Open Data Access and Harmonisation by Virtual Hub - ENERGIC OD solutions

OnoM@p / NoiseCapture european application

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Summary

- Introduction to Noise pollution
- General overview
- Noise-Planet initiative
- OnoMap SDI
- NoiseCapture app
- Virtual Hub
- Conclusion
(Effect of) Noise in Europe

“Excessive noise seriously harms human health and interferes with people’s daily activities at school, at work, at home and during leisure time. It can disturb sleep, cause cardiovascular and psychophysiological effects, reduce performance and provoke annoyance responses and changes in social behaviour.”

European Environmental Noise directive 2002/49/EC

“define a common approach intended to avoid, prevent or reduce on a prioritised basis the harmful effects, including annoyance, due to the exposure to environmental noise”
Noise mapping
- To identify noise pollution
- To propose action plans to reduce noise
- To communicate with citizens

Methods
- **Modelling** of noise emission and propagation (NMPB, CNOSSOS, ISO 9613...)
- **Measuring** real noise in urban areas (noise observatories): need a large amount of “qualified” data.
Alternative approach

Develop a participative approach based on collaborative noise maps using smartphones (i.e. citizens) for a massive acquisition of noise data in urban environment.


- Made by specialists in Geomatics and in Acoustics
- Following VGI and open/participative science concepts
- Citizen both producer and consumer of data
- Build a qualified noise database
- Produce “real” and relevant noise maps
- Share database and noise maps with communities
General overview

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Users
(citizens, experts, researchers, stakeholders ...)

Acquire

Process and organize

Publish results

ENERGIC-OD Virtual Hub

Interactive map

Raw data
Noise-Planet platform

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http://noise-planet.org/
A Spatial Data Infrastructure to:
- **Collect** data coming from acquisition (NoiseCapture, …) and modelisation (NoiseModeling, …) modules,
- **Organize** data in a single place
- **Describe** data in a common way
- **Publish & share**, to encourage data reuse

Based on (open) standards (ISO 19115, WMS, WFS, WPS, SFS-SQL, …) and compliant with the european INSPIRE Directive
OnoMap SDI

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Metadata catalog
- Describe
- Organize
- Search

CSW

Spatial database
- Store
- Manage
- Query

SFS SQL

Processing
Process data remotely

WPS / Groovy

Cartographic server
- Connect
- Style
- Transform
- Share

WMS / WFS

WebCarto library
Display in an interactive way

HTML 5 / Javascript

NoiseCapture app

- Official release V1.0
- Android app *(at least 4.3)*
- Free *(… and no Adds)*
- Open-source *(GPLv3)*
- For any kind of users (citizens, professionals, …)
- Need to calibrate the smartphone
- No background measure. Users decide when it starts and it ends
Privacy policy

- No need to register

- Anonymised data. Only basic informations are collected:
  - Unique User ID (UUID) to link noise measures and a smartphone
  - Smartphone informations (OS version, Model)

- No audio recording → not possible to understand a conversation, ...

Read the full privacy policy:
http://noise-planet.org/NoiseCapture_privacy_policy.html
NoiseCapture app

Measurement

3 possibilities:
- Spectre
- Spectogramme
- Map
**NoiseCapture app**

**Description**: Once the measure is done, users are invited (optionnally) to add description

- Text description
- Take a photo (private information)
- Pleasantness
- Tag to qualify measure conditions
- Tag to qualify measure sources
Indicators: Consult indicators related to your measure

- Mean db during the measure
- Noise classes repartition during the measure
- Frequences histogram
**NoiseCapture app**

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**Visualization**: Visualize on the map the selected measure, all your past contributions and the community map.
History: Consult and manage your measures

Icon to indicates if the measure has been uploaded to our server.
1. Install NoiseCapture (thanks to Google Play or QR Code)

2. Activate your GPS

3. Launch the app and start measuring noise
- A ready-to-go protocol / tutorial

- Already available in French, English and Italian

→ http://noise-planet.org/noisecapture_protocol.html
NoiseCapture Party

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Geneva (CH)
(since February - EPFL project) *

Lyon (FR)
(since May - by http://www.acoucite.org/) *

To come

Firenze (IT) – Lorenzo Bigagli (CNR) project *
St-Nazaire (FR) – Digital Week, september 20th **
Paris (FR) – 8es Assises nationales de la qualité de l’environnement sonore (Nov. 2017) **

* autonomous initiative
** supported by CNRS/IFSTTAR
Reuse of NoiseCapture

- Researchers from Switzerland (http://www.unige.ch/)
- Noisebay app
- San Francisco (USA)
- May 1st to 18th

→ https://crowd.unige.ch/noiseMapSF
Translation with the Transifex platform: https://www.transifex.com/LAE/noisecapture/

- Create a free account & start translate
- 187 character chains (words or small sentences)
- Can be done in half a day
- Measures from NoiseCapture uploaded in quasi-realtime (± 1mn) and displayed in the interactive map: http://noise-planet.org/map.html

- Mainly in Europe, but also coming from the all world.

- 3 WMS (& WFS) layers
  - Sound levels
  - Density of measures (blue)
  - Location of measures

→ URLs can be found here

... and already visible in the pEU VH
Download raw data

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- One entry point: data.noise-planet.org
- Under ODbL licence
- Measures in 49 countries (2017, Sept. 3rd)
- 1 zip file per country (3 geojson files per regions)
Download raw data

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3 GeoJSON files

* .tracks.geojson

```
{
    "type": "Feature",
    "geometry": {
        "type": "Point",
        "coordinates": [125.6, 10.1]
    },
    "properties": {
        "name": "Dinagat Islands"
    }
}
```

* .points.geojson

* .areas.geojson
**Some stats (2017 Sept 3rd)**

- 1 003 users (*at least 1 measure*)
- 1 000 730 points of measures
- 5 131 tracks
- Average track time: 195s
- Average track length: 486m
- Active installations: 941
- Installation per countries:
  - France: 781
  - Switzerland: 382
  - Italy: 55
  - Colombia: 48
  - India: 47
  - USA: 33
  ...

Note: Statistics and data may have changed since this presentation.
Connection between the VH and NoiseCapture/Onomap data

→ 881 resources collected
Main features

- A comprehensive and open infrastructure for producing noise data from smartphones, with a special attention to the audio-processing,
- A raw database for the need of the scientific community in order to produce a relevant evaluation of noise in the environment,
- All data accessible through the pEU VH

Future developments

- Improve the calibration and audio processes,
- Methodologies for Data Quality Assessment,
- Production of noise maps,
- Use data coming from pEU VH to improve noise maps
- Translate the application in other languages
- NoiseCapture for iOS (iPhone).
Thank you for your attention


Visualize community noise maps: http://noise-planet.org/map.html

Follow the development of NoiseCapture on GitHub platform: https://github.com/Ifstttar/NoiseCapture

Made by ... ... and partially funded by