Intermediate Progress Report
Deliverable D1.5
Version FINAL

Odeuropa
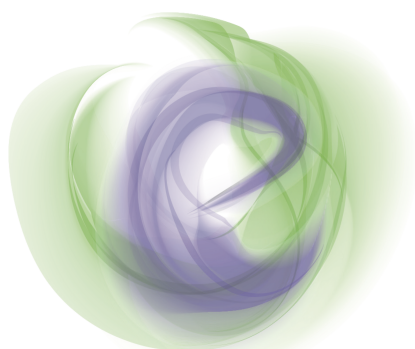
Grant Agreement No.	101004469
Project Acronym	ODEUROPA
Project full title	Negotiating Olfactory and Sensory Experiences in Cultural Heritage Practice and Research
Funding Scheme	H2020-SC6-TRANSFORMATIONS-2020
Project website	http://odeuropa.eu/
Project Coordinator	Prof. Dr. Inger Leemans KNAW Humanities Cluster Email: inger.leemans@huc.knaw.nl
Document Number	Deliverable D1.5
Status & version	FINAL
Contractual date of delivery	December 2022
Date of delivery	Thursday 2nd February, 2023
Type	Report
Security (distribution level)	Confidential
Number of pages	15
WP contributing to the deliberable	WP1
WP responsible	WP1
EC Project Officer	Hinano Spreafico
Authors: Marieke van Erp,[1] Inger Leemans[1]	
Internal reviewers: Raphael Troncy,[2] William Tullett[3]	
Affiliations (1) KNAW, (2) EURECOM, (3) ARU	
Keywords: Progress report	
Abstract: This progress report describes the activities and results of the second year of the project.	

Table of Revisions

Version	Date	Description and reason	By	Affected sections
0.1	November 2022	Init	Marieke van Erp	All
0.2	28 November 2022	Add WP4 achievements	Raphael Troncy	5
0.3	11 December 2022	Added details impact	Inger Leemans	8
0.4	12 December 2022	Added details impact	Sofia Ehrich	8
0.5	18 December	Internal review	Raphael Troncy, William Tullett	All
0.6	20 December	Comments internal review processed	Marieke van Erp	All
1.0	21 December	Final check and approval by principal investigator	Inger Leemans	-

Executive Summary

Summary table	
Challenges	In a multifaceted, distributed project such as Odeuropa, there are continuously many things happening that may sometimes be difficult to keep track of centrally.
Barriers	Balancing not overloading the entire consortium with detailed information relevant to a subset but keeping them informed and bringing in other colleagues when needed can be a barrier to sharing progress information
Practices	The management team has set up spreadsheets and reporting forms where each work package records their progress. Furthermore, the weekly Odeuropa hour and project and General Assembly meetings are used to exchange information
Guidelines	We have used best practices in project management to record progress during the year and updated our templates and recording sheets where we felt the process could be further optimised

Table 1: Summary table about challenges, barriers, practices, and guidelines learned/developed in the deliverable.

Contents

1 Introduction

The project progress is measured via key performance indicators. Table 2 shows the project's progress for Y2. In the remainder of this report progress, the highlights and progress of each work package are described. We remind that we have defined the following specific target audiences (TAs):

TA1. **Cultural Heritage Professionals**

      a: GLAM Digital Collection curators

      b: Other GLAM professionals

TA2. **Academia**

      a: Computer Science (Computer Vision, Computational Linguistics, Semantic Web)

      b: SSH (Cultural History, Art History)

      c: STEM (Heritage Science & Olfactory Museology)

      d: Other disciplines

TA3. **Industry** (including Perfume industry, Creative Industries, Scent marketing, Consultancy)

TA4. **Cultural Heritage Policy Makers** (Regional, National, EU, International)

TA5. **General Public** (including Intangible Heritage Communities)

	KPI for Impact	Base Target	Stretch Target		M18	M24	Target Audiences
KPI 01	#GLAMS integratiiong Odeuropa assets	2	6	This integration is planned for y3	0	1	Iconclass started integrating olfactory classes in its database in 2022.
				Total	0	1	
KPI 02	# Participants in olfactory events	500	5000	OE1 (Mediamatic)	40	40	TA1, TA3
				OE02 (Ulm)	183	800	43 test tours + 180 olfactory tour participants
				OE03 (Berlin)	160	160	TA1, TA2, TA3
				Smellinars 1 & 2	160	160	TA1, TA2, TA3
				Amsterdam University Library Event		20	TA1, TA2
				OE04 City Sniffers		600	TA1, TA2, TA5
				OE5 Hackathon Improve Your Olfactory Language		28	TA1, TA2, TA3

				Total	563	1810	See (D7.3) Impact Activities Report for details
KPI 03	# Users of demonstrators	500	1500	Demo version of the Odeuropa Smell Explorer EOKG	20	45	We have not yet started to track site visitors with google analytics. We therefore calculated evaluator users (e.g. hackathon participants).
				Smell Talk Tracker		20	idem
				City Sniffers App		260	
				Total	20	325	
KPI 04	# Consultancies & Trainings for GLAMs Targeted for Y3	80	120	Training museum curators & tour guides	5	25	Museum Ulm, Amsterdam Museum
				Training/ participation heritage professionals in smellscape analysis	15	37	Library professionals (Sorbonne, Sainte Geneviève, BNU Strasbourg, Wellcome collection, UvA library, NUK, John Rylands, Leiden University), museum professionals (Openlucht Museum, Stedelijk Museum, Doge's palace), heritage sites (Darzo mines).
				Consultancies	6	6	Mauritshuis, Van Abbemuseum, Amsterdam Museum, Amsterdam Library, BHIC
				Total	26	68	
KPI 05	# Presentations & Papers	25	50	Presentations	36	75	TA1, TA2, TA3
				Academic papers & other publications	9	29	TA1, TA2, TA3
				Total	45	104	
KPI 06	# Members Odeuropa / PastScent network	100	300	Odeuropa Network & Odeuropa newsletter members	140	354	All TAs
				PastScent members	58	64	TA1, TA2, TA3, TA4
				Total	198	418	

KPI 07	# Respondents to questionnaires	100	500	Olfactory event		#questionnaires	
				Odeuropa Workshop working with Smells in Glams (OE1)	30	30	TA1, TA2
				Odeuropa Museum Ulm olfactory tours (OE2)	43	120	TA1, TA5
				Odeuropa PastScent workshop (OE3)	0	20	TA1, TA2, TA3
				Odeuropa: City Sniffers tours (OE4)	0	40	TA1, TA2, TA5
				Odeuropa: Ljubljana Hackathon (OE5)	0	15	TA1, TA2, TA3
				Jorvik Viking Centre	0	125	TA5
				Bodleian Library tours, Oxford	0	48	TA5
				Kunstmuseum Den Haag	0	33	TA5
				Museo del Prado Madrid	70	70	TA5
				Louvre Museum Paris		6	TA5
				Rainham Hall London		27	TA5
				NeusWijzer		27	TA5
				Total	1993	2384	
KPI 08	# Visitors to Odeuropa Website	7k/yr	50k/yr	Odeuropa Website visitors	31k	40k	Between 1 Oct 2020 and 12 December 2022, the Odeuropa Website reached 38.149 visitors in 54.841 sessions. 100.944 page visits.
				Odeuropa videos	4.5k	16k	Views of Odeuropa Youtube Channel and Press releases & other Odeuropa Youtube videos
				Total	35.5k	56k	

KPI 09	# Consultations for commercial entities	10	40	Targeted for Y3	5	6	Perfume recommendation, R&DLab, Architects, AromaPrime, Floriade, FlevoCampus, IFF
				Total	5	6	

Table 2: Odeuropa key performance indicators, targets and achievements.

2 WP1: Project Management

While Y1 of the project was intense in terms of project management as workflows needed to be set up, evaluated, rejigged and become habitual, the activities in Y2 were more maintenance-oriented. One major change compared to Y1 was that the majority of the planned events could take place in an in-person manner, although the hybrid meeting option was kept to facilitate input from colleagues unable to travel. The following project meetings took place:

12 & 13 April Sophia Antipolis, France, hosted by EURECOM
27 & 28 September Trento, Italy, hosted by FBK
9 & 10 November Ljubljana, Slovenia, hosted by JSI (preceded by the WP3 organised 'Improve Your Olfactory Language' Hackathon on 7 & 8 November)

After deliverables D1.1 Project Website (M1), D1.2 Project Fact Sheet (M1), D1.3 Project Templates (M1) and D1.4 Data Management Plan (M6) in Y1, no new deliverables (besides the current one) were foreseen for WP1. The team is working towards a redesign of the project website to make the project's core results (The Odeuropa Smell Explorer (WP4), Encyclopaedia (WP5) and the Olfactory Storytelling Toolkit (WP7)) more central. The implementation of this is foreseen in the first quarter of 2023.

The project templates have undergone a slight update to take into account the suggestions from the project review, in particular the structure for deliverable executive summaries. Also in line with the suggestions coming out of the project review, the management team adapted a more tabular form of reporting as to the topics discussed. As in 2021, the project ran smoothly: all partners remained committed and respected the collaboration agreement. The inter-project communication framework we designed in year one (e.g. Slack, project email, Airtable, google drive, github, Odeuropa hour) is functioning well, supporting the challenging inter-dependencies and co-creation aspects of the trans-disciplinary project.

In personnel and finance, we had some minor shifts. WP Lead Cecilia Bembibre got a teaching position at UCL for 2022-2023. UCL has hired George Alexopoulos to support in the WP6 core tasks of Impact evaluation (D6.2) and smell digitisation and preservation (T6.3). Art historian Lizzie Marx was able to secure a position as a museum curator. The remainder of her tasks were taken over by Hang Tran (FAU). The General Assembly reached agreement to move some of the budget for the Encyclopaedia creation and development in WP5 from ARU to EURECOM. The project officer was informed and approved this decision.

Dissemination and Communication

In 2022, the consortium gave 39 presentations to scientific audiences, and put out 20 publications. The main target audiences for these outputs were academics (humanities, sciences), and cultural heritage scholars and professionals. We also published two papers with representatives from the fragrance industries.

Although the Odeuropa project never toppled its initial press attention boom around the launch of the project (October-November 2021), resulting in a global public interest for the project and its

Organisation of a Conference	0
Organisation of a Workshop	4
Press release	3
Non-scientific and non-peer-reviewed publication (popularised publication)	12
Exhibition	1
Flyer	1
Training	23
Social Media	2
Website	1
Communication Campaign (e.g. Radio, TV)	57
Participation to a Conference	16
Participation to a Workshop	10
Participation to an Event other than a Conference or a Workshop	16
Video/Film	18
Brokerage Event	0
Pitch Event	0
Trade Fair	0
Participation in activities organised jointly with other EU project(s)	1
Other	1

Table 3: Summary of the project's 2022 Dissemination and Communication activities

topics, global interest for the project remains very high in 2022. In this year we actively participated in 57 press engagements (interviews for printed press, TV, radio, online). Apart from this, numerous (online) press outlets wrote about Odeuropa independently (i.e. without contacting us, which means they, for example, republished or translated an article, or a video about the project). Up to now, we have registered 245 press appearances (88 Printed press (Newspaper & magazines), 80 Online, 63 Radio & Podcast, 12 TV interviews) and 300 independent press outlets covering Odeuropa. See Figure 1 for a schematic overview of the press attention for Odeuropa per country. In 2022, the Odeuropa website attracted 14k unique visitors. Figure 2 shows the number of unique website visitors over time.

Publications

We list below the most significant publications made in 2022.

- Marx, Lizzie., Sofia Collette Ehrich, William Tullett, Inger Leemans, Cecilia Bembibre, Odeuropa, IFF, and Museum Ulm. 'Making Whiffstory: A Contemporary Re-creation of an Early Modern Scent for Perfumed Gloves'. American Historical Review, 127, no. 2,, 2022, 881-893.

- Leemans, Inger., William Tullett, Cecilia Bembibre, Lizzie Marx. 'Whiffstory: Using Multidisciplinary Methods to Represent the Olfactory Past'. American Historical Review, 127, no. 2022, 849-879.

- Tullett, William., Inger Leemans, Hsuan Hsu, Stephanie Weismann, Cecilia Bembibre, Melanie A Kiechle, Duane Jethro, Anna Chen, Xuelei Huang, Jorge Otero-Pailos, Mark Bradley. 'Smell, History, and Heritage'. American Historical Review, 127, no. 1, 2022, 261-309.

- Lisena, Pasquale, Daniel Schwabe, Marieke van Erp, Raphaël Troncy, William Tullett, Inger Leemans, Lizzie Marx, and Sofia Colette Ehrich. 'Capturing the Semantics of Smell: The Odeuropa Data Model for Olfactory Heritage Information'. In 19th Extended Semantic Web Conference (ESWC), Hersonissos, Greece, May 29 – June 2, 2022. **Winner: Best Paper Award Resources Track**
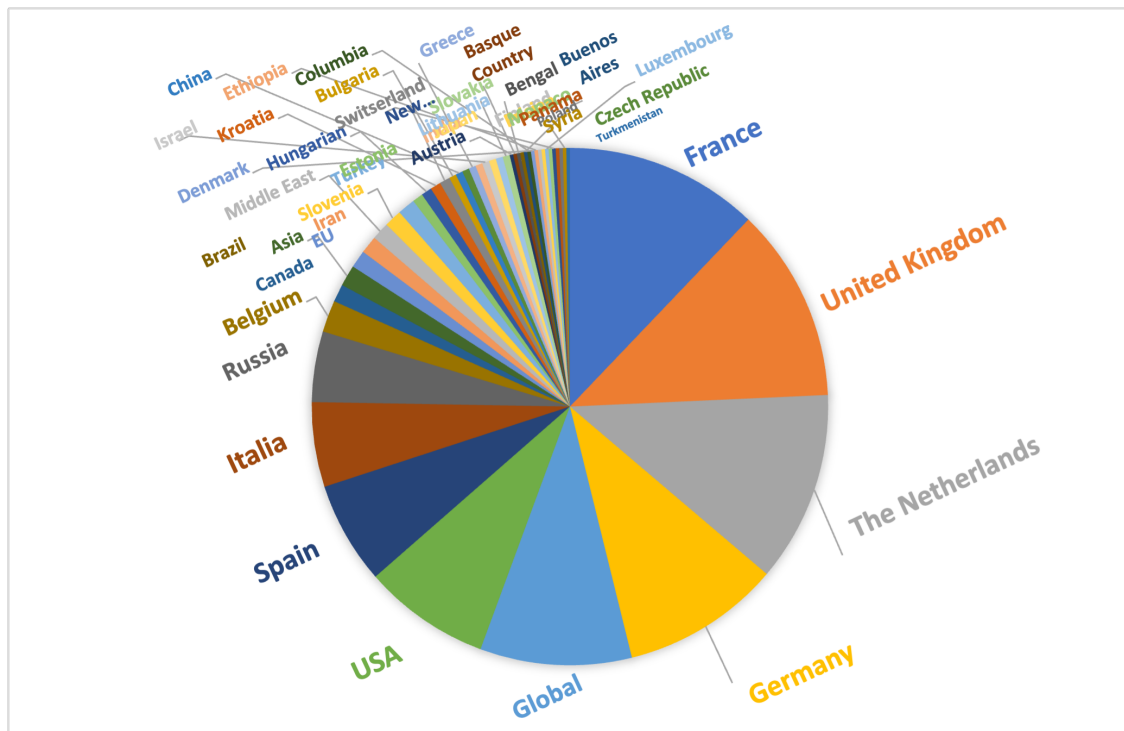
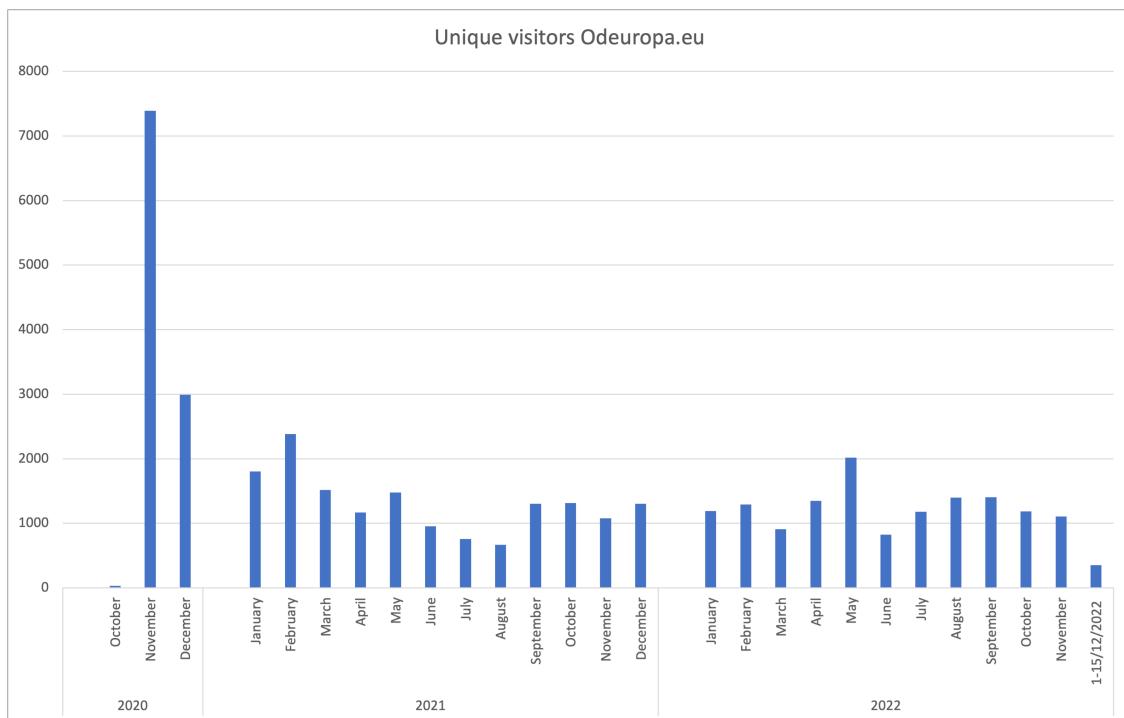Figure 1: Number of Odeuropa press appearances by country

Figure 2: Odeuropa unique website visitors statistics

- Menini, Stefano, Teresa Paccosi, Sara Tonelli, Marieke van Erp, Inger Leemans, Pasquale Lisena, Raphael Troncy, William Tullett, Ali Hürriyetoğlu, Ger Dijkstra, Femke Gordijn, Elias Jürgens, Josephine Koopman, Aron Ouwerkerk, Sanne Steen, Inna Novalija, Janez Brank, Dunja Mladenić and Anja Zidar. 'A Multilingual Benchmark to Capture Olfactory Situations over Time'. In LCHANGE Workshop, 2022.

- Menini, Stefano, Teresa Paccosi, Serra Sinem Tekiroğlu and Sara Tonelli. 'Building a Multilingual Taxonomy of Olfactory Terms with Timestamps'. In Language Resources and Evaluation Conference (LREC), 2022.

- Schmidt, Alexander, Prathmesh Madhu, Andreas Maier, Vincent Christlein, and Ronak Kosti. 'ARIN: Adaptive Resampling and Instance Normalization for Robust Blind Inpainting of Dunhuang Cave Paintings'. In 11th International Conference on Image Processing Theory, Tools and Applications (IPTA), IEEE, 2022.

- Madhu, Prathmesh, Anna Meyer, Mathias Zinnen, Lara Mührenberg, Dirk Suckow, Torsten Bendschus, Corinna Reinhardt et al. 'One-Shot Object Detection in Heterogeneous Artwork Datasets'. In 11th International Conference on Image Processing Theory, Tools and Applications (IPTA), IEEE, 2022.

3 WP2: Images

Work package 2 completed task T2.2 Acquisition and annotation of image data that was started in M3 with two releases of the Odeuropa annotated image data: D2.2 Annotated image data version 1 (M15) and D2.4 Annotated image data version 2 (M20). Version 1 of the dataset was used in the ODOR Computer Vision Challenge that was organised between March and May 2022.[1] The challenge is further described in D2.5 Computer Vision Challenge (M24).

In collaboration with WP3, WP2 co-organised a second challenge in the context of the MediaEval challenge called 'MUSTI – Multimodal Understanding of Smells in Texts and Images'[2] in which the research community is invited to match an image to a corresponding text description focused on references to smell. At the time of writing this deliverable, the results analysis is ongoing. Results will be presented at the MediaEval workshop that is held in conjunction with the MultiMedia Modelling Conference in January 2023.[3] Odeuropa team member Marieke van Erp is also invited to give one of the keynotes at the main conference.

WP2 furthermore delivered a first version of the object detection/image analysis AI model (D2.3, M18) which will be further developed in the coming year. Integration with the Smell Explorer (WP4) proved to be an interesting research challenge due to semantic web models' better support for textual data than for image data but has been implemented and tested during the Odeuropa hackathon and workshop in Ljubljana in November 2022.

4 WP3: Texts

Work package 3 finalised the text annotation started in M1, resulting in a 7-language dataset consisting of texts from 1600 – 1920 in which references to smells, associated objects, qualities and emotions are marked. This dataset is used to evaluate the information extraction tools.

In M18, Deliverable D3.3 'Odeuropa text processing system version 1' was delivered. The team is currently working on D3.4 'Odeuropa text processing system with historical corpus analysis', due in M28, and on the improvement of the information extraction component to cover the identification of additional olfactory frame elements and to make it robust to diachronic variation in language.

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[1] https://odor-challenge.odeuropa.eu/
[2] https://multimediaeval.github.io/editions/2022/tasks/musti/
[3] https://multimediaeval.github.io/editions/2022/

In WP3 large amounts of English texts were analysed using the text processing system version 1 (presented in Deliverable D3.3) to extract olfactory information. The output was used during the WP5 PastScent workshop, which took place in August 2022.

Based on the feedback from PastScent and on the manual evaluation of a subset of automatically extracted data, the WP deployed an update of the text processing system. The updated version has been used to extract additional data from French, Italian, Dutch and Slovenian corpora, that have been used for the WP3 Hackathon and Workshop in November 2022.

These efforts (up to the moment of writing) resulted in the extraction of the following data:[4]

- **English:** 180,508 sentences related to smell from 28,606 books for a total of 141,512 instances of smell sources and 98,147 of smell qualities.

- **Italian:** 38,471 sentences related to smell from 4,485 books for a total of 36,817 instances of smell sources and 22,371 of smell qualities.

- **French:** 1,421 sentences related to smell from 183 books for a total of 1,421 instances of smell sources and 882 of smell qualities.

- **Dutch:** 34,663 sentences related to smell from 3,153 books for a total of 30,907 instances of smell sources and 13,494 of smell qualities.

- **German:** 14,939 sentences related to smell from 1,414 books for a total of 9,032 instances of smell sources and of 11,883 smell qualities.

- **Slovenian:** 12,862 sentences related to smell from 2,313 books for a total of 13,541 instances of smell sources and 9,212 of smell qualities.

For multilingual emotion recognition task WP3 partners have developed an annotated benchmark of smell related emotions in English, French, Dutch and Italian languages. The emotion recognition set up for olfactory information currently covers 11 emotions (Joy, Trust, Fear, Surprise, Sadness, Disgust, Anger, Anticipation, Love, Desire and Nostalgia) and sentiment.

5 WP4: Semantic Web

Work package 4 advanced the development of the European Olfactory Knowledge Graph. The version 1 was delivered in M12 and contained initially only 494 texts and 2.030 images that were part of the respective WP3 and WP2 benchmarks. As the central integration point of the technical WPs, this work package worked intensively with WPs 2 and 3 to set up a workflow to ingest results from the automatic image classification and detection and text information extraction into the Knowledge Graph. A major achievement this year was the deployment of the Knowledge Graph with 85.713 texts and 2.030 images organized in 6 graphs (or different sources) for the WP5 PastScent Workshop in August 2022, and later on, an updated version with 326.699 texts and 4.520 images organized in 11 graphs for the WP3 Hackathon and Workshop in November 2022. It is to be noted that not all texts contain smell references and our estimate is currently that around 10 % do. This WP is working on an even bigger and more dense version of the European Olfactory Knowledge Graph, version 2, which will be due in M30.

Another major work item in this WP has been the development of an exploratory search engine that enables the serendipitous discovery of documents (excerpts of texts and images) that contain mention of smell words together with rich annotations about the smell experience. The tool is available at http://explorer.odeuropa.eu/, localized in multiple languages and has been evaluated twice by potential users during the PastScent workshop and the WP3 Hackathon.

The work in this WP was recognised by the research community by the Best Resources Paper award for the paper "Capturing the Semantics of Smell: The Odeuropa Data Model for Olfactory Heritage Information." presented at the European Semantic Web Conference [Lisena et al., 2022].

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[4]Latin language processing will be added in Y3.

6   WP5: Storylines

Work package 5 organised the PastScent Workshop where scholars working on the history and heritage of smell, alongside experts from computer science, museums, heritage science, perfumery, and olfactory consultancy were brought together to use and test the technologies developed in the project (D5.2 Academic Conference on Olfactory History and Digital Heritage, M20). The workshop had a hands-on character, and its results informed further development in WPs 2-3-4 as well as blueprints and potential external authors for this WP's storyline and encyclopaedia entry creation (D5.3 : Pilot version of an Online Encyclopaedia of Smell Heritage, M34).

Furthermore, this WP coordinated three invited papers to the American Historical Review journal, the American Historical Association's flagship journal. The first article revolved around a conversation with the community on smell, history, and heritage [Tullett et al., 2022]. Issue 2 included the world's first peer-reviewed historical scent [Marx et al., 2022, Leemans et al., 2022]. At the time of writing, the third issue with an Odeuropa contribution is in production. WP5 has authored a book on *Smell and the Past*, which makes the case for uniting our text and image data with actual smells in our research practice and communication. This open-access book is now forthcoming with Bloomsbury Academic in May 2023.

Besides, WP5 PhD student has been hosted by the Amsterdam University Library to be the first *Mens in Residence* resident-researcher in April-May 2022. This one month of research-residence was the opportunity to collect participatory data through the method of *smell walks*; to imagine ways to connect the users with the vast collections the library has to offer; and to make an interactive presentation at the end of the residence. This resulted in 14 people participating in several smell walks, a multisensory display, a video in Folia online magazine and an article about the research for the UvA library cultural programme. The methodology was further developed during smell walks in and around libraries in Slovenia (Slovenia National Library in Ljubljana and the Fransiscan monestary libraries in Novo Mesto).

7   WP6: Olfactory Heritage Science

The work in this WP is focused on measuring smells and their impact. The core work of this WP in Y2 has been to develop questionnaires that measure attitudes and impact regarding the use of smells in GLAMs (D6.2 Questionnaires for measuring the value of introducing smells in GLAMs (extension granted until M27). Due to COVID-related delays in many GLAMs, collecting user responses had a slower start than expected. However, the later start did give us the opportunity to increase our understanding of the smell in heritage landscape. Whereas we initially focused on guided tours in painting-led museums, we are now capturing diverse ways in which museums share olfactory content (scented city tours, machine-mediated scent delivery, perfumer-led tours). The team has captured ca 450 audience responses from 10 events and exhibitions in six different countries and is currently analysing them.

A second research strand is a study into smell digitisation and preservation (Task 6.3) that is due to in Y3 for which the ground work has started this year. The team has identified two key scents, namely frankincense (in both resin and burnt censer form) and historic leather (for example, from a historical motor vehicle) and will conduct a GCMS and GC-O analysis as well as a sensory analysis in order to contribute towards a standardisation of heritage smell vocabulary/descriptions.

8   WP7: Impact

The work in WP7 has multiple diverse target groups: GLAMs, the general public, and policy makers. In April 2022, the first Odeuropa co-curated olfactory guided tour (T7.3) opened at Museum Ulm in Germany. In this tour, the Odeuropa team worked with the museum staff and scent designers

to develop historically informed scents with a selection of paintings from the museum collection. Since the launch, olfactory guided tours have been conducted and will continue indefinitely. From April-December 2022, the museum collected questionnaires for WP6 (D6.2).

In September 2022, Odeuropa's City Sniffers: a smell tour of Amsterdam's ecohistory (T7.3), a self guided city tour was launched. Via a smartphone application and accompanying *Rub and Sniff* map developed by the consortium, participants can learn about the smells of Amsterdam's past. The tour generated a number of media appearances, 550+ people used the app, and 600 maps were passed out. The smartphone application's questionnaire (WP6) had a 5% completion rate, which is deemed significant for a digital survey. For further details, see the Impact Activities Report Year 2 (D7.3).

In November 2022, Odeuropa coordinated the Hackathon and Workshop, Improve Your Olfactory Language (T7.6) with the National and University Library of Slovenia. The event had 30 participants. The primary objective of the event was to test the effectively of Odeuropa's three demonstrators: The Odeuropa Smell Explorer, Smell Talk Tracker, and INCEPTION. Feedback was collected from stakeholders via an online survey which was evaluated and considered by WP3 and WP4. Nose-on components of the event included a smell session and a smell walk on the library premises and around the city of Ljubljana.

The second strand of activities in WP7 is engaging with policy makers. The bulk of these activities will take place in year 3, but the groundwork was set in D7.1 Policy Brief (Y1). Progress continued with various meetings with policy makers throughout year 2. A policy making roundtable (subtask 7.7.5) will take place in Paris in January 2023. To prepare for this meeting, KNAW and UCL have written a two-page overview on Olfactory Heritage Policy. We also integrated information on the Odeuropa project and olfactory heritage in cultural heritage sites and repositories (JPI Heritage Hub; EU Strategy21 Cultural Heritage Best Practices)

Furthermore, the year 1 versions of the Communication and Dissemination and Exploitation Plans of the project have received updates (D7.9 Communication Plan version 2, and D7.10 Dissemination and Exploitation Plan version 2 (both in M18)).

References

[Leemans et al., 2022] Leemans, I., Tullett, W., Bembibre, C., and Marx, L. (2022). Whiffstory: Using multidisciplinary methods to represent the olfactory past. *The American Historical Review*, 127(2):849–879.

[Lisena et al., 2022] Lisena, P., Schwabe, D., van Erp, M., Troncy, R., Tullett, W., Leemans, I., Marx, L., and Ehrich, S. C. (2022). Capturing the semantics of smell: The odeuropa data model for olfactory heritage information. In *European Semantic Web Conference*, pages 387–405. Springer.

[Marx et al., 2022] Marx, L., Ehrich, S. C., Tullett, W., Leemans, I., Bembibre, C., Odeuropa, IFF, and Ulm, M. (2022). Making whiffstory: A contemporary re-creation of an early modern scent for perfumed gloves. *The American Historical Review*, 127(2):881–893.

[Tullett et al., 2022] Tullett, W., Leemans, I., Hsu, H., Weismann, S., Bembibre, C., Kiechle, M. A., Jethro, D., Chen, A., Huang, X., Otero-Pailos, J., et al. (2022). Smell, history, and heritage. *The American Historical Review*, 127(1):261–309.