for 'Newspapers A-Z'. The page title is 'Edit Record Sets Browse Page 'Newspapers A-Z''. The breadcrumb trail is 'Dashboard / Pages / Record Sets Browse Pages / Newspapers A-Z / Edit'. The interface includes a navigation bar with 'Show', 'Edit', 'Delete', 'History', and 'Unpublish' options. The main content area contains several form fields:

- Slug:** 'collections/newspapers/a-z'. Optional. Length up to 255.
- Title:** 'Newspapers A-Z'. Required.
- Link text:** 'See more titles beginning with %{set\_pref\_label}'. Optional. Customise the link text shown to search for more records in each set. Include "%{set\_pref\_label}" where the set preferred label should go, e.g. "More records like %{set\_pref\_label}...".
- Base query:** 'q%5B%5D=proxy\_dc\_type%3A"http%3A%2F%2Fdata.europeana.eu'. Optional. Portal search query for all record sets on this page, used for "more records" links, combined with set query, e.g. "[[TYPE]]=IMAGE".
- Set query:** 'q=proxy\_dc\_title:%{set\_query\_term}'. Optional. Portal search query for each record set on this page, used for "more records" links. Include "%{set\_query\_term}" where the set-specific query term should go, e.g. "q=proxy\_dc\_title:%{set\_query\_term}".

At the bottom, there is a 'Sets' section with a '+ Add a new Set' button.

*Example 1 of interface that allows to edit browse pages*

Curation of browse pages is controlled by an editor within Europeana. The editor is allowed to define how the page behaves, and how its links perform. The pages can be tailored to any scenario. For example, a page could be a list of animals or a list of artists by the type of art they produce (oil, watercolour, contemporary).

Sets ▼ + Add a new set

Optional.

A B C D E F G H I J K L M N O P Q R S T U  
V W Z

**Preferred label**

Required.

**Alternative label**

Optional.

**Portal URLs**

Required.

**Query term**

Optional.

*Example 2 of interface that allows to edit browse pages*

For each section of the browse pages, editors can define the individual items that go into each section.

## Value and future of browse pages

Browse pages will have many different use cases with the newspaper collection and across the Europeana Collections website. Uses of the browse page could include the following examples:

- A list of newspaper titles by language of publication or country.
- A list of artists, which divides the artist by what genre they painted in.
- A list of musical pieces, separated by the music genre they exist in.
- An exploration page for music, with sections containing musical genres, musical instruments and influential musicians.

The browse pages provide extra value to Europeana Collections because currently the only way users can learn about content on Europeana Collections is by executing a search query or by viewing our curatorial content. Browse pages provide a quick way for user to access specific subjects they may find interesting.

In addition to the improved user experience, they improve our SEO. These browse pages are unique on the web and with their rich linking these pages achieve higher ranking by search engines. We will continue to iterate on these browse pages to include strong titles and descriptions to make them as SEO friendly as possible.

## 3 User research

User research is an crucial phase of product development. More than ever users are demanding and less patient as the world wide web offers many different options to choose from. Empathizing with user's needs, motivations and behaviors and designing an interface which intuitively caters to the users is crucial for the survival of any (online) business.

Users are expecting a one of a kind experience that is easy to use and that cures their physical and emotional pain. To understand what our users need and want we need to ask them for their needs and expectations. Below are the user research activities, we undertook from April to July 2018.

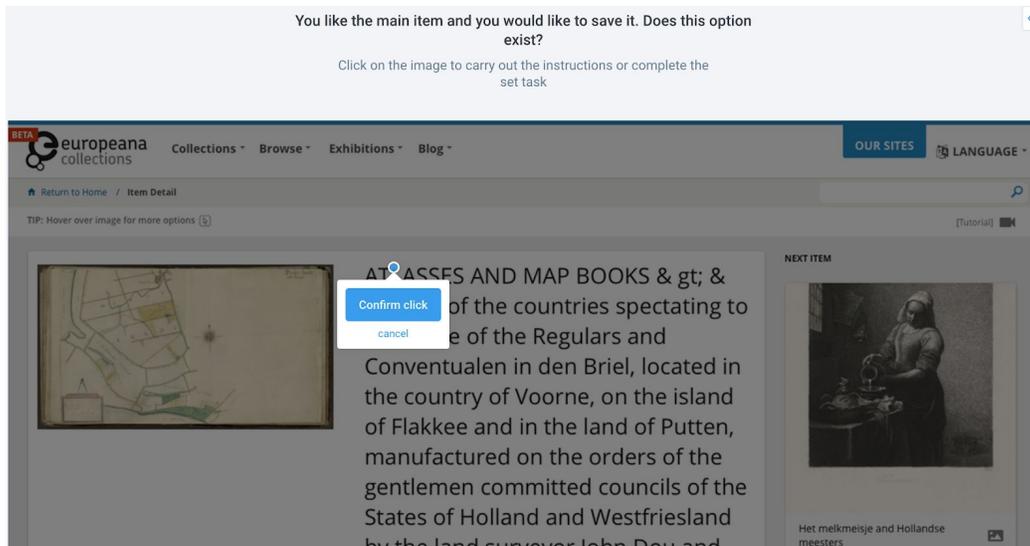
### 3.1 Item page testing

In December 2018, we will launch the new item page on Europeana Collections. To understand whether this new item page design is clear and guides the user to perform certain actions we will test it in the design phase.

The purpose of this research is to understand if the positioning of the call to action elements on this page is most optimal for our users to see, understand and use. The main elements that we are testing are:

- Download button
- Name of creator
- Date of creation
- Name of the providing institution
- Copyright status

The type of test that we will perform is a "One-click test." This test examines what a user would click on first on the interface in order to complete their intended task. It is most suited for this research because studies show that users who click down the right path on the first click will complete their task successfully 87% of the time. This is a good indicator to evaluate if the new design positions of the call to action elements are placed where a user would expect them and that their intent is clear.



*Screenshot of item page test*

This test will be shared with our end-users via Facebook, with our data providing partners, and with teachers via the appropriate channels. The design of the item page will be updated based on the results from this test before it goes into implementation.

## 3.2 Validating the Unique Selling Point of Europeana Collections

In preparation for the redesign of Europeana's digital presence (Europeana Pro and Europeana Collections) in the first half a year of Europeana DSI-4 we wanted to validate the Unique Selling Point (USP) of Europeana Collections. What sets our website apart from its competitors? What do we offer that others don't?

The purpose of this research is to pinpoint the unique value proposition of Europeana Collections and make it explicit in our design and communication. We want users to understand why we exist and how Europeana Collections can serve them.

To validate the Europeana Collections USP we surveyed the employees of the Europeana Foundation office. The results are:

- 55% of the employees find that the USP of Europeana Collections is one entry point to Europe's cultural heritage collections and,
- 35% find that it is the diversity of content it offers.

✓ 3 **As an employee of Europeana Foundation, what do you value about Europeana Collections?**

20 out of 20 people answered this question



☰ 4 **What problem do you think Europeana Collections is solving for users?**

20 out of 20 people answered this question

One entry point to Europe's CHI collections, clear rights labels --> trustworthy, big collections of high quality materials in high resolution to explore (would be nice if in future we have more :-))

a month ago

Users don't Have to go to to all separate Institutions to find the data they need.

a month ago

Multi-institution/country discovery of cultural heritage objects.

a month ago

Bringing cultural heritage together on one platform and making links between different content and institutions.

*Screenshots from the survey*

## 4 Search improvements and evaluation

### 4.1 New re-ranking strategy

In the last week of July 2018, we rolled out a new version of the ranking logic for the search result pages on Europeana Collections. This new logic heavily prioritises objects with available media over objects without media - the presence of digital content for an object is now the first criterion for ranking results. The order of search results is now decided by (in this order):

1. Presence of digital content
2. Relevance of the object for the query, as currently computed by our search engine (Solr) based on how well the metadata for the object matches the query (see earlier Europeana reports on our efforts to improve that relevancy calculation)
3. Date of update: objects most recently added to Europeana come first
4. Completeness of metadata for the object: objects with most complete metadata come first

### 4.2 Measuring performance for Europeana search

In this period, we did not run another iteration of the performance measurement reported on in a previous usage pattern report (M8)<sup>2</sup>. Our search engineer left the Europeana Foundation and over the past three months, we were recruiting a replacement for the previous Search Engineer role. The new Search Engineer will start at the beginning of October 2018.

Furthermore, as a result of the new ranking strategy described above, a lot of search result pages have drastically changed, and it makes much less sense to evaluate the performance of our general search while the new ranking is still very fresh and may be reassessed in the coming weeks in the light of first feedback. We will compute the metrics in this line of evaluation in the first period of Europeana DSI-4.

### 4.3 Evaluation of the entity-based autocompletion

In this period, there has been no update to the functionality of the entity-based autocompletion and to the data behind it (i.e. the entities in the Entity Collections). The findings reported in the previous report (M8) therefore still apply. This concerns both the heuristic evaluation of auto-complete functionalities and the system-oriented evaluation of

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<sup>2</sup> Previous reports can be viewed on the Europeana DSI-3 project page in the section project documentation. View at <https://pro.europeana.eu/project/europeana-dsi-3>

performance of accuracy, as well as the report on the coverage of the Entity Collection knowledge graph.

## 4.4 Assessing the correlation between users' search behaviours and their satisfaction with Europeana Collections

Europeana users carry out search and exploratory tasks in the Europeana portal on a daily basis. Their interactions (search behaviour) during their visits are recorded in the site, such as the duration of their visits, the queries they submitted, the records they viewed, etc. However, how these behaviour correlate with users satisfaction is not yet understood. For example, do users submit more queries because i) they are engaged with the system (high satisfaction), or ii) because they could not find any relevant results with their previous queries (low satisfaction)? This study aims to analyse whether aspects of users' behaviour correlate with users' satisfaction in the system.

In this study, we utilised the data gathered in the task-based evaluation in Europeana DSI-2, in which 30 users carried out three previously-defined tasks using Europeana: a fact-finding task, a specific-subject task, and an exploratory task. This dataset was chosen since it contains both the user interactions when carrying out the task (referred to as *implicit data*) and the user' feedback (referred to as *explicit data*). A list of 20 metrics were extracted from these implicit data, shown in Table 1. Explicit data includes users' perceived success of Europeana, perceived usefulness of the information found, and the perceived ease of the task. This allows the correlation between these implicit and explicit data to be studied further. In this study, we focused on the correlation between these implicit metrics and the users' perceived success of Europeana.

**Table 1: List of implicit metrics**

Type	Id	Data
General metrics	TimeSpent	Time spent in each task
	AllActivity	The number of activities
	SearchCount	The number of search activities (including query reformulations, collection and filter addition and removal)
	PaginationCount	The number of paginations (i.e., users viewing more than 1 result pages)
	ClickCount	The number of clicks

Specific-activity metrics	UniqueQueries	The number of unique queries
	SearchFilterAddCount	Additions of search filters
	SearchFilterRemoveCount	Removal of search filters
	CollectionFilterAddCount	Additions of collection filters
	CollectionFilterRemoveCount	Removal of collection filters
	AverageResultsFound	Average number of results found
	AverageRank	Average rank of clicked results
Consecutive-activity metrics	Search.SearchCount	The number of times that two search activities that were carried out consecutively
	Search.PaginationCount	The number of search activity that is followed by pagination activity
	Search.ClickCount	The number of search activity that is followed by a click
	Pagination.SearchCount	The number of pagination activity that is followed by a search activity
	Pagination.PaginationCount	The number of times that two pagination activities that were carried out consecutively
	Pagination.ClickCount	The number of pagination activity that is followed by a click
	Click.SearchCount	The number of click activity that is followed by a search
	Click.ClickCount	The number of times that two clicks were carried out consecutively

The findings in our study show that there are a number of implicit metrics that correlate with users' perceived success of Europeana. In general, when computed across all tasks, **nine metrics were found to weakly correlate with users' perceived success.** The strongest correlating metrics were the number of unique queries that users submitted during the task (`UniqueQueries`), and the time they spent in carrying out the tasks (`TimeSpent`). This suggests that users who submitted more queries during the tasks and

spent more time in carrying out the tasks tend to perceive Europeana to be less successful in supporting their tasks. The full list of the correlating metrics are shown in Table 2.

These metrics obtained stronger correlations when computed for the different tasks, suggesting that users behaved differently in carrying out different tasks. When users carried out **a fact-finding task (Task 1), four metrics were found to achieve a weak and moderate correlation to users' perceived success.** `TimeSpent` negatively correlated the strongest with users' perceived success, confirming the intuition that for fact-finding task, the more time users spend to complete the task, the less successful they judged the Europeana portal to be.

The number of result pages viewed consecutively (`Pagination.PaginationCount`), the number of interactions (`AllActivity`) and the number of result pages viewed in general (`PaginationCount`), were also shown to correlate negatively to users' perceived success. This further indicates that the more actions users had to carry out (especially going through multiple pages of results), the less successful they perceived Europeana to be.

Only **one metric was found to moderately correlate (negatively) with users' perceived success in carrying out a specific-subject task (Task 2):** the number of removal of collection filters (`CollFilterRemoveCount`). The removal of collection filters may indicate that users were not able to find the results they wanted. This finding confirmed this hypothesis further, as the results show that the more times users removed the collection filters in their tasks, the more likely they perceived Europeana success to be lower.

Finally, **users' perceived success of Europeana in supporting their exploratory task (Task 3) was found to achieve a moderate negative correlation with one metric: the number of unique queries they submitted.** Prior to this study, the number of unique queries (`UniqueQueries`) could be interpreted as a high satisfaction (e.g., high engagement) or a low satisfaction (e.g., poor search results) metric. The finding in this study suggests the latter, as the more queries users submitted in the exploratory task, the less likely they perceived Europeana to be successful in supporting them in the task.

**Table 2. Summary of metrics that correlate with Q\_success (per task)**

Task	Implicit Metric	Correlation
All Tasks	Time spent carrying out the tasks ( <code>TimeSpent</code> )	-0.31
	The number of interactions ( <code>AllActivity</code> )	-0.27
	The number of searches carried out ( <code>SearchCount</code> )	-0.25
	The number of result pages viewed ( <code>PaginationCount</code> )	-0.22

	The number of unique queries (UniqueQueries)	-0.32
	Removal of collection filters (CollFilterRemoveCount)	-0.26
	The number of multiple searches carried out consecutively (Search.SearchCount)	-0.22
	The number of multiple result pages viewed consecutively (Pagination.PaginationCount)	-0.25
	The number of activities of viewing result pages followed by a search (Pagination.SearchCount)	-0.25
Task 1: Fact-finding task	Time spent carrying out the tasks (TimeSpent)	-0.42
	The number of interactions (AllActivity)	-0.37
	The number of result pages viewed (PaginationCount)	-0.36
	The number of multiple result pages viewed consecutively (Pagination.PaginationCount)	-0.38
Task 2: Specific-subject task	Removal of collection filters (CollFilterRemoveCount)	-0.46
Task 3: Exploratory task	The number of unique queries (UniqueQueries)	-0.45

To summarise, in this study, some metrics have been shown to correlate with an aspect of users' satisfaction (i.e., users' perceived success of Europeana). Although based on a small dataset, these findings provided interesting first results of how the correlation of specific metrics and user satisfaction vary differently in different tasks. In the future this analysis should be applied to wider-scale, "real" logs of Europeana.eu.

More information about the study, and the detailed results and analysis for the other aspects of users' feedback are reported in the document 'Correlation between users' search behaviours and their satisfaction in Europeana'.<sup>3</sup>

<sup>3</sup> View at <https://docs.google.com/document/d/1lxiHy6ZzxAliqpE-oBVE2-EMDi1Ae55hl5FPBxaExVQ/edit#>