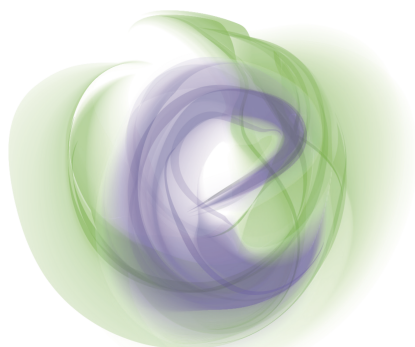


Dissemination and Exploitation Plan version 2
Deliverable D7.10
Version FINAL



Odeuropa

NEGOTIATING OLFACTORY AND SENSORY EXPERIENCES IN CULTURAL HERITAGE PRACTICE AND RESEARCH



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Abstract:	In this document, we report on the dissemination and exploitation of the Odeuropa deliverables. We describe: <ul style="list-style-type: none"> • the Odeuropa aims and projected impact; • the target audiences (stakeholders); • the Odeuropa outputs (e.g. datasets, technology, toolkits, policy guidelines, and other products Odeuropa will offer); • the impact channels; • the actions associated with the dissemination and exploitation targets; • the key performance indicators to monitor and evaluate the performance of dissemination and exploitation; • the progress made so far (up to Month 18 of the project); • the plans for future dissemination and exploitation activities. <p>This document can best be read alongside D7.9 Communication Plan (Version 2, July 2022) and the D7.1 Policy Brief (revised version April 2022)</p>

Table of Revisions

Version	Date	Description and reason	By	Affected sections
0.1	June 2022	First draft	Inger Leemans, Arno Bosse	1-10
0.3	June 2022	Partner input	William Tullett, Vincent Christlein, Sofia Ehrich	1-10
0.3	July 2022	Internal review	Cecilia Bembibre, Marieke van Erp	1-10
0.4	July 2022	Corrections after internal review	Inger Leemans	1-10
1.0	July 2022	Final check and approval by project manager	Marieke van Erp	-

Executive Summary

In this document, we describe the 2nd version the Odeuropa project's knowledge transfer strategy. We outline the Odeuropa aims, stakeholders, and intended outputs and dissemination channels, and the dissemination and exploitation results reached in the first 18 months. We will describe how, halfway through the project, we re-evaluate the original knowledge transfer strategy as outlined in the Grant proposal. This revision is not the result of the project not reaching its goals. Quite the contrary: we are doing more than we envisioned and thus also achieving more impact. The revised strategy both describes and responds to this reality. First, we adapted and expanded the key performance indicators, so they can better capture the broader impact of the project. Second, we differentiated more explicitly between different stakeholder communities and impacts. Thirdly, we started to design a more detailed knowledge transfer strategy for exploitation beyond the end of the project. Together, these measures should provide the team with a clear set of guidelines for orienting ourselves towards impact during in the second half of the project.

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1 Introduction

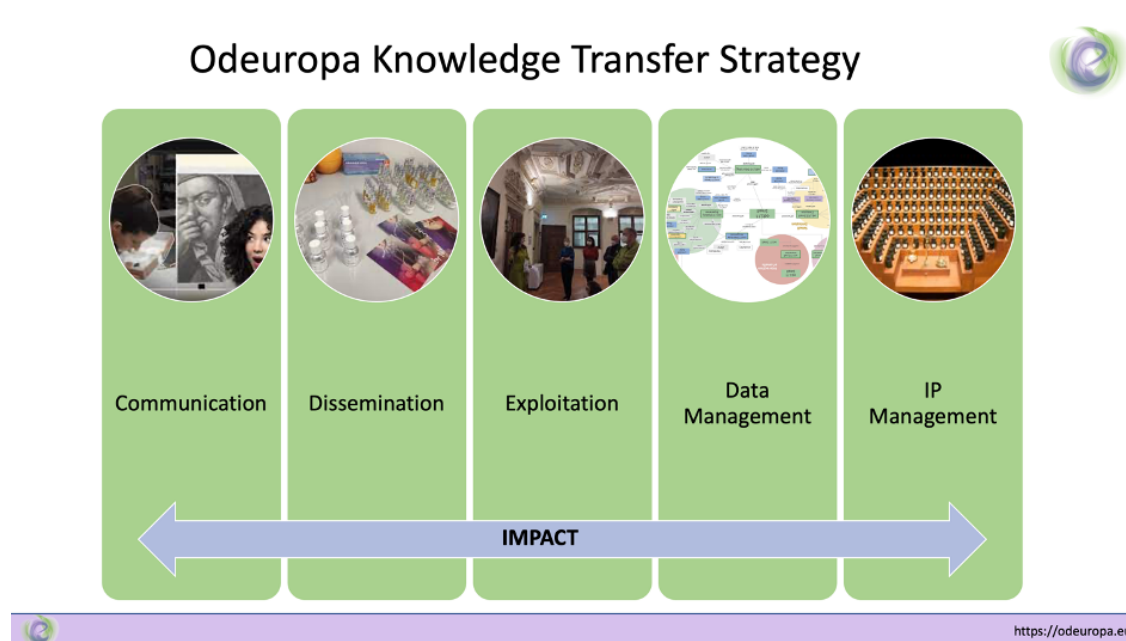
The Odeuropa project is a Research and Innovation Action on the history and heritage of smell. The EU funded project runs for three years (January 2021 - December 2023) and encompasses a collaboration amongst seven academic partners in six European countries, with professionals from the several heritage institutes, the scent industry and creative industries. From our first press release in November 2020, the project attracted global attention from the media, from the general public and also from other parties (GLAMs, commercial companies, artists, academics) interested in the possible outcomes of our work. The interest remains: in June 2022, for instance, [the Guardian](#), [Die Welt](#), [Nez](#) and the Latin American [Infobae](#) covered the project, while the BBC filmed an item on Odeuropa for the [BBC World News Travel Show](#). These media items in themselves again triggered new news articles and press interest, and what is more: they attended new interested parties to reach out to us for collaborations and interest in our assets. We estimate that, up to now (June 2022), our press coverage and our own communication efforts have reached over 7.5 million people across the globe. This unusually high degree of interest in our work has prompted us to confront new challenges: how should we respond to the many inquiries we receive, and best disseminate and exploit the knowledge and outputs developed in the project? With the project now at the halfway point, this is an excellent moment to address these issues.

In this report, we detail our dissemination and exploitation strategy, the planned activities, our performance so far and our future strategy, to help us tackle the opportunities and challenges of the project. The plan acknowledges the challenge articulated by the EU to accelerate the potential uptake of research and innovation (R&I) results and data. We base our valorization strategy on the EU toolkit [Research & innovation valorisation channels and tools: Boosting the transformation of knowledge results into new sustainable solutions \(2020\)](#). The activities of the Odeuropa project are categorised by designated impact areas and target audiences, through which channels our results will be disseminated and exploited. Our knowledge transfer strategy covers **Communication** (calling attention to multiple audiences about our research and innovation [. . .] and addressing the public policy perspective), **Dissemination** (sharing research results with potential users), and **Exploitation** (the use of results for commercial purposes or in public policy making). Key Performance Indicators (KPIs) help to capture the quantifiable measures to our success. Our Dissemination and Exploitation Plan is connected to other dynamic or 'living' documents (online Airtable spreadsheets with stakeholder engagements, and spreadsheets tracking our tasks and progress), which members of the Odeuropa project team keep updated.

2 Objectives and impact strands

The main aim of the Odeuropa project is to show that the concept of olfactory heritage and the techniques of critically engaging our sense of smell are viable means for connecting and promoting Europe's tangible and intangible cultural heritage. Our main objectives are to:

- **Develop state-of-the-art AI techniques** to identify olfactory information in large-scale, digital text and image collections, across multiple European regions and languages from the 17th to the early 20th century, to curate historical olfactory narratives;
- **Create digital and multi-sensory resources** to allow different stakeholders and audiences to freely access and interact with the project's data, storylines, and training material;
- **Define and promote measurable standards** and best practices for olfactory heritage science;
- **Educate and train cultural heritage professionals** in the use of olfactory heritage strategies;



- **Develop policy recommendations** for cultural heritage brokers, NGOs, and decision makers to help preserve and safeguard our past and future olfactory heritage.

These objectives can be further defined under different impact strands:

1. **Curate digital heritage, overcoming language barriers for digital heritage collections:** Curate digital outputs to preserve, study and disseminate the cultural significance of olfactory heritage. Offer solutions to the problem that language change hampers static ways of retrieving this information from historic data collections;
2. **Present cultural heritage collection in a compelling way, enhancing our understanding of European Cultural History:** The new technologies, methods and data formats developed in Odeuropa will help to present cultural and historic remains and memories in a comprehensive and attractive, scientific manner. Show how the preservation and analysis of the tangible and intangible resources of our cultural heritage would enhance our understanding of cultural history;
3. **Enhance scientific impact:** Odeuropa will raise the scientific impact of olfactory heritage and sensory (mining) studies, and enhance scientific impact by promoting the use and re-use of digital collections;
4. **Create Economic Impact:** Odeuropa's deliverables will produce economic impact for cultural institutions, and for the fragrance and creative industries;
5. **Promote Cultural Heritage:** Odeuropa will support the promotion of Europe's cultural heritage, by elevating the value of olfactory heritage and by developing a plan for policy making on olfactory heritage.

3 Target Audiences

To reach our objectives, we designed a series of Dissemination and Exploitation strategies tailored to specific target audiences (TAs):

TA1. Cultural Heritage Professionals

<https://odeuropa.eu>

- 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)

Our primary area of focus is in the Cultural Heritage domain. Thus, this sector also represents our priority target audience. The second important area of focus is in the scientific domain. Communication activities for the project are focused on the same audience groups, although with different actions and timelines, and reported in D7.9 *Communication Plan Version 2*. The communication, dissemination and exploitation strategies have been designed to be complementary.

4 Odeuropa Knowledge Potential

The research and innovation of the Odeuropa project will produce different areas of expertise and concrete outputs which will be of specific interest to commercial and other non-academic parties interested in olfaction. These range from digital ontologies and vocabularies for smell heritage (connecting multiple languages), through online demonstrators, a toolkit with best-practices for GLAMs who want to work with smells but lack the knowledge to do so, and a library of European heritage scents. **APPENDIX 1. Odeuropa Outputs** provides a full overview of the intended outputs.

Overall, the innovation of Odeuropa lies in its ambition to help to create a paradigm shift: new modes of thinking about the importance of smell in daily life and cultural practices and heritage, a new model for trans-disciplinary research and development on this topic, and the manifold opportunities that result from this for different stakeholder groups.

To date, the following stakeholder groups have expressed interest in Odeuropa know-how and deliverables:

- **GLAMs (Galleries, Libraries, Archives, and Museums)**. The Odeuropa project collaborates with and attracts interest from museums and other heritage institutes. Especially for smaller heritage institutes, multisensory storytelling is an attractive way to attract new visitors. However, expertise on how to do this is usually not available in the institutes. GLAMs are therefore interested in:
 - Odeuropa's **Olfactory Storytelling Toolkit** (How to work with smells in GLAMs)
 - Odeuropa's **European Smell Heritage Explorer** (for inspiration) and the Encyclopaedia of Smell Heritage and History (as a reference)
 - Odeuropa's **vocabularies and taxonomies** (to enrich digital heritage collections and heighten discoverability and public interest for the collections)
 - Odeuropa's **consultancy services** (e.g. via the "Sniffers in residence" module)
- **Fragrance Industry**. The Odeuropa project collaborates with, and attracts interest from perfume industries, both from the larger fragrance firms (e.g. IFF), from SMEs (e.g. perfume houses such as Givaudan) and from micro businesses (boutique scent designers, olfactory artists). Fragrance companies are interested in:

- Odeuropa's **vocabularies and taxonomies** (provide long-term, trans-language data on smell experiences)
 - Odeuropa's **knowledge about the history and heritage of smells**, and about sensitivities around smells. What smells were and are significant for European communities? What is the projected impact of smells on different communities?
 - Odeuropa's **methodology for smell representations** (reconstructions, recreations)
 - Odeuropa's **network**, especially relations with heritage institutes
 - Developing **olfactory events** with the Odeuropa team (e.g. museum exhibits, urban tours)
 - Developing **scented products** (e.g. scented candles with heritage smells, to be sold in museum shops etc.)
- **Other commercial parties**
 - **Commercial Cultural Heritage Consultancy Agencies:** bureaus specialised in Innovation planning, helping GLAMs to develop effective strategies for community engagement. These parties are interested in finding out how smell can help GLAMs to improve impact.
 - **Architecture / interior design.** These parties are interested in Odeuropa's knowhow on smellscape, smell mapping / smell tour methodologies and the design of spaces attuned to people's wellbeing and sensitivities. How can smell improve wellbeing and quality of living? How to capture the smellscape of buildings / spaces?
 - **Bureaus for environmental monitoring.** Bureaus/consultancies in odour measurement are concerned about the relation between malodours and health. They have a vested interest in the perception of malodours, in cultural sensitivities around odour nuisance, olfactory fear. Odournet is one of the Odeuropa partners in this area.
 - Theme parks, Cultural Event organisations These parties are interested in olfactory imagineering for public engagement. Odeuropa for instance collaborates with Floriade 2022.
- **Cultural Heritage Policy Makers**
 - Regional, National, EU, and global policy bodies for cultural heritage (tangible, intangible and digital) are opening up to the concept of sensory heritage (cf. D7.1 *Policy Brief*).
- **Research & education**
 - Smell studies is a fast-expanding research field, where different disciplines collaborate to get to a better understanding of olfaction and its role in past and present societies [Tullett et al., 2022]
- **General Public**
 - The public interest in smell is rising. Not only have journals, newspapers and online media discovered smell as a topic, the market for scent design, perfumes and scented products is expanding.¹ Furthermore, the Covid pandemic and the related rise in anosmia and paranosmia cases, has brought our sense of smell to the worldwide attention.

These different stakeholder interests offer ample opportunities for the dissemination and exploitation of Odeuropa's outputs.

¹ See for instance the *Projected growth of scented candle market* and *Projected Perfume and Deodorant Market*, KVB Research 2021.

5 Requirements and Standards

The Odeuropa outputs will be disseminated to different stakeholder communities. We follow the FAIR principles² as core requirements for the dissemination and exploitation of the Odeuropa deliverables and technology:

- **Findable:** The Odeuropa outputs should be disseminated through designated channels, so they can be easily reached by the different target audiences;
- **Accessible:** The outputs need to be available for others to use and open access;
- **Interpretable:** The Odeuropa outputs should be presented in such a way that they are comprehensible to the different target audiences;
- **Reusable:** The licensing needs to be clear so the conditions of reuse are easily understandable. All publications must include the statement that the results were generated with the assistance of EU financial support.

In the Odeuropa budget, we allocated ample funds for open access publications.³ All Odeuropa outputs and communication, dissemination and exploitation activities will acknowledge the required guidelines for acknowledging EU funding and displaying the correct EU logo etc.

6 Key Performance Indicators (KPIs)

In the project proposal we indicated 8 KPIs to measure the project's impact. In Figure 1 we provide this initial list of the KPIs, with Base targets (BT) and Stretch targets (ST):


 Odeuropa	Key Performance Indicators (KPI) for Impact	BT	ST
KPI 01	Number of GLAMs integrating Odeuropa outputs in digital collections (Initially targeted: Museum Ulm & National Library of Slovenia)	2	6
KPI 02	Number of participants in olfactory events	500	5000
KPI 03	Number of users of demonstrators	500	1500
KPI 04	Number of consultancies & trainings for GLAMs (Consult and train GLAMs on how to use olfactory storytelling)	80	120
KPI 05	Number of presentations at national, community, pan-European events	25	50
KPI 06	Number of members of the Odeuropa / PastScent network	100	300
KPI 07	Respondents to questionnaires	100	300
KPI 08	Number of visitors to Odeuropa Website & Online Encyclopaedia	7K/yr	50K /yr

Figure 1: Odeuropa KPIs as outlined in the project proposal

When revisiting the KPIs and measuring our progress in the first year, we realised that we lacked a KPI to trace our consultancy efforts for GLAMs and commercial parties. Since the project started, we have received considerable interest from different parties to gain knowledge from our expertise in order to make use of the Odeuropa outputs, or even collaborate with us. In

²<https://www.go-fair.org/fair-principles>

³See also the [Odeuropa Data Management Plan](#)


 Odeuropa	KPI for Impact	BT	ST	Progress upto Month 18		Explanation
KPI 01	# GLAMs integrating Odeuropa outputs	2	6	total	0	Participants: TA1. Actions planned for Y3
KPI 02	# Participants in olfactory events	500	5000	OE1 (Mediamatic)	40	Participants: TA1, TA3
				OE2 (Ulm)	183	43 test tours + 180 olfactory tour participants
				OE3 (Berlin)	160	Participants: TA1, TA2, TA3
				Smellinars 1 \& 2	160	Participants: TA1, TA2, TA3
				Amsterdam Library Event	20	Participants: TA1, TA2
				total	563	Cf. Impact Activities Report (D7.2)
KPI 03	# Users of demonstrators	500	1500	total	20	Demo-version of EOKG evaluated by Odeuropa team
KPI 04	# Consultancies \& trainings for GLAMs	80	120	OE2 (Ulm)	5	Training Museum curators \& tour guides
				WP5	15	Training librarians
				Consultancies	6	Participants: TA1
				total	26	
KPI 05	# Academic output	25	50	Presentations	36	TA1, TA2, TA4
				Academic papers	13	TA2
				total	49	
KPI 06	# Members Odeuropa / PastScent network	100	300	Odeuropa Network	140	
				PastScent members	58	
				total	198	
KPI 07	# Respondents to questionnaires	100	300	OE1 (Mediamatic)	30	OE1 respondents: TA1.
				OE2 (Ulm)	43	OE2 respondents: TA1 \& TA5
				Encyclopedia		Respondents: TA1 \& TA2 \& TA3
				NeusWijzer	1850	Respondents: TA5
				Prado	70	Respondents: TA5
				total	1993	

Figure 2: Odeuropa. Adapted KPIs, with progress up to Month 18

response to this, we adapted the description of KPI 04 (Number of users trained) to: "Number of consultancies & trainings for GLAMs". And we added KPI 09: "Number of consultations for commercial entities", to trace our impact in helping companies to integrate olfactory know-how in their activities.

In Figure 2 we provide a new overview of the KPIs and trace the progress made up to month

18 of the project (June 2022), indicating the target audiences reached by our actions.

7 Dissemination and Exploitation Activities

The KPIs provide numbers but they do not offer insights into the (qualitative) results we reached in the first half of the project. Below, we will describe the progress made in more depth, structured around the impact strands we defined at the beginning of this document. Next, we will describe the tasks we foresee for the second part of the project in order to reach our overall KPIs and project goals, and our strategy for dissemination and exploitation after the end of the project.

7.1 Curating Digital Heritage, Overcoming Language Barriers for Cultural Heritage

Target Audiences:

TA1. **Cultural Heritage Professionals**, Digital collection specialists, IT specialists

TA2. **Research** (specifically: Data Science, Computer Vision, Computational Linguistics, Semantic Web, Digital Humanities)

WPs in the lead: WP2 (Images), WP3 (Texts), WP4 (Semantic Web)

Main outputs and tasks:

- Share curated, sensory annotated image & text datasets (D2.2, D3.2);
- Share curated vocabularies, taxonomies, data model, and ontologies for the European Olfactory Knowledge Graph (EOKG) (D4.2);
- Publish technical documentation on olfactory curation standards;
- Share methodology for multilingual, historical text and emotion annotation; share annotated ground-truth benchmark dataset;
- Share NLP software; publish interactive text demonstrators;
- Integrate Odeuropa digital assets in digital heritage collections of GLAMs & Cultural heritage aggregators.

Impact strategy and progress:

- All the Odeuropa digital outputs are shared through [Github](#) and [Zenodo](#), so scholars can freely access them and reuse the software for future projects;
- The Odeuropa insights and outputs are communicated to **GLAMs** and other stakeholders through the **Odeuropa website** (stable information, news, and blogposts), social media (Twitter and YouTube), and the Odeuropa newsletter (see also D7.9 *Communication Plan v2*);
- Additionally, the Odeuropa insights and outputs are communicated to academic and other audiences through **lectures and publications** (T7.1). In the first 18 months, we managed to raise considerable interest through our keynote lectures, and papers for high-ranking journals and proceedings (see for a full overview see D7.1 *Impact activities report* and the Periodic Technical Report RP1). The consortium regularly discusses its publication strategy, to make sure that all the results are disseminated to the different relevant domains. For instance, on the topic of language barriers, in May 2022, Stefano Menini presented our text benchmark of 6 languages at the annual meeting of the Association for Computational Linguistics' in Dublin [Menini et al., 2022]. Our paper on the Odeuropa olfactory

ontology was awarded 'best resources paper' at the European Semantic Web Conference [Lisena et al., 2022]. Two papers on the computer vision efforts of the project were published in computer science and humanities venues [Zinnen, 2021, Marx et al., 2022b]. For our academic papers, we are also collaborating with the EU Horizon 2020 projects VAST and Polifonia. For a full list of our open access publications, see <https://odeuropa.eu/publications/> ;

- In 2022, FAU was selected by ICPR 2022 (the flagship conference of IAPR, the International Association of Pattern Recognition) to organise an AI Challenge (D2.4): the [Odeuropa Competition on Olfactory Object Recognition \(ODOR\)](#). The [ODOR Challenge](#) communicated the computer vision efforts of the Odeuropa project and engaged with other computer vision experts and disseminated our sensory mining methodology to academics;
- The **European Olfactory Knowledge Graph (EOKG) (D4.2)** is one of the milestones of the project. The EOKG and interactive demonstrators built on top of it (e.g. a serious Game demonstrator T4.5) will be available both for download (i.e. source code) and as a hosted service which can be queried by scholars, heritage professionals and the general public alike to access vast quantities of enriched olfactory heritage knowledge. In year 2, the beta version is evaluated by the Odeuropa project members and advisory board. Two dissemination events are organised to support the dissemination and evaluation process: the Hackathon in Ljubljana (T7.6) and the PastScent conference (T5.3). In year three, the EOKG will be presented during the OST and OHT presentation events. (Social) media communication (Tweetbot, T7.1) will help to attract attention to the EOKG;
- The **Hackathon** in Ljubljana (T7.6, month 23) will function as a moment for co-creation. We are inviting professionals from different stakeholder groups to evaluate our digital outputs, and offer us suggestions for new dissemination and exploitation channels;
- One of our strategies for the dissemination of the Odeuropa digital assets in the cultural heritage domain is the **integration of olfactory information in the digital collections of heritage institutions**. Two of our collaborating partners, Museum Ulm & National Library of Slovenia (task planned for year 3, T7.6), already have plans in place to carry this out. Additionally, we have agreed to also target Europeana and the Wikimedia Foundation (specifically, Wikidata), to enrich their collections with olfactory ontologies and data (amell is already a property in WikiData but it is not well differentiated). As a first step we registered as a member of Europeana Pro, and created an Odeuropa gallery in the [Europeana collection](#). Next action is to invite Europeana curators to the Ljubljana Hackathon (T7.6), to showcase our vocabularies and ontologies, and discuss possible integration, and the curation of an [Europeana Exhibition](#) linked to the Odeuropa Storylines and Encyclopedia. In addition, we will propose to give a presentation on Odeuropa at the next Europeana conference in 2023. Additionally, we have targeted [IconClass](#), a multi-lingual art historical classification and labelling system widely used in digital heritage collections (e.g. Rijksmuseum, Europeana). Our research indicates that the lack of widely available, standardised olfactory labels and metadata may be one of the causes for the current "anosmia" in art history. Following a series of positive conversations with IconClass this year, plans are now underway to integrate new olfactory classes in the IconClass database.

7.2 Presenting Cultural Heritage in a Compelling Way / Enhancing the Understanding of European Cultural History

Target Audiences:

TA 1. **Cultural Heritage professionals**

TA 2. **Research** (Specifically: SSH, Museology, Heritage Science)

<https://odeuropa.eu>

TA 5. General Public;

WPs in the lead: WP5 (Storylines), WP6 (Olfactory Heritage Science), WP7 (Impact)

Main outputs and tasks:

- Organise Olfactory Events (T7.2, T7.3, T7.4, T7.5, T7.6), co-created with heritage professionals;
- Publish results from PhD research "Olfactory storytelling in History and Heritage" (T5.1, T5.3);
- Publish olfactory storylines in monograph (T5.4);
- Share Olfactory Heritage Science & Museology methods & results (WP6);
- Publish & share European Olfactory Knowledge Graph (EOKG) (D4.2);
- Publish & share online Encyclopaedia of Smell Heritage (D.5.3);
- Publish and share: Olfactory Storytelling Toolkit (OST) (D7.3, T7.8).

Impact strategy and progress:

- The impact of this strand firstly is founded on **co-creation activities with heritage stakeholders**. This method is woven into the workflow of the project. The KPI overview shows the number of heritage professionals which have actively participated in the olfactory workshops and exhibit, answered our questionnaires, agreed to participate in smell walks and smell walk diaries, and/or provided other input for the development of the Odeuropa assets. In year 2 and 3 we will continue this way of working, also actively engaging libraries and archives.
- The main assets of this strands will be the **Olfactory Knowledge Graph** (EOKG) (D4.2), the **Encyclopaedia of Smell Heritage** (D5.3), and the **Olfactory Storytelling Toolkit** (OST) (D7.3). In year two, beta-versions of the EOKG, OST and Encyclopedia will be evaluated with stakeholder communities during the Hackathon in Ljubljana (T7.6) and the PastScent conference (T5.3). In year three, they will be shared online in open access. Their publication will be communicated through the Odeuropa channels (see above).
- We are now in negotiation with [Nez](#), the Olfactory Journal, to publish the public summary of the **Olfactory Storytelling Toolkit** (OST) in their book series. Nez is the leading journal for the fragrance world and has outstanding expertise in olfactory design. Distributing the OST through their channels would assure dissemination to fragrance and creative industries. The IPR of the OST remains with the Odeuropa project.
- The OST, EOKG and Encyclopedia will be presented during a two-day, **nose-on, educational workshop** in August 2023, targeted for the **GLAM communities**. Originally, we had Mediamatic in Amsterdam in mind for this, but because this subcontractor has proven unstable, we are now negotiating with the French perfume archive Osmothèque to host the event. This way, we can use the event to also present the Odeuropa Heritage Scent Library (see below), and reach out directly to the French **fragrance communities** as well as to relevant research groups. For this, we can draw on the existing Odeuropa Network (168 members) and the groups with which we have engaged (e.g. [Centre des Monuments Nationaux](#), [SITEM](#), and the French CNRS).
- The **lectures, talks and publications** for this strand are specifically targeted to **cultural heritage professionals and scholars in museology, heritage studies and history**. They

help to both disseminate our knowledge and engage new stakeholders for future exploitation. In 2022, Sofia Ehrich and Inger Leemans presented our work on olfactory storytelling at the DASA Dortmund museum workshop: *Neue Wege der Konzeption und Reflexion von Museumsausstellungen* [Leemans and Ehrich, 2022b], and explained our methodologies in a nose-on workshop for academics and museum curators at the NIAS Symposium 2022, *Contested Objects: The Racial and Colonial Dimensions of Material Culture* [Leemans and Ehrich, 2022a]. Lizzie Marx presented olfactory heritage and art history insights on the Workshop: *Value and Role of Smells in Museum Practice*, organised by *Odotheka* (Odeuropa sister project), the National Museum of Slovenia and the Heritage Science Laboratory Ljubljana [Marx, 2022]. Another relevant presentation was for a meeting on Digital Humanities in relation to creative industries in Amsterdam. The delegation consisted of representatives of the city of Amsterdam, the university, museums, companies, and theatres [Ehrich, 2022]. An important step has been made by the presentation by Cecilia Bembibre and Inger Leemans for the EU JPI Cultural Heritage Governing board [Leemans and Bembibre, 2022]. This board consists of policy makers from heritage communities, science foundations and governments (ministries of culture and education). We explained the Odeuropa conceptualization of “olfactory heritage” and presented our policy plans for sensory heritage. The presentation led to follow-up meetings in Month 20-24. The Odeuropa project will also be listed in the JPI Heritage Research Hub.

- In 2023 the Odeuropa storylines and methodology will be published in an **Open Access monograph** *Smell and the Past: Noses, Archives, Narratives Narrative* (T5.4). The monograph, written by William Tullett (ARU) will be published by Bloomsbury Publishing. The book presentation will offer a new opportunity to promote European cultural history and heritage and smelling as a method for understanding the past.
- PhD student Victoria-Anne Michel (ARU, WP5) has been working with staff and visitors to GLAMs (specifically **libraries and archives**) through smell-walks, smell-diaries, and an exhibition of her research to help them understand the smellscape of their institutions. This has included GLAMs in France, the UK, and the Netherlands where Michel held the first Person in Residence Fellowship at the University of Amsterdam libraries.
- The **PastScent Community**(D5.1) is already connecting scholars across disciplines who are working on smell and the past, with members using the mailing list to share conferences, events, and calls for contributors. We will be utilising the network as part of the **Pastscent conference** (T5.3), in August 2022 to help develop ideas on how to embed smell better in repository catalogues and tools used by GLAMs such as Iconclass.

7.3 Enhancing Scientific Impact

Target audiences:

TA **2. Research** (Specifically: Computer Science; SSH (Cultural History, Art History), STEM (Heritage Science & Olfactory Museology))

WPs in the lead: All

Main outputs and tasks The aim of this strand is to raise the scientific impact in the different academic areas involved in Odeuropa.

- raise scientific impact from use and reuse of digital collections by disseminating the sensory mining methodologies, training data and results
- raise scientific impact from use and reuse of heritage collections by disseminating the olfactory heritage and multisensory storytelling methodologies, training modules and results, through these channels:



Figure 3: Cover March 2022 Issue American Historical Review

- integrate results and methods into courses and internships for BA and MA students (T7.7) and seminar for junior scholars on Data Science and Olfactory Heritage (T2.4)

Impact strategy and progress:

- Scientific communication and dissemination is provided through different academic channels: Computer Vision, NLP, and Digital Humanities journals and conferences, History, Heritage Science & Museum studies conferences & journals, Public lectures / talks (T7.1), the AI Challenge (T2.3), Hackathon (T7.6), PastScent conference (D5.2), and the Odeuropa Network and PastScent community, the Odeuropa website and Social media (T7.1) (see also impact strand 1). To flash out one strand of publications: in 2022 and 2023, the Odeuropa team will publish four theme issues for the renowned *American Historical Review*. This highly rated journal has shown great interest in our ground-breaking, trans-disciplinary work. A visualisation of one of the olfactory recreations even made it to the cover of the journal (Figure 3). The first issue is a so-called 'conversation' evaluating the state of the art in smell history and heritage. For this conversation William Tullett and Inger Leemans brought together a diverse range of scholars and curators from different backgrounds: archives, classics, archaeology, heritage science, literature, and history [Tullett et al., 2022]. Our article in the second issue describes the Odeuropa methodology for olfactory representations of heritage scents [Leemans et al., 2022]. For this issue, we collaborated with perfumers from IFF and scent design SMEs. The article is accompanied by a scented card (sent out to all members of the journal) with the glove scent Odeuropa recreated for the Museum Ulm guided Tours. The scent is presented as a publication of its own, and obtained a specific DOI (Digital Object Identifier) [Marx et al., 2022a]. With this action we aim to further the discussion on how to curate heritage scents. For the third issue we will present the digital heritage and sensory mining methodologies of the project. The *American Historical Review* is sent out to 11.500 members. The digital readership is much larger.
- In our impact strategy we also encompass the **education and training of future generations**. This we do through:
 - **Internships**. In the first 1,5 year Odeuropa hosted ten interns on different topics (olfactory history, literature, heritage storytelling, intangible heritage, policy making, project communication);
 - **Training Student assistants**: In the first 1,5 year Odeuropa hired eight student assistants to aid with the olfactory annotation (WP3);
 - **Courses**. In 2021 and 2022, Caro Verbeek taught the MA course 'Knowing by sensing' at the VU University, teaching students about the history, philosophy and heritage of the senses by engaging different senses in the learning process. Additionally, in June 2022, Inger Leemans provided a 'micro lecture' for the student science festival DejaVU 2022;
 - Together with the *American Historical Review*, the Odeuropa team has developed an **Online Module** 'How to teach about the history of smell (And why should you): A nose on module', which will be finalised in the second semester of 2022. The module targets history teachers and students, and will be presented at the annual conference of the American Historical Association 2023;
- Enhancing scientific impact is also reached through **collaboration with other research communities**. For this, see below: 'Future Research Activities'.

7.4 Promoting Europe's Cultural Heritage - Policy Making

Target: Odeuropa will support the promotion of Europe's cultural heritage, by promoting the value of olfactory heritage and by developing a policy plan for the safeguarding, curation and promotion of olfactory heritage.

Target Audience:

TA 5. Cultural Heritage Policy makers)

WPs in the lead: WP6 & WP7

Impact strategy and progress: For a detailed outline of the policy making strategy of the Odeuropa project, we refer to the Policy Brief (D7.1). In this brief we:

- present a (working) definition for olfactory heritage as a concept;
- describe the current state of the art in sensory heritage recognition and policy making, reviewing past and current initiatives to safeguard smells of heritage value;
- identify 50 relevant stakeholders for olfactory heritage policy making;
- outline a plan of action for policy making as part of the project's activities.



Figure 4: Dissemination to the academic communities: Inger Leemans gives an online lecture at Osmocosm 2021.

7.5 Economic Impact for Cultural Heritage Institutions and (Creative) Industries

Target: Odeuropa's deliverables will produce economic impact for cultural institutions, and for the fragrance and creative industries.

Target Audiences:

TA 1. Cultural Heritage Professionals

TA 3. **Industry** (including Perfume industry, Creative Industries, Scent marketing, SMEs, and consultancies)

WP's in the lead: WP1 (Project Management), WP6 (Impact measurement), WP7 (Impact)

Main outputs and tasks:

- Publish & share Impact measurements;
- Host olfactory storytelling events with GLAMs (T7.2, T7.3, T7.4);
- Host entrepreneurial hackathon presenting Odeuropa Heritage Scent Library and other commercially exploitable assets (T7.10),
- Collaborating GLAM partner networks, Odeuropa website (D1.1), Social media (T7.1), Workshops with training sessions for cultural heritage partners (T7.4 & T7.8), GLAM collaboration partners, Fragrance Industry, Creative industry partners, Scent marketing channels,
- Share Odeuropa outputs with commercial partners.

Impact strategy and progress:

- The first line of exploitation is targeted towards the **GLAMs**. As the interest for (the history and heritage of) smell is rising, more and more GLAMs are discovering the **added economic value of multisensory storytelling**. This offers ample opportunity for the exploitation and commercialisation of Odeuropa results. Specifically for smaller GLAMs, multisensory storytelling can be beneficial. These institutions have the potential agility to pursue a low-cost, yet innovative olfactory event. Through the Odeuropa EOKG (D4.2) and Olfactory Storytelling Toolkit (D7.3), GLAMs can obtain a competitive advantage. The olfactory guided tours Odeuropa co-created with Museum Ulm already resulted in an additional audience of 150+ visitors. The tour will run for many more months to come.
- During the project we aim to **train 80 GLAM professionals** on how to enhance the institute's impact through olfactory storytelling. During the first 18 months we already trained 20 Museum curators, Museum tour guides, librarians and archivists in how to investigate and exploit the olfactory opportunities of their buildings and collections. smellscape analysis. Furthermore, we have been contacted by different GLAMs for consultancies and collaborations for future olfactory events. As the Odeuropa team is already occupied with its many tasks, we have outlined a strategy consisting of the following:
 1. engaging in first conversations (to investigate future exploitation possibilities);
 2. drawing attention to the projected launch of our assets (e.g. the OST) and connected training events in year 3;
 3. establishing a network and consultancy structure for exploitation beyond the project (see below).
- Apart from the overall Impact strategy outlined in this document, Odeuropa also has developed an **Impact Measurement Plan**, aimed to develop **strategies for measuring the impact of olfactory storytelling in GLAMs**. The plan, developed by the UCL team and evaluated by focus groups, resulted in an *Impact questionnaire* and a *Value questionnaire*. The

short Impact questionnaire is distributed to participants of the Odeuropa olfactory events (Museum Ulm tours & Amsterdam City Sniffers urban tour). Going beyond the original plan, we also will distribute this questionnaire to visitors of other olfactory GLAM events (e.g. exhibit in the Prado Museum). Thus, we are confident we can reach the target KPI of N=800. The value questionnaire, currently under development, will provide a more in-depth investigation into the different valuations of smell in relation to cultural heritage (1. Educational – Learning value, 2. Enjoyment – Entertainment, 3. Affective value (emotions, feelings, mood), 4. Memory, 5. Sense of time, sense of place, 6. Community value - Sense of belonging - Identity, 7. Diversity, 8. Well-being, 9. Legacy value). Target: N=100.

- The second line of exploitation is targeted towards the **Industries**. In the first 18 months of the project, we have explored possible industry interest for the Odeuropa assets. Our strategy here was to:
 1. Investigate the types of industries interested in smell heritage and history;
 2. Developing a network interested parties (through communication channels Odeuropa queries, Airtable);
 3. Capturing their interest by conducting preliminary conversations;
 4. Planning for future exploitation actions.

We have now targeted these industries as possible exploitation parties: Perfume industry, Creative Industries (e.g. olfactory artists), Scent marketing, Architects, Fragrance consultancy websites, and Theme parks and Event organizers, GLAM consultancy agencies. Our main action to reach this network (apart from the Odeuropa newsletter and other communication channels) is the **Entrepreneurial hackathon** (T7.10) planned for year 3. In this workshop, commercial developers will be invited to explore business opportunities for their sector. At the hackathon, we will present the Odeuropa digital assets and the heritage scent library. We are also considering to organize the hackathon as a matchmaking event, so GLAMs can find new partners for development of the enhancement of their digital collections and for multisensory storytelling.

8 Intellectual Property Management

The outline for intellectual property management of the Odeuropa project is captured in the Consortium Agreement, signed by all Odeuropa partners in November 2021.⁴ In our research and innovation actions we indicated three domains in which further scrutiny of IP issues are advisable: 1. Heritage scent development,⁵ 2. Curation of the heritage scents, 3. Media engagement. Below we will describe these issues and the steps we are undertaking to address them:

1. **Heritage scent development.** One of the outputs of the Odeuropa project are the 'olfactory representations' (scent compositions informed by (historical) research). For this, the Odeuropa project works with subcontractors and collaborators from the perfume and scent marketing industry. These incorporate both large fragrance firms (IFF - International Flavors and Fragrances), and SMEs. The assets created by these collaborations are: **heritage scents** and **scent marketing products** (e.g. scratch and sniff cards, designed scent containers (e.g. wispies) with heritage scents, scented candles, scented ball packages (e.g. 1672 Disaster Year scent ball package, see Figure 6). The development of heritage scents usually involves the integration of academic knowledge, knowledge from heritage institute

⁴The document is based on the DESCAs Model Consortium Agreement. Note that the consortium agreement was not signed by our heritage and industry collaborators and contractors.

⁵Heritage scents are historically informed reconstructions, recreations or artistic creation of scents that are or have been significant for specific cultures. See [Leemans et al., 2022] for a detailed description



Figure 5: Odeuropa blotter, used in olfactory events

professionals, and scent industry expertise. In an ideal world, all knowledge about the produced scent should be made public, both to the developing parties, and to the general public. However, the complex arrangement of IPR in the perfume industry constrains the level of detail perfume companies are willing /able to share. For instance, disclosing the exact chemical formula of a scent composition would require the company to disclose information about certain company developed, patented, molecules on which the firm bases its profit. For freelancers and SMEs in the fragrance business, the provision of the exact chemical formula is often also not possible, since they work with ingredients produced by other firms. For the Odeuropa project detailed knowledge about the recipe (albeit not the exact chemical formula) is essential for:

- communication to the public (to foster in-depth knowledge instead of mere immersive experiences);
- archiving – we are committed to archive our scents for future research;
- reuse – also in the future it should be possible for GLAMs to make use of the Odeuropa Heritage scents;
- One of the essential aspects here is that the Odeuropa project aims to enhance understanding of (intangible) cultural heritage. For all Odeuropa heritage scents and scented products it is therefore essential that they are presented with the documentation on their cultural historical significance. The story of the scents needs to be connected to the perfumes.

These issues require a fine-grained standard for collaborative scent development between fragrance companies, GLAMs and academic researchers. In year one, we have developed the 'Perfumer Brief' to meet these standards. In year two, we are further refining this brief, and drafting up a standard contract, to be used as a template for future engagements by the Odeuropa consortium and other parties.



Figure 6: Scented product. Olfactory interpretation of the Disaster Year 1672, created by Odeuropa and Iscent, and present for the academic and GLAM communities at the Brabant Archive April 2022, and for students at the DejaVu festival June 2022.

- The Odeuropa team** is in negotiation with the French perfume archive Osmothèque to donate the historical scent compositions of the Odeuropa project to the archive, for preservation, documentation, and future dissemination. Osmothèque will catalogue these as the **Odeuropa Heritage Scent Library**. For this transaction we will work with the contracts used by the Osmothèque. For documentation, we aim to register all the Odeuropa heritage scents as a DOI or “ISBN-O”. (a newly created documentation system, providing a unique identifier for heritage scents, offering opportunities for future reference and reuse).
- Media engagements.** The Odeuropa team is often approached by international media for interviews and **participation in larger media projects**. In the first 18 months, three documentary makers have approached the team with requests for filming a documentary about the project. Although the team is open for these more extensive media projects, we want to remain assured that Odeuropa remain in control its our core messages. To arrange the IPR issues in this matter, KNAW’s legal department has drafted up a contract which is currently under review by the Odeuropa team.

9 Dissemination and Exploitation beyond the end of the project

We expect the impact of our work to continue after the project as our curated, open-access datasets and metadata are disseminated by cultural heritage aggregators, via the semantic web from the European Olfactory Knowledge Graph, and from datasets hosted on digital repositories data platforms. The KNAW has committed to host the Odeuropa website, the OEKG, the Encyclopaedia of Smell Heritage, and the PastScent social network for at least five years after the end of the project. As a result, we predict that Odeuropa will become the hub for an already active, but currently widely dispersed community. This will allow Odeuropa to serve as a consolidated platform and even more importantly, as a knowledge resource for the expertise needed to carry out future activities (including new research proposals) in this area.

The Encyclopaedia has the ambition to become the **standard reference** for anyone working on smell and olfactory heritage in academia, GLAMs, or creative industries. It will provide an authoritative, professionally researched foundation for further academic research in this field, a repository of information for historical novelists, film consultants, and creative professionals who want to add an olfactory dimension to their projects. The scents, storylines, and fragrant spaces identified by the Encyclopaedia will serve as a knowledge base that will aid in the integration of smell into existing and future definitions of cultural heritage.

As concrete actions for Dissemination and Exploitation beyond the project we aim to:

- Describe Odeuropa results on the [Horizon Results Platform](#): a platform where the results of Horizon projects are presented; it allows stakeholders to reach the innovators with the potential to form fruitful partnerships;
- Describe Odeuropa policy plan on the [EU Policy Lab](#): a space designed to foster creativity and engagement and to develop interactions, processes and tools able to bring innovation into European policy making.

Halfway through the project we realised that more action was needed to provide a structure which helps us bank on the sizable interest in our expertise and assets. As the project is delivering more results of interest to commercial and other parties than previously expected, and the project team is quite often approached by new parties requesting consultancy and other services that stretch beyond the scope of the project, the consortium has started to outline a more detailed set of structures and requirements for future engagement with stakeholders.

To provide a structure for exploitation beyond the end of the project, we propose to found an “Odeuropa Services” group and draw up some additional rules for the dissemination and exploitation of Odeuropa’s knowledge and assets for commercial use. Through this collaborative structure, the former team members can further exploit Odeuropa’s expertise, also experimenting with olfactory heritage commodities, such as scented products for museum shops. A first outline for this consultancy structure, and the IP challenges that would need further description, has been drafted in June 2022, together with the Knowledge Transfer Office (KTO) of the KNAW. The draft has been discussed in the General Assembly (July 2022). As the GA has agreed on the general direction of the document, KNAW will further develop it, with the KNAW’s KTO reviewing the juridical elements of the plan, making sure they do not contradict the DESCA Consortium Agreement. The revised version of the plan could be put before the GA again at the end of 2022.

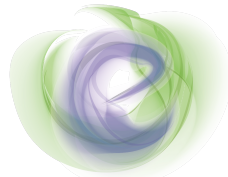
10 Future Research Activities - Research Funding and Awards

Because olfactory heritage is in many respects still an emerging field, there exists a real opportunity for the Odeuropa partners to leverage their ‘first-mover’ advantage to establish their expertise and credentials in this domain. We are determined to build on the experience we will develop during the Odeuropa project to pursue future EU and nationally funded research projects in this field. For its scientific development and further dissemination, Odeuropa already collaborates with the Horizon 2020 projects VAST and Polifonia, and with the Odeuropa ‘sister projects’

Odotheka, NeusWijzer, and Scented Memories. Two international reading groups are hosted by the Odeuropa team members: one on Smell and Place, one on translations (aim: to overcome the Anglo-Saxon bias in smell studies). Furthermore, we have reached out to other scientific communities in smell studies (e.g. CNRS, Institut Paul Bocuse), where we presented our work and investigated opportunities for future collaborations on smell as cultural phenomenon. To secure future dissemination and exploitation, the Odeuropa team is currently preparing different applications for future research (and innovation) projects:

- In 2021 our proposal for a **NIAS-Lorentz workshop** Nose Wise: Modelling Smell for Cultural Heritage Collections was awarded funding. Due to Covid19, we had to postpone the workshop. We will resubmit in late September 2022. The workshop is intended as a networking event for the spring 2023, to develop future research activities with new partners;
- To disseminate the Olfactory Storytelling Toolkit and the Odeuropa olfactory vocabularies and taxonomies, we aim to apply for a **Museum Grant** (Museumbeurzen) of the Dutch National Science Foundation (collaboration with Amsterdam Museum and/or Open Air Museum);
- The European consortium we were able to establish through the Horizon 2020 fund, provides a strong starting point for future EU research and innovation action. We are exploring interest for an EU Synergy network on Smell and emotions, and for a **Marie Skłodowska-Curie Doctoral Network (DN)**. We believe that the Odeuropa expertise in (computing) smell as cultural phenomenon and in sensory heritage provides a strong foundation for joint academia- industry research, facilitating knowledge exchange and innovation through 1) the mobility of people, 2) to help develop new high-quality jobs and products, while 3) improving competitiveness of GLAMs and SMEs;
- One of the domains we were not able to cover in depth in the EOKG is poetry. To fill this gap, we will collaborate with Leiden university for a research project *L'Odour: Literature and Olfactory Discourse in the Renaissance* (**Dutch National Science Foundation, Open Competition**, deadline November 2022). This project can help to test the capacity of the EOKG to incorporate new datasets after the project;
- In 2024, when the project has ended, we aim to apply for various awards, such as the [Horizon Impact Award](#) and the [Europa Nostra Award](#), to show how Odeuropa used its results to provide value for society.⁶

⁶EURECOM, one of the Odeuropa beneficiaries was recently awarded the Europa Nostra Award for the H2020 SILKNOW project it is involved in: <https://www.europanostra.org/europes-top-heritage-awards-honour-30-exemplary-achievements-from-18-countries/>.



Odeuropa

Appendix 1. Odeuropa outputs

To reach the targeted impact, Odeuropa is developing an extensive list of outputs (including but also extending beyond the project's pre-defined deliverables), which will be disseminated to the relevant Odeuropa stakeholders and target audiences:

- Advanced **ontology** for the cultural perception of smell (D4.1), with:
 - **Taxonomy** of olfactory phenomena in images and texts (D2.1 \& D3.1)
 - **Annotation schemes** for capturing olfactory references in text and images (D2.1 \& D3.1)
 - Annotation schemes for capturing **emotional responses** to smell events (D3.5)
- Advanced **vocabularies** of smell words in 7 different languages (English, French, German, Dutch, Italian, Slovenian, Latin), spanning 3 centuries (1600-1900) (D3.5)
- A **populated knowledge graph** (EOKG: European Olfactory Knowledge Graph) (D4.4) with references to smell experiences, including:
 - olfactory objects
 - olfactory spaces
 - olfactory gestures
 - olfactory iconographies
 - noses (expert smellers)
 - emotions evoked by smell
- **European Smell Heritage Explorer** (D4.5 \& D3.6) Demonstrator for the EOKG to open information about Olfactory Cultural Heritage to different target audiences
- **Encyclopaedia of Smell Heritage and History** (D5.3)
- **The Odeuropa Library of Heritage Scents**. Reconstructions, recreations and interpretations of historically significant scents and smellscapes, with the documentation about the historical scents and the contemporary scent reconstructions.
- **Hands-on guidelines** on *How to Work with Smells in GLAMs* (**Olfactory Storytelling Toolkit** (D7.3), including:
 - **Pathway** for overcoming barriers to work with smell in GLAMs (D6.1)
 - **Models** for the **development, documentation and evaluation** of scent **representations** in GLAMs
 - A **database** of GLAMs which have been working with smells in the past.
 - Overview of distribution methods.
 - **Impact questionnaires**. A model for evaluation of the value of bringing smell into GLAMs (D6.2)
- Olfactory Heritage **Policy Toolkit** (D7.4), including a **Manifesto for Olfactory Heritage**
- **Online module** on how to teach with smells
- Odeuropa \& PastScent **community** and **bibliography** (D5.1)

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