



[3rd MYGEOSS] Odour Collect deliverable

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1. Summary

This deliverable compiles technological and design aspects regarding Odour Collect application, covering analysis, development and deployment and issues appeared during those stages.

The application is in production, both online in the form of a webpage and as a mobile app. On one hand, online project has been developed through HTML 5 and JavaScript while the implemented web services has been developed on PHP. This project is kept under the umbrella of Ibercivis Foundation servers at the University Institute for Biocomputation and Physics of Complex Systems of the University of Zaragoza. On the other hand, the mobile app has been developed in Android and it is available at Google Play Store.

2. Introduction

The proposed application would provide a tool to empower citizens, who are suffering from odour nuisance at their homes or who identify an odour problem at their regular life, to report the incidence to the world, check the frequency of the episode (either reported repeatedly by themselves or by other citizens in the same area), check the level of nuisance alert, etc., in order to ask for action to the relevant stakeholders, with the aim of eventually eliminating or significantly reducing the nuisance, thus improving their quality of life. The application will provide a standardized method to evaluate odour episodes through crowd-sourced citizens' observations. Data available could eventually be checked by odour and meteorology experts in order to find the odour source to be attacked, so as to eliminate the problem.

Odours cannot be measured chemically as regular pollutants, as odour perception is the result of the combination of volatile substances as a whole and it is something far more complex than the sum of the concentration of substances whose odour perception threshold is overcome. In fact, the best odour sensor is the human nose (we have less than ten genes for the sense of taste and more than 1,000 for the sense of smell, in order to analyse the complex mixture of volatile molecules that produce the odour perception).

Measurement methods have been developed and standardised under the EN 13725:2003 standard, which defines how to sample and analyse odours by dynamic olfactometry, based on **“standard human noses” as measurement sensors** to obtain an objective value of odour concentration, in odour units per m³. The standard allows obtaining emission values at the source, which can be used to calculate the immision values and the impact area in the odour source surroundings using a convenient dispersion model, thus calculating the nuisance area.

However, there is **no unified legislation throughout Europe or the world** to deal with odour contamination, which means that there are not nuisance immision values defined to classify odour complaints and that Local Authorities cannot oblige industrial activities causing the problem to implement corrective actions to eliminate the nuisance, as they do with chemical and other pollutants.

Lacking of a unified regulation throughout Europe which controls odour contamination, and being odour nuisance the second source of complaints listed by the Environmental Agency ADEME in

France, citizens are the victims of this lack of regulation. Since odour studies are expensive and industries cannot be obliged to contract them by Local or Regional Authorities, and even some of them deny the access to their facilities to measure emission at the source, a second methodology has been developed to calculate the immision values in the affected areas and evaluate nuisance. It is standardised by the VDI 3940:2008 (future CEN 16841). It sets a series of panellists, or standard human noses, that carry on measurements in a grid in the impact area during a period of time so as to obtain statistically representative measurements, which can be used to estimate the **frequency of odour nuisance** and built the odour frequency map.

However, this type of studies is also expensive and usually depends on Local Authorities funding, which is usually scarce. To solve the problem, in some communities “citizen observatories” have been set, creating a net of volunteers which act as panellists and contribute to create the odour frequency map. The results are not so well defined as when using the VDI 3940:2008 standard, but they act as an orientation to know the extent of the problem and to report and demonstrate the odour complaint. Usually, this type of study is only undertaken locally in communities with a huge odour problem and where citizens’ complaints achieve to gain social relevance, thus revealing the necessity for action. The methodology is not standardised (each country or each Local Authority usually does “its best”) and there is no tool that gets in contact different communities with similar odour problems, which could take advantage of their mutual experiences.

The proposed application aims to build this tool, where citizens throughout the world could easily and instantaneously report their odour complaints, visualise the odour frequency maps based on their reports and on other citizens’ reports on their impact area, check if the odour episodes overcome an established odour nuisance threshold which sets an alarm, have a powerful and public analysis to request for action to the relevant stakeholders, share their experiences with other affected communities to mutually learn, made their complaints checked by an odour and meteorology expert, etc. Application results would aim to further develop a standard method for odour citizens’ observatories, compile a library of successful cases (i.e. cases where action has been taken after an odour complaint has been reported in an area, eliminating or reducing the problem), gather a series of educational packages on odour measurement and impact, and help improving the national and European legislative framework.

The application will be deployed under the umbrella of Socientize project. Socientize FP7 project (www.socientize.eu) had a relevant impact in the European citizen science environment as well as worldwide. The European Commission referenced it as a flagship for the promotion of public engagement because of its balance of policy recommendations, community alignment and innovative experiments. Since the Socientize EC-based funding was over in November 2014, it is kept alive by all the partners since it is was worthy and there is a community-endorsement to do so. After one year of redesign, 2016 represents a new milestone for Socientize as we are deploying another round of experiments as well as policy effort with the focus now at national level. From a practical point of view for Odour Collect, Ibercivis ensures support for the hosting and hardware services such as backup, monitorization or load balance. It is also pertinent to mention the support of Ibercivis and Socientize with the communication and dissemination, working on all the measures required to ensure networking effects such as snow ball effect for awareness and recruitment, based on key issues such as user experience, trust and reputation.

3. Technical Documentation

3.1. URL Website

The project is available and accessible online in his website form under the URL: <http://odourcollect.socientize.eu/>

The app is available for download here:

<https://play.google.com/store/apps/details?id=ibercivis.com.odourcollectapp>

Data Management Plan is available at:

http://modulos.ibercivis.es/assets/OdourCollect_DMP_v1.pdf

Web service to retrieve the whole reports is available at:

<http://modulos.ibercivis.es/webservice/getreports.php>

Web service to retrieve the whole open data available from the project (under development):

<http://modulos.ibercivis.es/webservice/getopendata.php>

3.2. Access to live source code

Both webpage and app source code are accessible through GitHub under GNU General Public License. The URL is: <https://github.com/Ibercivis/OdourCollect>

3.3. Running code (.APK file for Android)

Running code, APK file, is attached to the current document. Besides, it can be found also in the online repository:

<https://github.com/Ibercivis/OdourCollect/blob/master/app/app/app-release.apk>

3.4. "Read me" file

Available at: <https://github.com/Ibercivis/OdourCollect/blob/master/README.md>

OdourCollect

OdourCollect is the App to report your odour complaints. Use the power of your nose: Smell and share!

Have you ever experience odour nuisance at home or at your working place? Do you know where to set up a complaint? Frequent exposure to annoying odours can cause headache, stress or lack of concentration, thus reducing your quality of life. Even though odour complaints are one of the main environmental problems in the EU, there is not specific

legislation to control the problem, meaning that citizens are defenceless!

OdourCollect provides a tool to empower citizens, who are suffering from regular odour nuisance, to report the incidence to the world. Odour maps are build based on crowd-sourced odour reports to calculate frequencies and levels of nuisance. Just log in and start reporting, anytime, everywhere! Your nose is indeed the best odour sensor available. Resulting odour maps are open for public consultation and could eventually be used to demonstrate the problem and ask for action to the relevant stakeholders, with the aim of eliminating or significantly reducing the nuisance, thus improving your quality of life.

The project is being developed within the frame of MYGEOSS, a two-year European project (2015-2016) by the European Commission to develop GEOSS-based (Global Earth Observation System of Systems) smart Internet applications informing European citizens on the changes affecting their local environment. OdourCollect is one of the 66 winners from 15 European countries of the third MYGEOSS open call for innovative ideas. We need you for project success!



3.5. Requirements list

This is the list of functional requirements set for this version of the App:

1. The system will allow user registration.
2. User registration will require as compulsory fields: user name, user e-mail, password, age (as a range), gender.
3. The App will be accessible by any user, independently of being or not registered.
4. The system will allow users to report odour episodes, referred to as “report”.
5. A report will include the following fields:
 - a) Time mark (system)
 - b) Place (system)
 - c) Type of odour (to be chosen from a list + open field): e.g. garbage, sewage, chemical, other (to be described), I don’t know.
 - d) Is it a strong odour (intensity from 1 to 6 – slide bar)?

- e) Is it a nice or foul odour (level of annoyance from -4 to 0 and to 4 – slide bar)?
- f) What is the weather like?: cloud coverage (from 1 to 8 – slide bar), rain (from 0 to 5 – slide bar), wind (from 0 to 4, slide bar)
- g) Where does the odour come from?
- h) What was the episode duration (< 1min, 1-5 min, > 10 min)?
- 6. The user must geo-localise the episode (automatic)
- 7. To make the report, the user must be authenticated
- 8. The App launch page will show a map with all the reports
- 9. The map has to accept two interrelated filters to allow report selection:
 - a) Filtered by period of time (divided by weeks, months...).
 - b) Filtered by type of odour.
- 10. Initial zoom will cover a 10km x 10km area and be centred in the user location.
- 11. Below the map, paged report summaries will be shown (5 per page).
- 12. When clicking at a report on the map, a pop-up will show a small summary over the map.
- 13. When clicking at the user from a report summary, within the map or below it, the user profile will be shown below and left of the map, and his/her report summaries will be shown to the right.
- 14. When clicking at a summary report below the map, the complete report will be shown.
- 15. The App will allow to leave comments on reports.
- 16. To make such comments, user must be authenticated.
- 17. Comments on reports could only be made from the complete report.
- 18. Reports summaries will contain: author, date (time mark), type of odour, intensity, annoyance, number of comments.
- 19. App will inform users without authentication of any action requiring authentication.
- 20. When surpassing a minimum pre-defined frequency threshold of an odour in a defined area, the option “call for action” will be available. A text field will appear to allow for short problem definition.
- 21. Call for action will be internally stored (or publicly available) and further developments will allow the communication to relevant stakeholders for odour problem solving.
- 22. There will be a fix page on “project information”.
- 23. There will be a fix page on “methodology”.
- 24. A “successful cases” page will be created, although it will not be activated until the first successful case is achieved.
- 25. “Educative modules” pages will not be available yet, but further developed according to the evolution and impact of the App.
- 26. An “internalization module” will be incorporated to allow further developing the App by translating it and launching it at European level.
- 27. The App name will be OdourCollect and the address odourcollect.socientize.eu.

3.6. Bugs and issues documentation

There is no bugs in the project (apparently). However, there has been several changes in the requirements for the final implementation of the app, specially in the app version. Those changes are detailed in the following along with the functional requirement that they affect to.

- *Requirement 9. b. Filtered by period of time (divided by weeks, months...).*

- Filtering is done by days instead of weeks and months, since it means the filtering is more fine-grained and easier for the user.
- *Requirement 11. Bellow the map, paged report summaries will be shown (5 per page).*
 - *In the online version of the project, it works as defined. However, in the app version, given space restrictions the paged list of reports is shown under request in the button “Show Reports” on top of the map.*
- *Requirement 13. When clicking at the user from a report summary, within the map or below it, the user profile will be shown below and left of the map, and his/her report summaries will be shown to the right.*
 - This requirement is fulfilled in the online version of the project, but not in the app since it adds an extra layer to reach the goal of finding the searched reports, while given space restrictions in mobile phones it is not possible to display user information below the map.
- *20. When surpassing a minimum pre-defined frequency threshold of an odour in a defined area, the option “call for action” will be available. A text field will appear to allow for short problem definition. And Requirement 21. Call for action will be internally stored (or publicly available) and further developments will allow the communication to relevant stakeholders for odour problem solving.*
 - *For this version of the app, “call for action” is available when displaying the report that brings the user to a new activity where he/she can provide a description of the problem. Further development for web version.*
- *Requirement 25. Educative modules” pages will not be available yet, but further developed according to the evolution and impact of the App.*
 - As set in the requirements this is future work.

4. Design Documentation

4.1. Wireframes (hand drawn or .PSD files)

In the following, navigation diagram in addition to the different wireframes are presented. The image files are also attached to the current document.



Illustration 1: Navigation Diagram

Is it a strong odour (1 soft, 6 strong)? 1

1 ● 6

Is it a nice or foul odour (-4 nice, 4 foul)? -4

-4 ● 4

Cloud coverage (1 cloudless, 8 covered): 1

1 ● 8

Rain (0 not a drop, 5 very rainy): 0

0 ● 5

Wind (0 no wind at all, 4 very windy): 0

0 ● 5

Type ▾ Duration ▾

Where does it come from?

ADD REPORT Cancel

Illustration 2: Add Report

Write your comment here

ADD COMMENT Cancel

Illustration 3: Add Comment

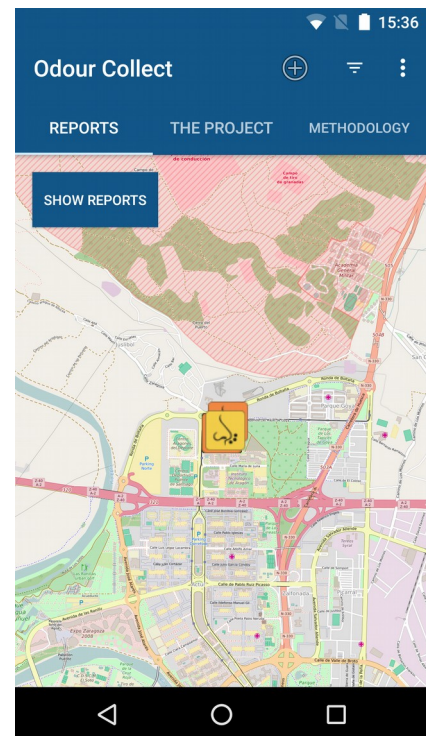


Illustration 4: Main Screen

User: edu
Type: Chemical
Date: 2016-07-15 14:56:24
Intensity (1 - 6): 2
Annoyance (-4 - 4): 1
Cloud (1 - 8): 1
Rain (0 - 5): 0
Wind (0 - 5): 2
Duration: < 1min
Origin: Corridor
Latitude: 41.68422000
Longitude: -0.88708000

Comments

It is a kind of annoying.
edu, 2016-08-30 14:36:02

this is a test
edu, 2016-09-16 17:09:12

another more

edu, 2016-09-16 18:20:38

lets hace a try

Illustration 5: Display Report

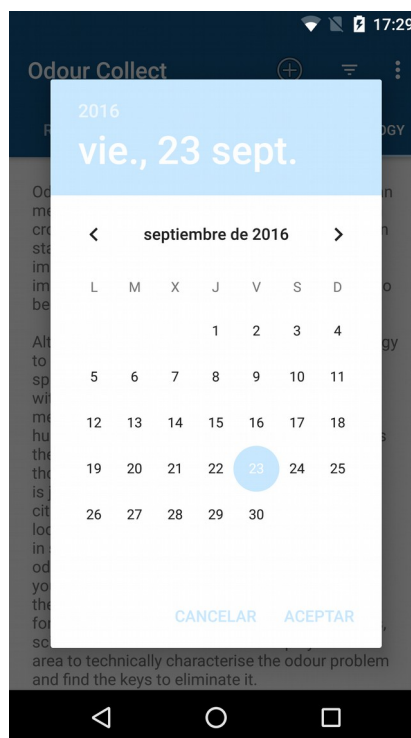


Illustration 6: Filter Date Since

Odour Collect

REPORTS THE PROJECT METHODOLOGY

Select Type

- Garbage
- Sewage
- Chemical
- Do not know
- Other

OdourCollect is based on a methodology to evaluate the impact of odour exposure on human health. It is a crowd-sourced citizens' science project that aims to measure odour exposure by field inspection and impact frequency of recorded odour episodes. It has become the European standard VDI 3940:2005.

Although the standard is designed to measure odours during a specific area, where the nuisance is localised, with a specific duration and a certain number of measurements performed by certified standard human "noses" or observers, OdourCollect adapts the methodology with the aim of first identifying those complaint areas where the quality of life is jeopardised by frequent odour exposure. Any citizen can act as the observer and collect geo-localised open data on the odour episode, both in space and time, which can be used to build odour complaint maps. Yes, you too! Yours' and your neighbours' observations will demonstrate the problem, thus empowering citizens to claim for solutions. Based on the identified odour maps, scientific odour studies could be deployed on the area to technically characterise the odour problem and find the keys to eliminate it.

Illustration 7: Filter Type

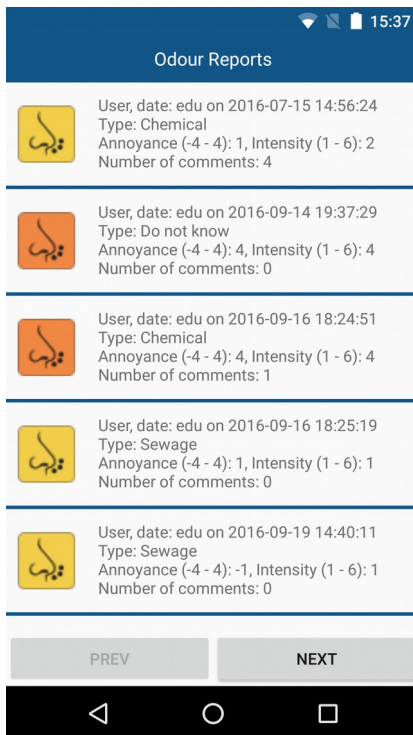


Illustration 8: List of Reports

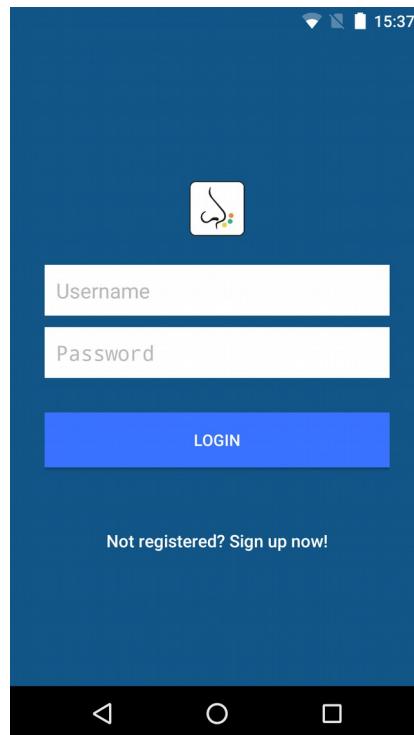


Illustration 9: Login



Illustration 10: Filter Date Until



Illustration 11: Methodology

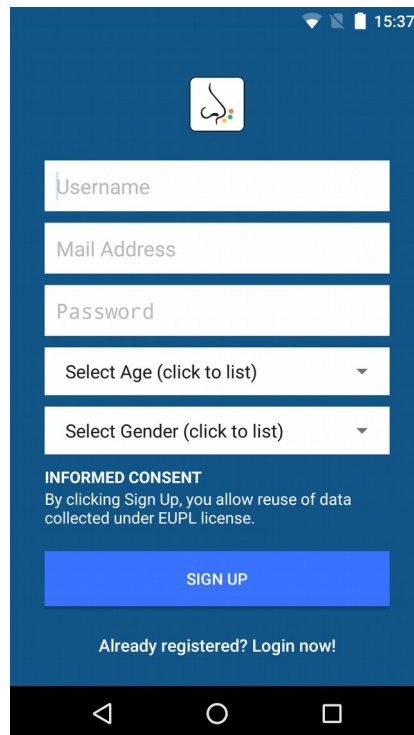


Illustration 12: Sign Up

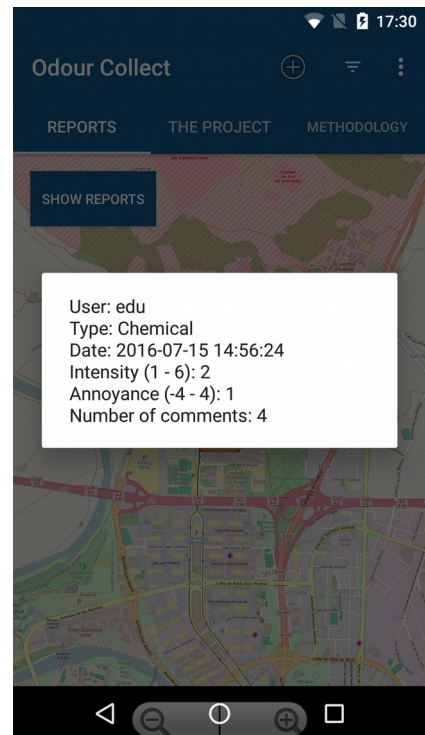


Illustration 13: Report Summary

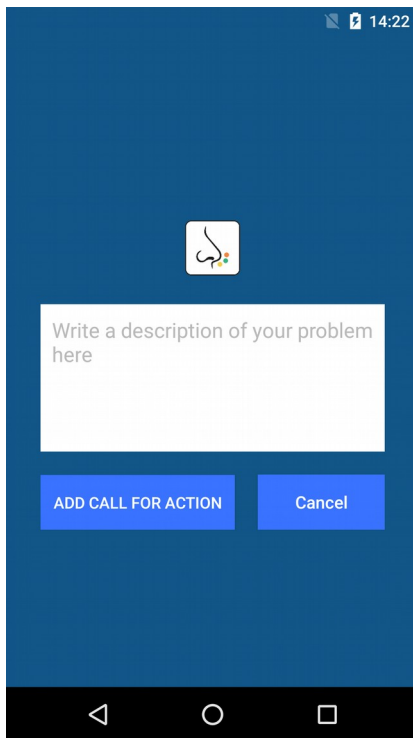


Illustration 14: Call for Action

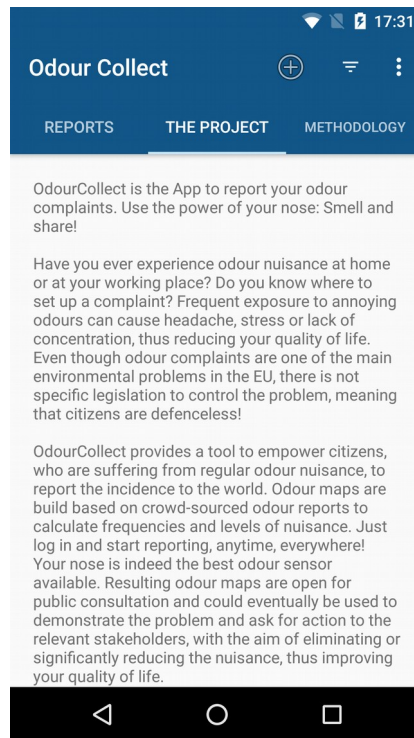


Illustration 15: The Project

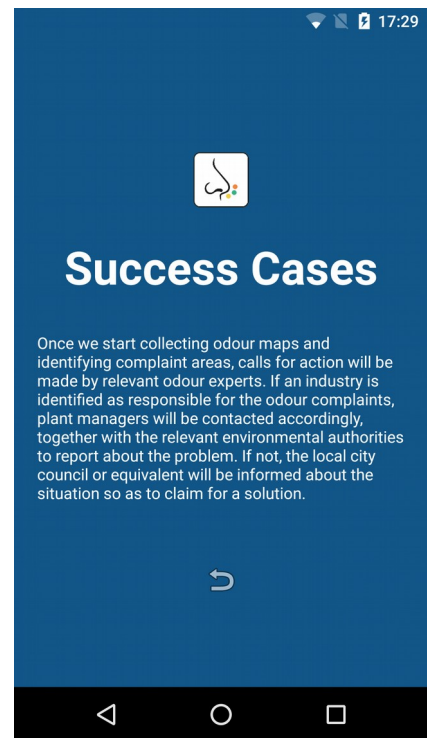


Illustration 16: Success Cases

4.2. Style Guide (Word or .pdf file)

Guidelines for usage of colors, fonts, and other graphical elements of your app design.

In the following, style guide is presented. First style guide is for the app, while the second one is for the online version of the project. A .pdf file is also attached to the current document.

Odour Collect App

Background Colours



Text Colours



Typography

Roboto, Normal, 18dp, #000000







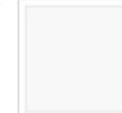

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Fusce id tempus tellus.

Image Dimensions











odourcollect.socientize.eu

Background Colours

							
HEX #fcfdd	HEX #f8f8f8	HEX #0078ae	HEX #2191c0	HEX #c0c0c0	HEX #337ab7	HEX #f8f8f8	HEX #e7e7e7

Text Colours

							
HEX #333333	HEX #222222	HEX #ffffff	HEX #337ab7	HEX #000000	HEX #eaeaf7	HEX #777777	HEX #808080

Typography

Header 1: N/A, N/A, N/A, N/A, N/A	The quick brown fox jumps over the lazy dog and feels as if he were in the seventh heaven
Header 2: N/A, N/A, N/A, N/A, N/A	The quick brown fox jumps over the lazy dog and feels as if he were in the seventh heaven
Header 3: N/A, N/A, N/A, N/A, N/A	The quick brown fox jumps over the lazy dog and feels as if he were in the seventh heaven
Header 4: N/A, N/A, N/A, N/A, N/A	The quick brown fox jumps over the lazy dog and feels as if he were in the seventh heaven
Header 5: N/A, N/A, N/A, N/A, N/A	The quick brown fox jumps over the lazy dog and feels as if he were in the seventh heaven
Header 6: N/A, N/A, N/A, N/A, N/A	The quick brown fox jumps over the lazy dog and feels as if he were in the seventh heaven
Body: 'Helvetica Neue', Helvetica, Arial, Sans-Serif, Normal, 14px, 20px, #333333	Lorem ipsum dolor sit amet, consectetur adipiscing elit. Fusce id tempus tellus. Ut cons

Image Dimensions

		
41 x 41 px	41 x 41 px	41 x 41 px

4.2. Images (.PSD or .AI files)

In the following, images are presented. The .PSD files are also attached to the current document within Images folder.



brand_logo.ai (brand_logo.psd): Logo of the application, presented in several parts of it.



good_odour.psd: Marker for good odour, presented in the map, list of reports and complete report summary.



mid_odour.psd: Marker for medium odour, presented in the map, list of reports and complete report summary.



bad_odour.psd: Marker for bad odour, presented in the map, list of reports and complete report summary.