

**Prof. Sanda Martinčić-Ipšić, PhD**

**[smarti@uniri.hr](mailto:smarti@uniri.hr)**

**<http://langnet.uniri.hr/>**

**Faculty of Informatics and Digital  
Technologies**

**University of Rijeka**

**MESOC Toolkit and Document  
Repository**



**MESOC**

**measuring  
the social dimension  
of culture**



This project has received funding  
from the European Union's Horizon 2020  
research and innovation programme  
under grant agreement No 870935

EXPLORING AND ASSESSING THE SOCIETAL IMPACTS OF CULTURE,  
Paris, 9.3.2023

# MESOC matrix – the knowledge organization structure



- Core cross-references **10** cultural domains (EUROSTAT) against **3** pillars of the structural model (new European Agenda for Culture)
- cultural domains:
  - **Heritage, Archives, Libraries,**
  - **Book and Press, Visual Arts, Performing Arts,**
  - **Audiovisual and Multimedia, Architecture, Advertising and Art crafts.**
- Three pillars of the structural model:
- **Health and Wellbeing, Urban and Territorial Renovation and Social Cohesion.**
- In each of 30 cells of MESOC matrix (at the intersection between rows and columns), we analyze **possible impacts**
- **two types of documents:** pilot and scientific studies > repository



# MESOC Repository of documents

- Database of **scientific and policy** documents
- Interface for **querrying** data by various categories
  - by **cells** of the matrix
  - by **cultural domain**
  - by **cross-over theme**
  - by **year** and **cultural domain**
  - by **year** and **cross-over theme**
  - filtering by categories: all, scientific document, policy (pilot, gray) literature, undefined
- Database: available on the official project website
- <https://www.mesoc-project.eu/resources/online-repository>



# MESOC Repository of documents statistics

No.	Cultural sector	Health and Wellbeing	Urban and Territorial Renovation	People's Engagement and Participation	GENERAL	Document included in two or more cells	TOTAL
1	Heritage	24	20	17	1	92	154
2	Archives	0	0	7	1	26	34
3	Libraries	5	8	12	0	35	60
4	Book and Press	21	0	15	2	44	82
5	Visual Arts	32	8	5	2	99	146
6	Performing Arts	87	3	50	1	94	235
7	Audiovisual and Multimedia	24	6	7	0	66	103
8	Architecture	12	7	24	1	35	79
9	Advertising	8	4	2	0	7	21
10	Art crafts	17	2	4	0	32	55
11.	General cultural dimension:	25	44	25	27	50	171
	<b>TOTAL</b>	<b>255</b>	<b>102</b>	<b>168</b>	35	580	

# MESOC Repository of documents

mesoc.uniri.hr/document/search?page=58

MESOC Home Documents About application Contact Logout

Documents Statistical analysis Template

Language Database Document Type Technique Author Country City Institution Territorial context Data providers Cultural sector

Cross-over theme Keywords Thesurus Keywords trans. var. Transition variable Document category

← Search New document

DOCUMENT ID	TITLE	KEYWORDS	YEAR OF PUBLICATION	DOCUMENT TYPE				
640	The arts, health, and aging in America: 2005-2015	Humanities; Public policy; Quality of life	2015	Journal_article	<a href="#">Detail</a>	<a href="#">Advance</a>	<a href="#">Edit</a>	<a href="#">Delete</a>
641	Participatory arts for older adults: A review of benefits and challenges	Arts; Cognition; Health benefits; Quality of life	2014	Journal_article	<a href="#">Detail</a>	<a href="#">Advance</a>	<a href="#">Edit</a>	<a href="#">Delete</a>
642	Feasibility study of the effects of art as a creative engagement intervention during stroke rehabilitation on improvement of psychosocial outcomes: Study protocol for a single blind randomized controlled trial: The ACES study	Art; Health status; Mood; Self-esteem; Stroke	2014	Journal_article	<a href="#">Detail</a>	<a href="#">Advance</a>	<a href="#">Edit</a>	<a href="#">Delete</a>
643	Understanding the impact of visual arts interventions for people living with dementia: A realist review protocol	Art interventions; Art programmes; Creative activities; Dementia; Imagination; Realist review; Realist synthesis; Visual art	2014	Journal_article	<a href="#">Detail</a>	<a href="#">Advance</a>	<a href="#">Edit</a>	<a href="#">Delete</a>

Figure 2. List of documents stored in Online Repository of Document

# MESOC Repository of documents



Documents Statistical analysis Template

Language Database Document Type Technique Author Country City Institution Territorial context Data providers Cultural sector

Cross-over theme Keywords Thesaurus Keywords trans. var. Transition variable Document category

[← Back](#)

## DOCUMENT DATA

DOCUMENT ID	TITLE	KEYWORDS	YEAR OF PUB.	LINK TO DOCUMENT
641	Participatory arts for older adults: A review of benefits and challenges	Arts; Cognition; Health benefits; Quality of life	2014	<a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-84928326026&amp;doi=10.1093%2fgeront%2fgnt138&amp;partnerID=40&amp;md5=2a98c30a7a5a36ff9d573b981c85673e">https://www.scopus.com/inward/record.uri?eid=2-s2.0-84928326026&amp;doi=10.1093%2fgeront%2fgnt138&amp;partnerID=40&amp;md5=2a98c30a7a5a36ff9d573b981c85673e</a>

**SUMMARY**

This article reviews the scientific literature on the enhancement of healthy aging in older adults through active participation in the arts. Methodologies and conclusions are described for studies of dance, expressive writing, music (singing and instrumental), theatre arts, and visual arts including documentation of mental/physical improvements in memory, creativity, problem solving, everyday competence, reaction time, balance/gait, and quality of life. In addition to these gains in measures of successful aging, the article also provides (in a Supplementary Appendix) some selected examples of arts engagement for remedial purposes. Finally, it offers suggestions for expanding inquiry into this underinvestigated corner of aging research. © 2013 The Author. Published by Oxford University Press on behalf of The Gerontological Society of America. All rights reserved.

BIBLIOGRAPHIC REFERENCE	NUMBER OF PAGES	TIME PERIOD OF DATA
Noice T., Noice H., Kramer A.F.; Participatory arts for older adults: A review of benefits and challenges ;Gerontologist vol:54 issue: 5.0 page:741.0	0	

METHODOLOGY FINDINGS AND OUTCOMES

Figure 3. Review of document data



- **AI & NLP** methods implemented in web app

<https://www.mesoc-project.eu/resources/toolkit>

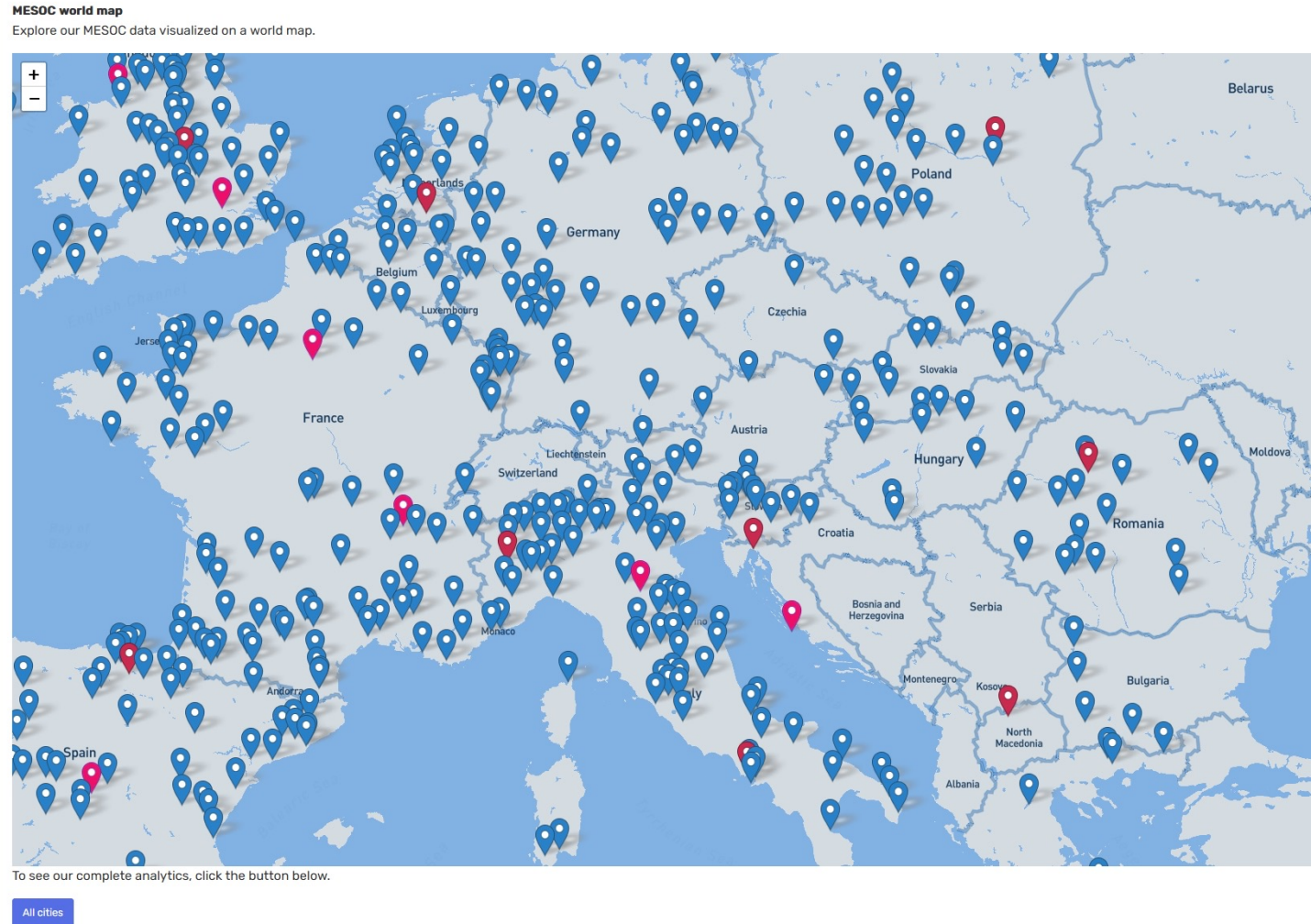
<https://toolkit.mesoc-project.eu/>

<https://app.mesoc-project.eu/browse>

- **Georeferenced visualization tool** for semantic search of MESOC documents
  - Two types of documents in the MESOC repository: pilot (**red**) and scientific (**blue**) studies.
- **Visualisation in MESOC matrix**
  - In 30 cells of MESOC matrix, we analyze possible impacts.



# MESOC Toolkit – georeferenced documents



Automatic  
georeferencing of  
studies:  
**pilot** and **scientific**  
and **both**

Figure 1: Figure presents the document browsing screen as the main entry point into georeferenced analysis.

14/03/2023





# MESOC Matrix



3 crossover themes

MESOC matrix  
Location: All cities

10 domains of arts & culture

	Health and Wellbeing	Urban and Territorial Renovation	Social Cohesion
Heritage	30%	31%	38%
Archives	19%	98%	55%
Libraries	42%	29%	31%
Book and Press	25%	27%	76%
Visual Arts	46%	75%	9%
Performing Arts	47%	12%	30%
Audiovisual and Multimedia	38%	62%	55%
Architecture	30%	58%	34%
Advertising	89%	0%	79%
Art crafts	24%	29%	37%

Figure 4. Classification of all documents from the repository into MESOC Matrix in a form of a heatmap.

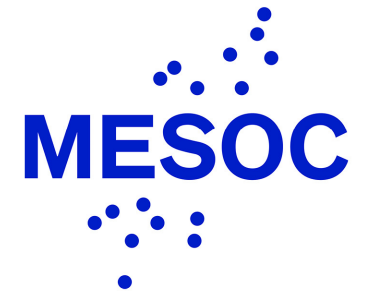
- **Analytical tool** - enables upload and automatic analysis of user's documents
  - Visualization in MESOC matrix - heatmap:
    - **automatic categorization into 30 cells of matrix: 30 categories of interest**
    - **automatic derivation of impacts**
- **Semantic search tool**
  - Retrieves the **top 10** documents **similar according to the content** of document
  - Retrieves the **top 10** documents **similar according to inferred impacts**
    - Having the similar impacts as the uploaded document
    - **Jaccard similarity** used as the similarity measure

$$J(K, K_{r,c}) = \frac{|K \cap K_{r,c}|}{|K \cup K_{r,c}|}$$

$K$  – set of aggregated keywords from all documents (same domain and cultural sector)  
 $K_{r,c}$  – set of keywords from document  $d$  describing cultural sector  $r$  and impact domain  $c$



# Analysis



Derived impacts  
for the documents  
in the cell

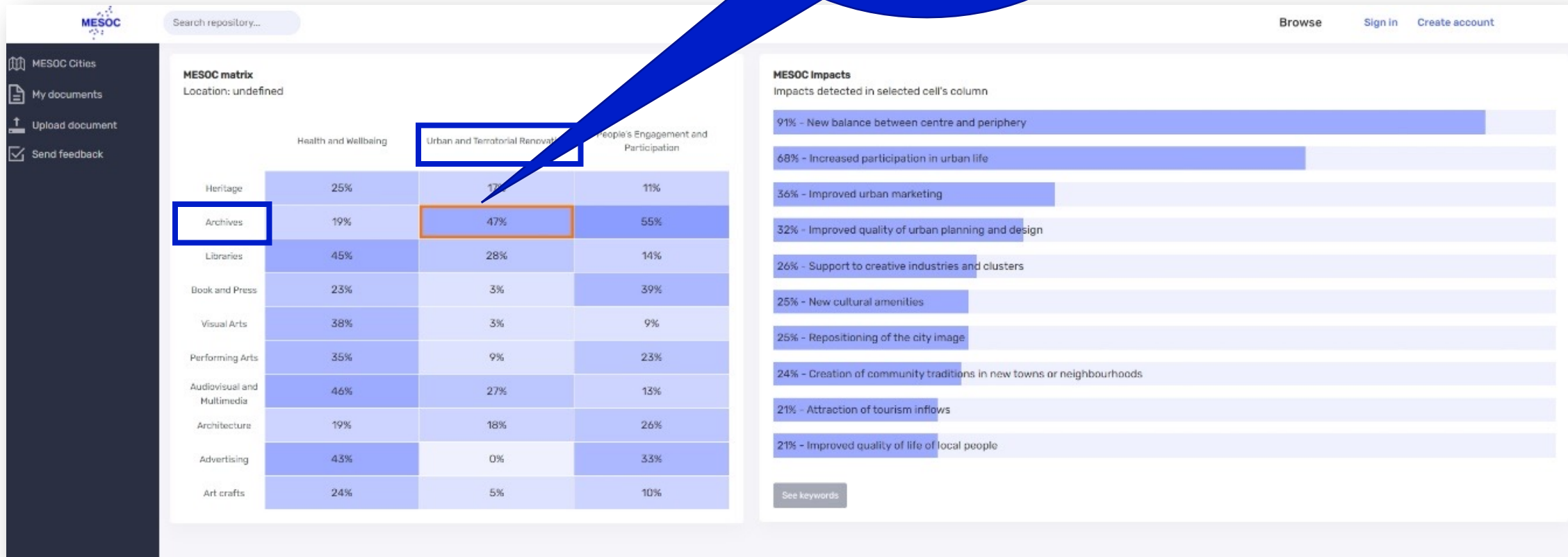
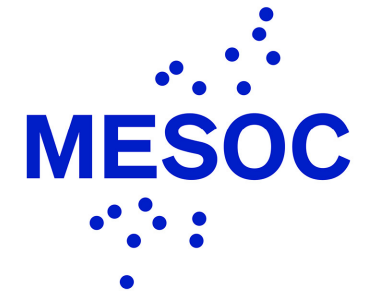


Figure 10. Figure represents impacts for Archives and renovation column selected in the MESOC Matrix.



# Retrieved document



documents.mesoc-project.eu/104.html

DOCUMENT DATA					
TITLE	KEYWORDS	YEAR OF PUB.	LINK		
Art and community development. The role the arts have in regenerating communities	community development, participatory arts, regeneration	2000	<a href="https://doi.org/10.1093/cdj/35.4.414">https://doi.org/10.1093/cdj/35.4.414</a>		
<b>SUMMARY</b>					
The arts are often considered to be at the periphery of the community development process and only a minor player in regenerating areas. Despite increasing globalization, communities are beginning to recognize their own identity, culture, traditional art forms and the value of working together at a local level. This paper is based on a recent study which shows that the arts have a role in regeneration and at a local level can be used as a tool within a wider community development programme.					
<b>BIBLIOGRAPHIC REFERENCE</b>				NUMBER OF PAGES	TIME PERIOD OF DATA
Key, A. (2000) Art and community development. The role the arts have in regenerating communities. Community Development Journal, 35 (4), 414-424.				11	
<b>METHODOLOGY</b>		<b>FINDINGS AND OUTCOMES</b>			
Analysis of 4 case studies		The main findings to emerge from the fieldwork are considered in terms of the importance of community consultation, involvement and ownership; the measurement of the links between 'hard' and 'soft' impacts; the use of the arts within regeneration policies; and methods used in the evaluation of arts projects.			
<b>OPEN ACCESS</b>	<b>DOCUMENT TYPE</b>	<b>LANGUAGE</b>	<b>RELEVANCE</b>	<b>DOI</b>	<b>CATEGORY</b>
NO	Journal Article	English	Theoretical	10.1093/cdj/35.4.414	Scientific paper
<b>TRANSITION VARIABLES</b>					
<b>CROSS OVER THEME</b>	<b>TRANSITION VARIABLE</b>	<b>KEYWORD TRANSITION VARIABLE</b>			
U&TR	Increased feeling of personal confidence	increased confidence			
U&TR	Improved quality of life of people with poor health	improve quality life			
		improving quality people			
		quality people life			
PE&P	Development of pride in local traditions and cultures	local heritage culture			
PE&P	Improved quality of life of local people	improve quality life			
		quality people			
		quality life local			
		improving quality people			
		quality people life			
PE&P	Make people feel better about where they live	feel better			
PE&P	Support to community projects	support community			
		project community			
		future support community			
		community development community			
		project local community			
		community base project			
		community development project			
PE&P	Build community organisational capacity	capacity community			
PE&P	Boost awareness of community identity	community identity			
PE&P	Help build new skills and work experience	develop skill			
PE&P	Help people develop their creativity	people develop			

Figure 7. When the retrieved similar document is selected it can be accessed in a full form captured in the MESOC repository.

14/03/2023



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 870935



Rijeka

MESOC matrix  
Location: Rijeka, Croatia

	Health and Wellbeing	Urban and Territorial Renovation	Social Cohesion
Heritage	100%	100%	100%
Archives	0%	0%	0%
Libraries	0%	0%	0%
Book and Press	0%	0%	0%
Visual Arts	0%	0%	0%
Performing Arts	100%	100%	100%
Audiovisual and Multimedia	0%	0%	0%
Architecture	100%	100%	100%
Advertising	0%	0%	0%
Art crafts	0%	0%	0%

MESOC Impacts

Impacts detected in selected cell's column


- 3% - Developed contact between generations
- 3% - Better understanding of communal meaning
- 2% - Educational development of children
- 2% - Help build new skills and work experience
- 1% - Increased participation in social activities
- 1% - Stimulated interest and confidence in culture
- 1% - Higher social capital


See keywords


Impacts for Social Cohesion

Geo-referenced documents

Document list by geographic reference.

  
 Rijeka - Candidate City for European Capital of Culture

  
 EPK- prospect 2 edition

  
 Stategy-realization- City Rijeka 2020

All documents for Rijeka

Similar documents

Document similarity by selected cell

  
 Understanding orchestrated participatory cultural initiatives: Mapping the dynamics of governance and participation  
**13%**

  
 Railway feat. culture - Rumia library effect as an example of the influence of culture-led regeneration in a medium-sized city in Poland  
**12%**


  
 Creating an Impact: Liverpool's Experience as European Capital of Culture  
**12%**


  
 Event and sustainable culture-led regeneration: Lessons from the 2008 European Capital of Culture, Liverpool  
**11%**

  
 The impacts of culture-led flagship projects on local communities in the context of post-socialist tallinn  
**11%**

Similar documents

Document similarity by selected impact

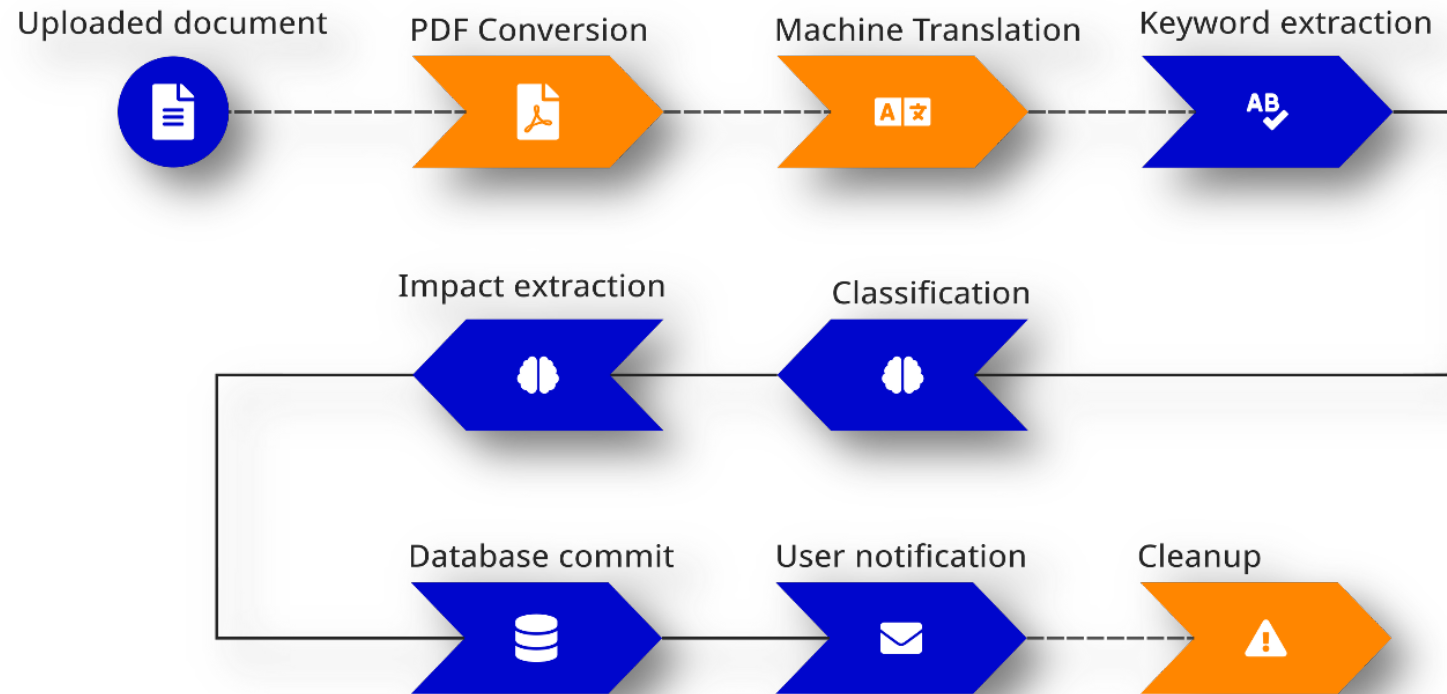
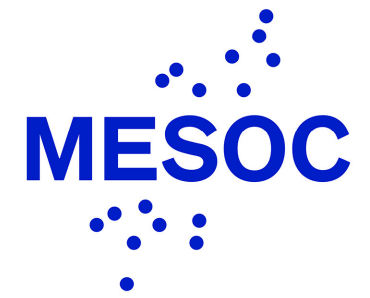
  
 culture-led urban regeneration strategies  
**33%**

  
 Use or ornament? The social impact of  
**16%**

Documents with simmlar impacts

Simmilar Documents

# NLP Pipeline



P. K. Bogović, D. Aljević, B. Kovačić, S. Martinčić-Ipšić. **The NLP Powered BI Toolkit: The Case of MESOC.** IEEE MIPRO 2022, pp. 1191-1196, 2022.

Font Awesome Icons | Licensed under CC BY 4.0 License  
<https://fontawesome.com/license/free>

Figure 3. Figure presents the workflow of NLP pipeline implemented into toolkit.



# Multi-label Document Classification



- Two **Random Forest** (RF) classifiers with the output probabilities
  - First **RF** classifies the document into **3 cultural sectors**
  - Second **RF** classifies document into **10 domains**
  - Final: multiplication of the obtained class probability vectors to the final class probabilities.
- Both RF models are evaluated using 10-fold cross-validation.
  - Synthetic Minority Oversampling Technique-**SMOTE** for unbalanced classes
- The obtained classification probabilities are used for the **visualisation of the heat map** in Toolkit





# The classification results

calculated as macro F1 scores averaged over 10 folds of cross validation

Societal impact domain	F1 score
Health and Well-being	0.96
Urban and Territorial Renovation	0.93
People's Engagement and Participation	0.95

TABLE II

CLASSIFICATION RESULTS IN TERMS OF MACRO AVERAGED F1 SCORES FOR 3 SOCIETAL IMPACT DOMAINS.

Cultural sector	F1 score
Heritage	0.97
Archives	0.97
Libraries	0.93
Books and Press	0.93
Visual Arts	0.95
Performing Arts	0.93
Audiovisual and Multimedia	0.94
Architecture	0.95
Advertising	0.93
Art crafts	0.97

TABLE I

CLASSIFICATION RESULTS IN TERMS OF MACRO AVERAGED F1 SCORES FOR 10 CULTURAL SECTORS.

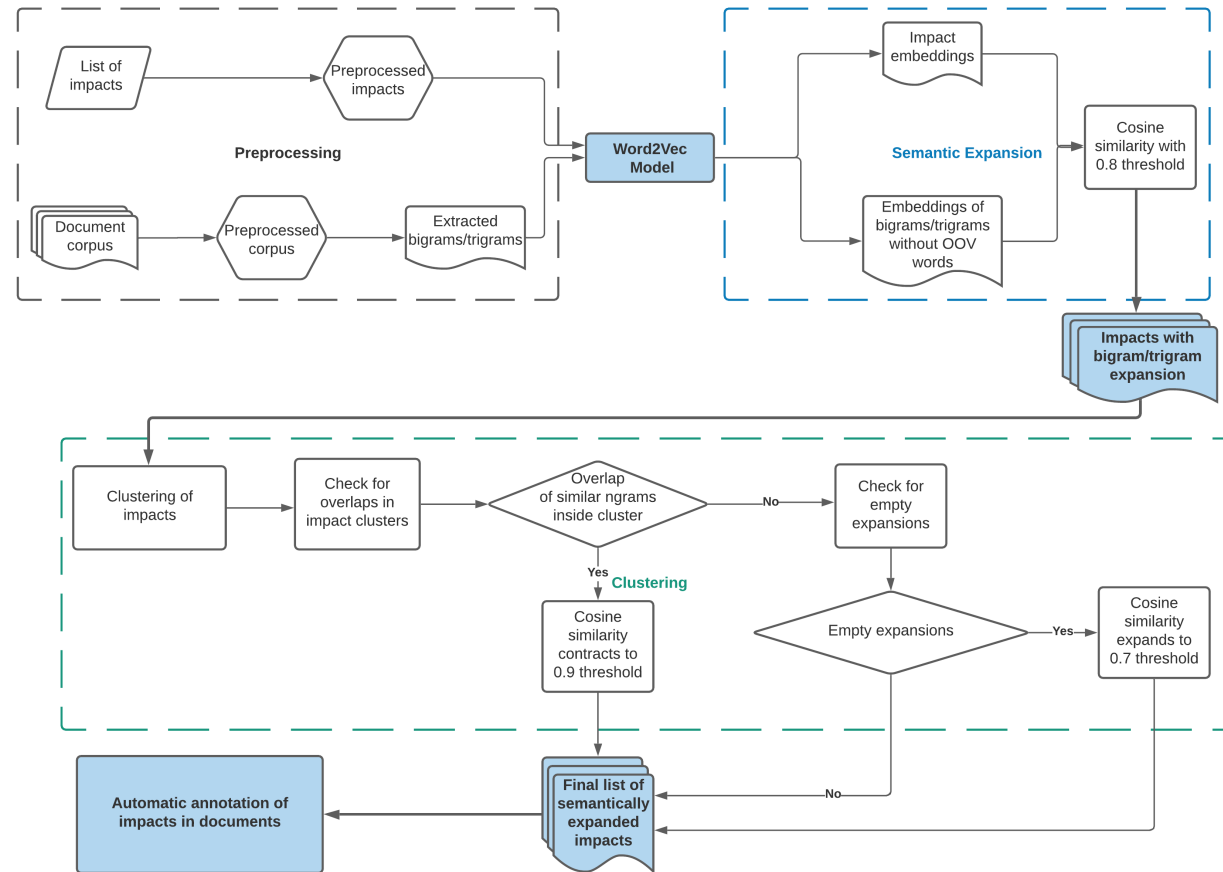
# Automatic inference of MESOC impacts



- Automatic inference of **MESOC impacts**
- Impacts are **not annotated** in the repository –**unsupervised** method proposed
  - Reversed annotation is performed automatically - based on semantic similarity of derived bigrams and trigrams from collected documents
- Used projection into the **semantic space**
  - Concept similarity is calculated as **cosine similarity** of **Word2Vec embeddings** with a threshold exceeding the set value (currently similarity threshold  $> 0.8 - 0.7$  and  $0.9$  coorection)
- Each **impact is expanded** with semantic concepts  $>$  **linked** to the original documents in the repository



# Impact inference



P. K. Bogović; F. Molinari, B. Kovačić; S. Martinčić-Ipšić, **Generation and Semantic Expansion of Impacts in Arts and Culture**. Advances in Information and Communication, Proc. Future of Information and Communication Conference (FICC22), Springer, LNNS, Vol 438, 76-94, 2022.

Figure 9. Figure overviews the process for semantic expansion of impacts and their annotation in three steps: pre-processing, semantic expansion and clustering, which we elaborate in the next subsections.



# Keywords for detected impact

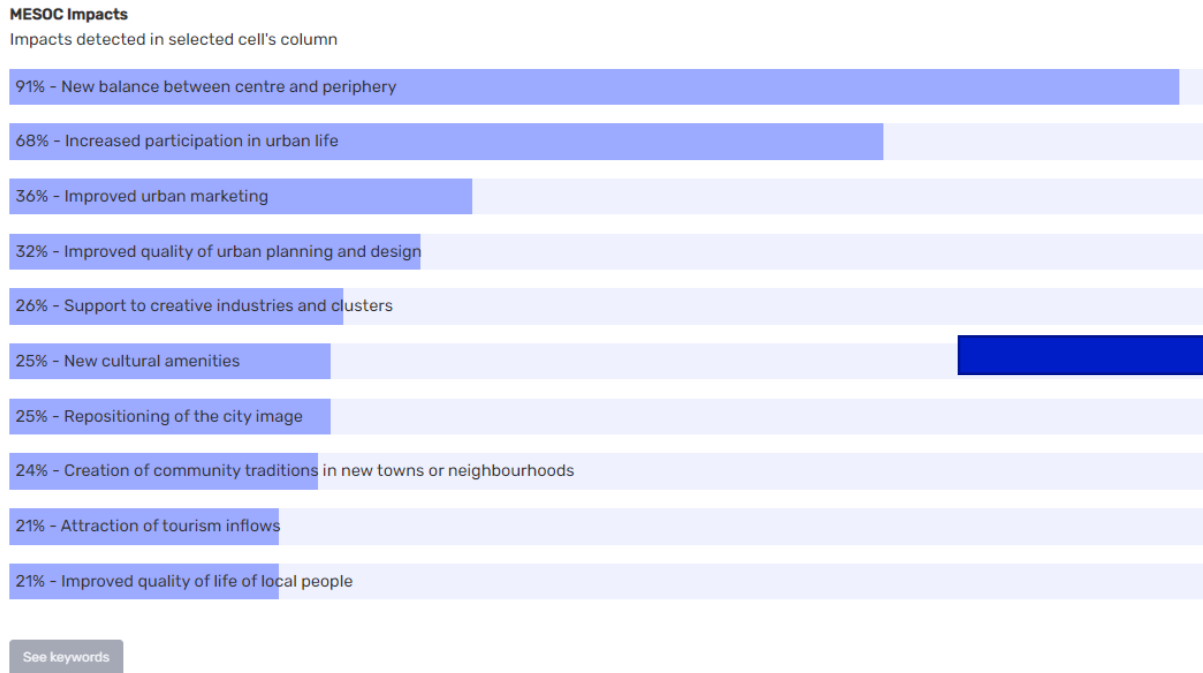
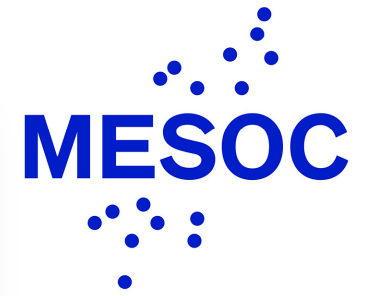


Figure 11. Figure lists keywords that are associated to the selected impact of **New Cultural Amenities**.

**Impact keywords**

close cultural amenity, cultural amenity, amenity diverse cultural, cultural amenity recognition, value cultural amenity, force cultural amenity, cultural amenity community, downtown amenity cultural, study cultural amenity, cultural amenity seven, cultural amenity catchment, cultural amenity contingent, historical amenity cultural, amenity supporting cultural, access cultural amenity, cultural amenity also, cultural natural amenity, cultural amenity spatial, cultural amenity employer, associated cultural amenity, cultural amenity draw, cultural amenity reveals, cultural amenity make, museum cultural amenity, cultural amenity may, amenity primarily cultural, development cultural amenity, amenity cultural district, cultural amenity approach, art cultural amenity, propinquity cultural amenity, cultural amenity usually, cultural amenity regard, cultural amenity agglomeration, natural cultural amenity, cultural amenity planning, cultural amenity neighborhood, cultural amenity amenity, cultural amenity easily, around cultural amenity, cultural amenity investment, amenity new, attended cultural amenity, availability cultural amenity, ascribed cultural amenity, scale cultural amenity, amenity cultural, cultural entertainment amenity, cultural amenity transport, offering cultural amenity, cultural amenity including, residence cultural amenity, cultural diversity amenity, range cultural amenity, relationship cultural amenity, cultural amenity hailed, thinking cultural amenity, cultural amenity user, offer cultural amenity, accessible cultural amenity, amenity cultural infrastructure, cultural amenity diverse, cultural amenity museum, social amenity, pay cultural amenity,

[Close](#)



# 2 scenarios: Browse & Analyze



## Browse results from all over the Europe

Additionally, MESOC Toolkit enables the semantic search of the pilot and scientific studies. First, it recommends similar documents nested into the same cell of the MESOC matrix. Second, it analyzes documents according to the semantics of transitional variables and recommends the set of relevant variables for the current analysis. Third, the semantic search can explain why a specific variable is inferred for the analyzed document, according to the MESOC knowledge representation model.

Browse



## Submit your own files for analysis

In the MESOC Toolkit user can upload his documents in .txt or .pdf format. The documents written in the English language are analyzed in the original form, while other languages will be translated into English by statistical machine translation service. For each document, user specifies the location for georeferencing of his document.

Create account



selection of browsing or uploading documents /analyze user content Toolkit

use



# Uploading documents

The screenshot shows the MESOC document upload interface. At the top left, there is a search bar and a navigation menu. The main content area is titled "Upload document" and includes a subtitle "Submit new document for MESOC analysis." Below this, there are three input fields: "Title" (containing "SCIENTIFIC PILOT study /Grey Literature"), "Language" (with a dropdown menu), and "Location" (with a dropdown menu). A "Type" dropdown menu is also present. Below these fields is a large text area for the "Abstract" (containing "Short description for import into repository"). At the bottom, there is a "Submit" button and a dashed box containing the text "Drag and drop your document or click to open file explorer." Annotations in blue text are overlaid on the form: "Language / faster SMT Google API" points to the Language dropdown, "Location- for georeferencing on the map" points to the Location dropdown, and "Short description for import into repository" points to the Abstract text area.

Search repository...

Upload document  
Submit new document for MESOC analysis.

Title  
Title of your document: **TITLE**

Type  
Select...

Language / faster SMT Google API

Language  
Select...

Location  
Select... Location- for georeferencing on the map

Abstract  
Document abstract

Short description for import into repository

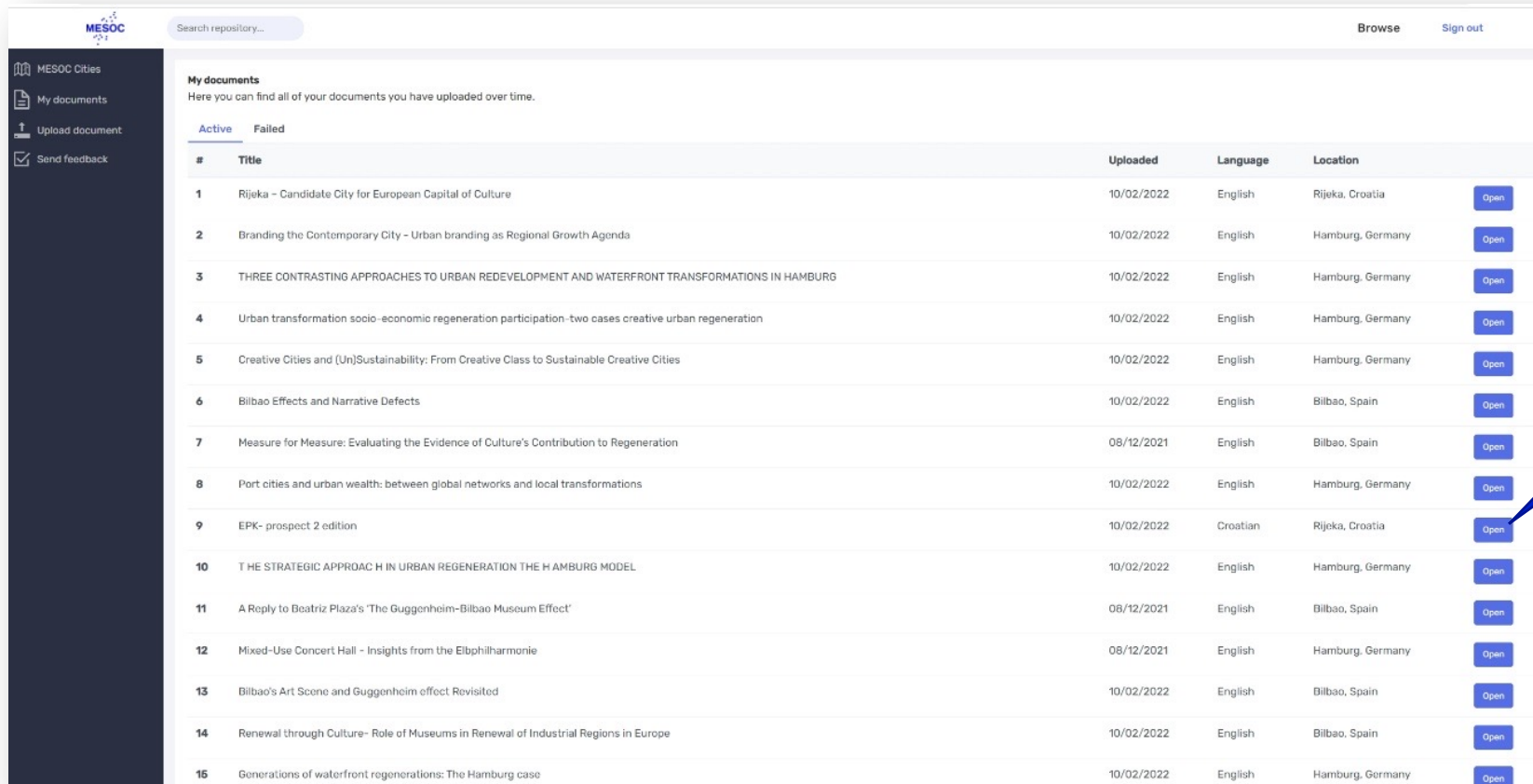
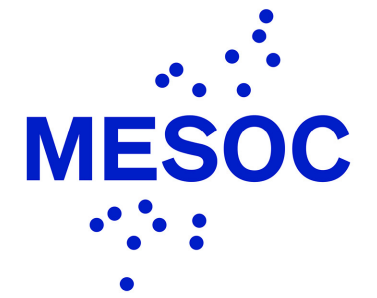
Drag and drop your document or click to open file explorer.

Submit

Figure 13. In uploading mode of usage the document upload screen is presented after the user is registered with e-mail.



# List of uploaded documents



The screenshot shows the 'My documents' page in the MESOC interface. The page has a dark blue sidebar on the left with navigation options: 'MESOC Cities', 'My documents', 'Upload document', and 'Send feedback'. The main content area is white and features a search bar at the top. Below the search bar, there is a section titled 'My documents' with a sub-header 'Here you can find all of your documents you have uploaded over time.' There are two tabs, 'Active' and 'Failed', with 'Active' selected. A table lists 16 documents with columns for '#', 'Title', 'Uploaded', 'Language', and 'Location'. Each row also has an 'Open' button on the right side. A blue speech bubble points to the 'Open' button for the 9th document.

#	Title	Uploaded	Language	Location	Open
1	Rijeka - Candidate City for European Capital of Culture	10/02/2022	English	Rijeka, Croatia	Open
2	Branding the Contemporary City - Urban branding as Regional Growth Agenda	10/02/2022	English	Hamburg, Germany	Open
3	THREE CONTRASTING APPROACHES TO URBAN REDEVELOPMENT AND WATERFRONT TRANSFORMATIONS IN HAMBURG	10/02/2022	English	Hamburg, Germany	Open
4	Urban transformation socio-economic regeneration participation- two cases creative urban regeneration	10/02/2022	English	Hamburg, Germany	Open
5	Creative Cities and (Un)Sustainability: From Creative Class to Sustainable Creative Cities	10/02/2022	English	Hamburg, Germany	Open
6	Bilbao Effects and Narrative Defects	10/02/2022	English	Bilbao, Spain	Open
7	Measure for Measure: Evaluating the Evidence of Culture's Contribution to Regeneration	08/12/2021	English	Bilbao, Spain	Open
8	Port cities and urban wealth: between global networks and local transformations	10/02/2022	English	Hamburg, Germany	Open
9	EPK- prospect 2 edition	10/02/2022	Croatian	Rijeka, Croatia	Open
10	T HE STRATEGIC APPROACH IN URBAN REGENERATION THE H AMBURG MODEL	10/02/2022	English	Hamburg, Germany	Open
11	A Reply to Beatriz Plaza's 'The Guggenheim-Bilbao Museum Effect'	08/12/2021	English	Bilbao, Spain	Open
12	Mixed-Use Concert Hall - Insights from the Elbphilharmonie	08/12/2021	English	Hamburg, Germany	Open
13	Bilbao's Art Scene and Guggenheim effect Revisited	10/02/2022	English	Bilbao, Spain	Open
14	Renewal through Culture- Role of Museums in Renewal of Industrial Regions in Europe	10/02/2022	English	Bilbao, Spain	Open
15	Generations of waterfront regenerations: The Hamburg case	10/02/2022	English	Hamburg, Germany	Open

Open for  
analysis /  
main toolkit  
screen

Figure 14. Figure presents the screen for analysis of user content - uploaded documents.





# Filtering uploaded documents

## Filter results

### Title

### Upload date

### Language

### Location




# Correction of automatic classification

## Classification

Select cells you consider to be correct.

	Health and Wellbeing	Urban and Terrotorial Renovation	Social Cohesion
Heritage	6%	27%	17%
Archives	0%	0%	0%
Libraries	0%	0%	0%
Book and Press	0%	0%	0%
Visual Arts	0%	0%	0%
Performing Arts	0%	0%	0%
Audiovisual and Multimedia	0%	0%	0%
Architecture	5%	25%	17%
Advertising	0%	0%	0%
Art crafts	0%	0%	0%

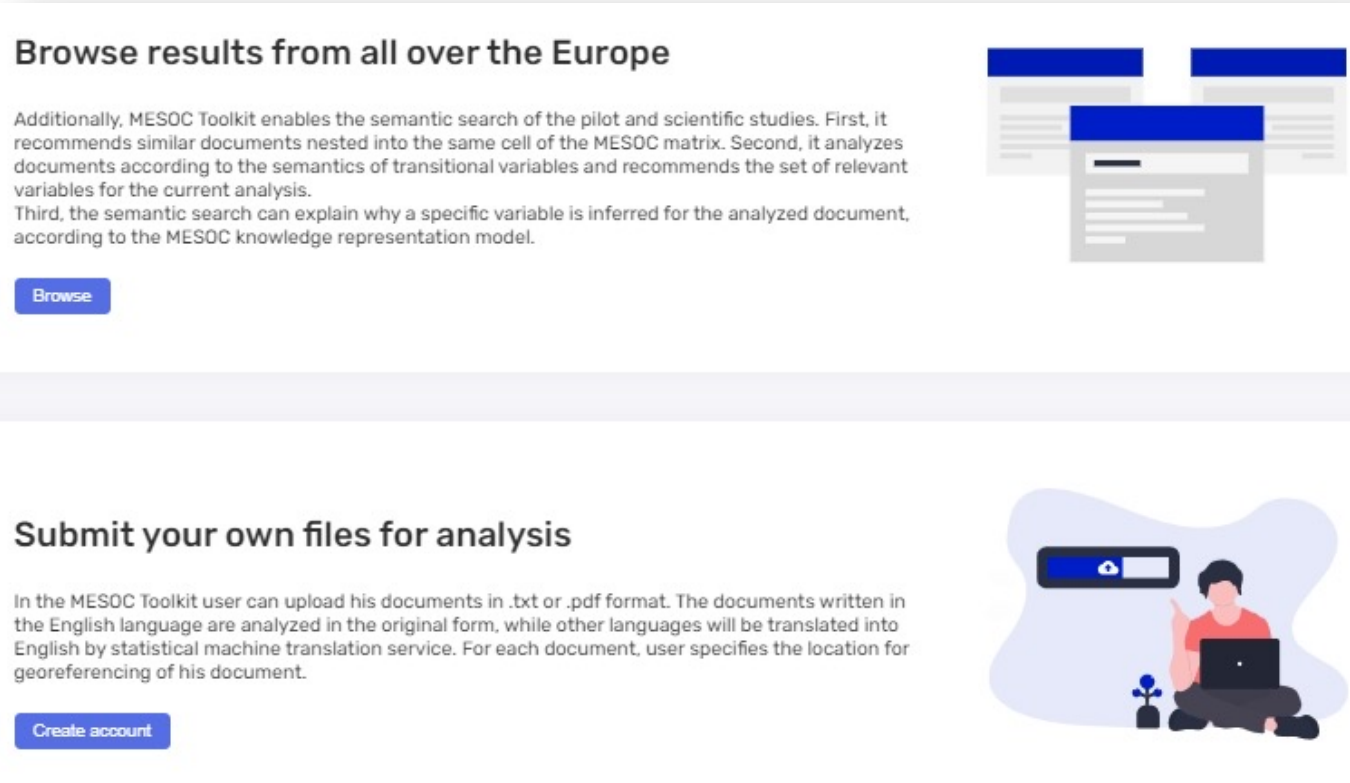
# User feedback – e-mail

A screenshot of the MESOC web application's user feedback form. The interface is clean and modern, with a dark blue sidebar on the left containing navigation options: "MESOC Files", "My documents", "Upload document", and "Send feedback" (which is highlighted with a checkmark). The main content area has a white background and a light blue header bar with the MESOC logo and a search bar. Below the header, the form is titled "Send feedback" and includes the instruction "Help us improve MESOC toolkit application." The form consists of two input fields: "Subject" and "Message body". A prominent blue "Submit" button is located at the bottom of the form. In the top right corner of the application, there are links for "Browse" and "Sign out".

Figure 15. Figure presents screen where user can send feedback or report problems with Toolkit.

# MESOC Toolkit

<https://www.mesoc-project.eu/resources/toolkit>



SEO: <https://toolkit.mesoc-project.eu/>

APP: <https://app.mesoc-project.eu/browse>

Figure 2. Figure shows the possibilities for the selection of browsing or uploading modes of Toolkit use.



# Toolikt Authors

- **Sanda Martinčić – Ipšić** (UoR); (design, NLP)
- **Petar Kristijan Bogović** (UoR); (NLP, impact generation)
- **Dino Aljević** (UoR); (backend, REST API & NLP)
- **Francesco Molinari** (eCo); (impacts)
- **Erik Jermaniš** (UoR); (frontend)
- **Valentin Kuharić** (UoR); (frontend)
- **Anto Čabraja** (UoR & QED) (frontend)

# Repository Authors

- **Božidar Kovačić** (UoR);
- **Pablo Fernández Compañ** (UoB);

