SwarmPulse

mapping the world together....

www.Swarmpulse.net

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What is it?

- Built as part of a research initiative at the ETH Zurich, Professorship of Computational Social Science (COSS)
- Part of the Planetary Nervous System platform, a large-scale distributed research platform that provides real-time social sensing services as a public good
- Allows users to visualize and anonymously share data and digital content (sensors values, media, web links etc.)
- User generated content and data.

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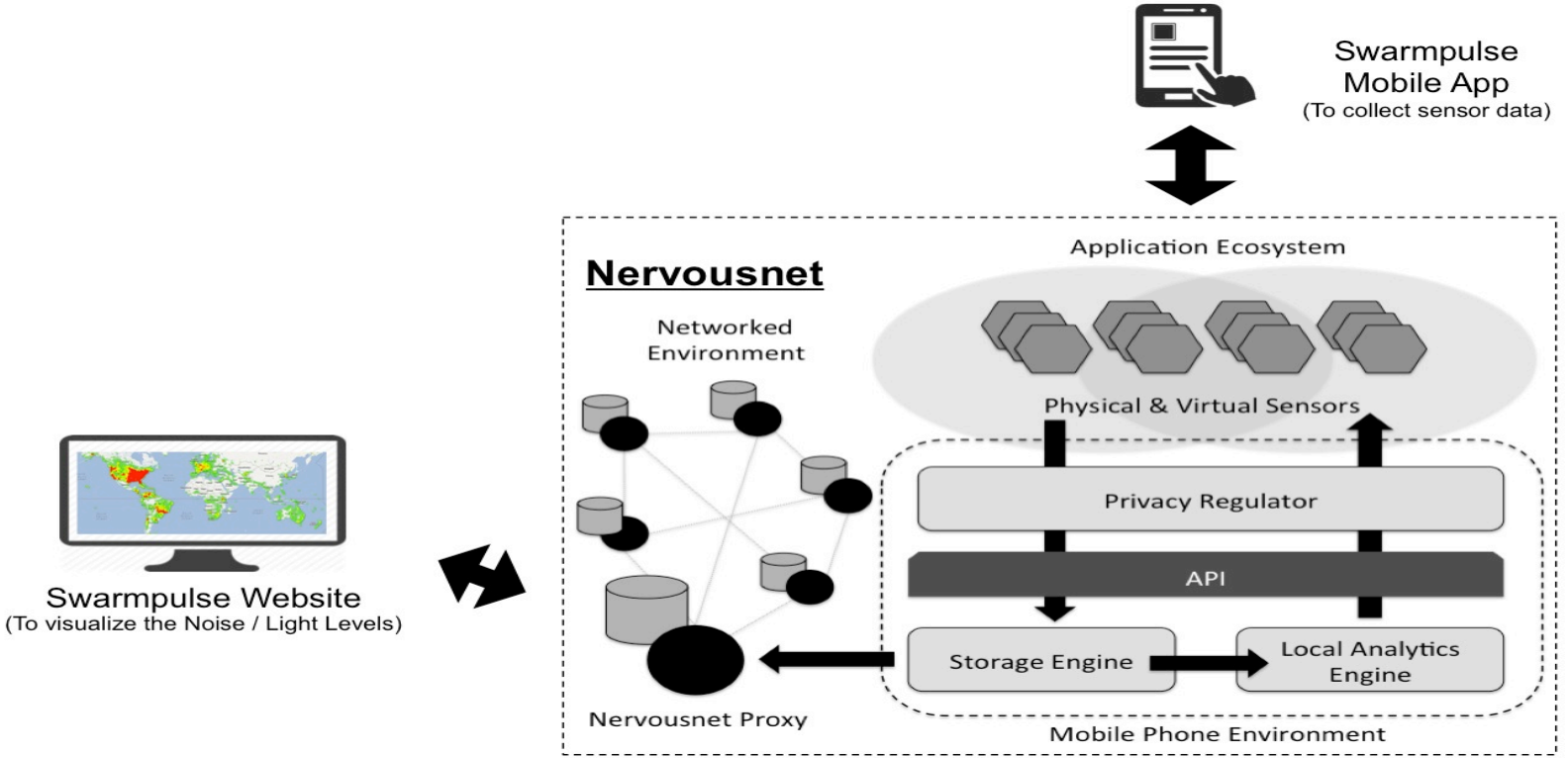
System Architecture



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Features

Current
version 1.0

- Real-time view
  - Visualize data as it is shared by users in real time.
  - Markers are cleared from the map after 5 minutes (300 seconds) to avoid the possibility of large amount of data being shown on the map.
- Time-Machine
  - Go back in time to view data as was shared by users at specific times.
  - Time range is limited to 30 minutes window period from the start time chosen by the user.
- Sensors
  - Light, Noise
  - Visualize light and noise levels at various geo locations.
- Sharing
  - Text Message and web links.
  - Share links, favorites websites directly from external apps and browser on Android and iOS devices.

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Features

To be implemented in version 2.0

- Allow for sharing of images, audio and video clips of limited duration.
- Rate Shared content.
- Report inappropriate content.
- Data Volatility – Allow for users to choose how long their data remains on the server.
- Auto Upload of Sensor data at specific time intervals.

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How – to?

- Mobile Client Download (Android only):
  - On you mobile phone, use the download mobile app button in the right corner on the website at www.swarmpulse.net.
  - Visit the following URL on your android phone:

    https://play.google.com/store/apps/details?id=ch.ethz.coss.nervous.pulse

  - Website for visualization:

    View website at: www.swarmpulse.net

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Limitations

- Web Browsers limitations
  - Large amount of data (> 20000 markers) causes problems with the browser performance.
  - To avoid this Clusters have been used to group together markers that are close. This is useful to an extent i.e. 60000 markers.
  - Secondly the pulse of the system is set to 5 minutes, i.e. data is removed after 5 minutes in Real-Time view and in the Time-Machine view the results are limited to only 30 minutes from the start time chosen by the user.

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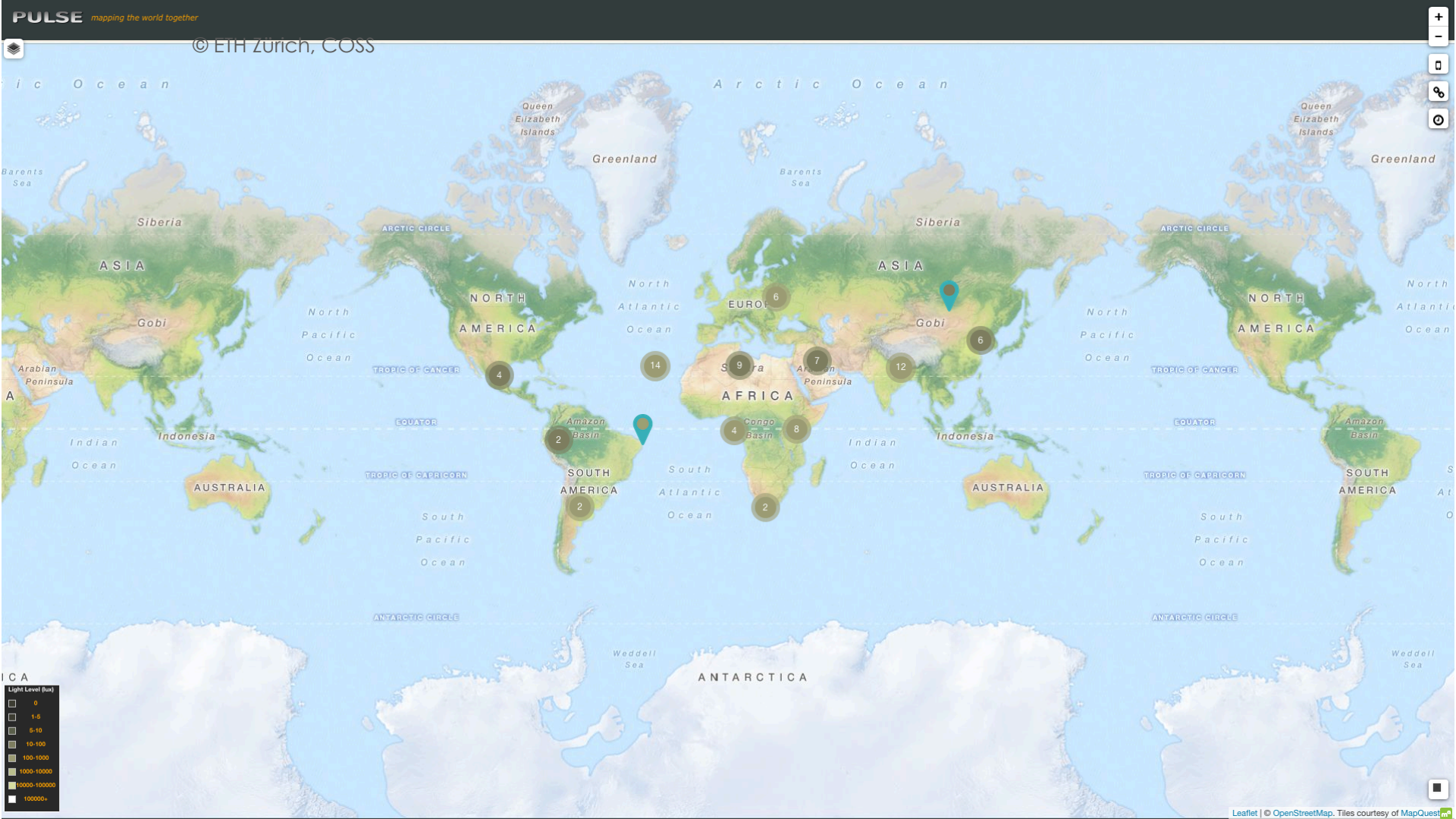
Screenshots

Website & Mobile Client


PULSE
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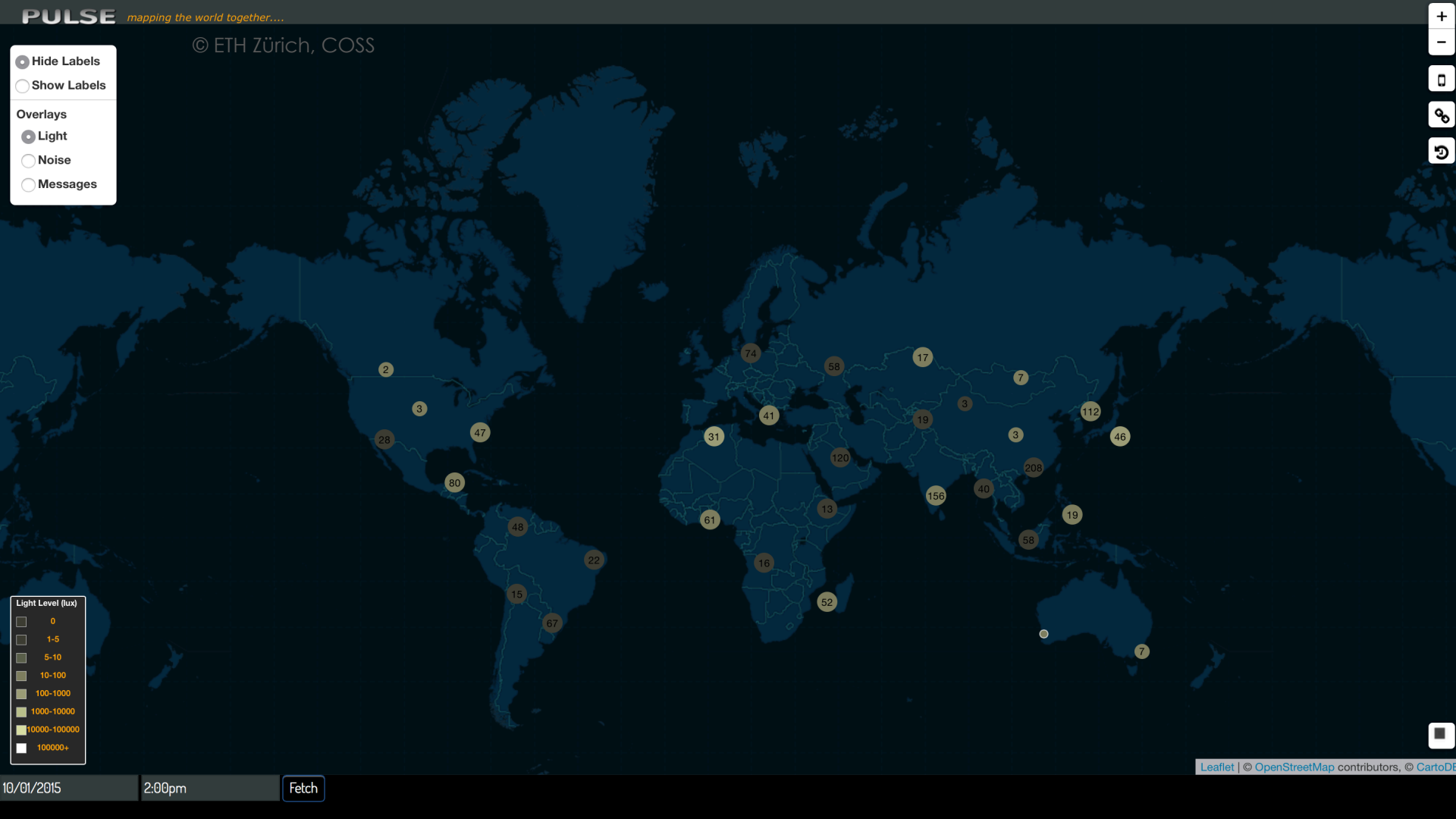
Arctic Ocean
Queen Elizabeth Islands
Greenland
Barents Sea
Siberia
ARCTIC CIRCLE
ASIA
NORTH AMERICA
EUROPE
AFRICA
Gobi
North Pacific Ocean
North Atlantic Ocean
Arabian Peninsula
TROPIC OF CANCER
EQUATOR
Indian Ocean
Indonesia
Amazon Basin
Congo Basin
SOUTH AMERICA
AUSTRALIA
TROPIC OF CAPRICORN
South Atlantic Ocean
South Pacific Ocean
ANTARCTIC CIRCLE
Weddell Sea
ANTARCTICA
6
14
9
7
12
4
2
4
8
2
Light Level (lux)
0
1-5
5-10
10-100
100-1000
1000-10000
10000-100000
100000+
Leaflet | © OpenStreetMap. Tiles courtesy of MapQuest


PULSE
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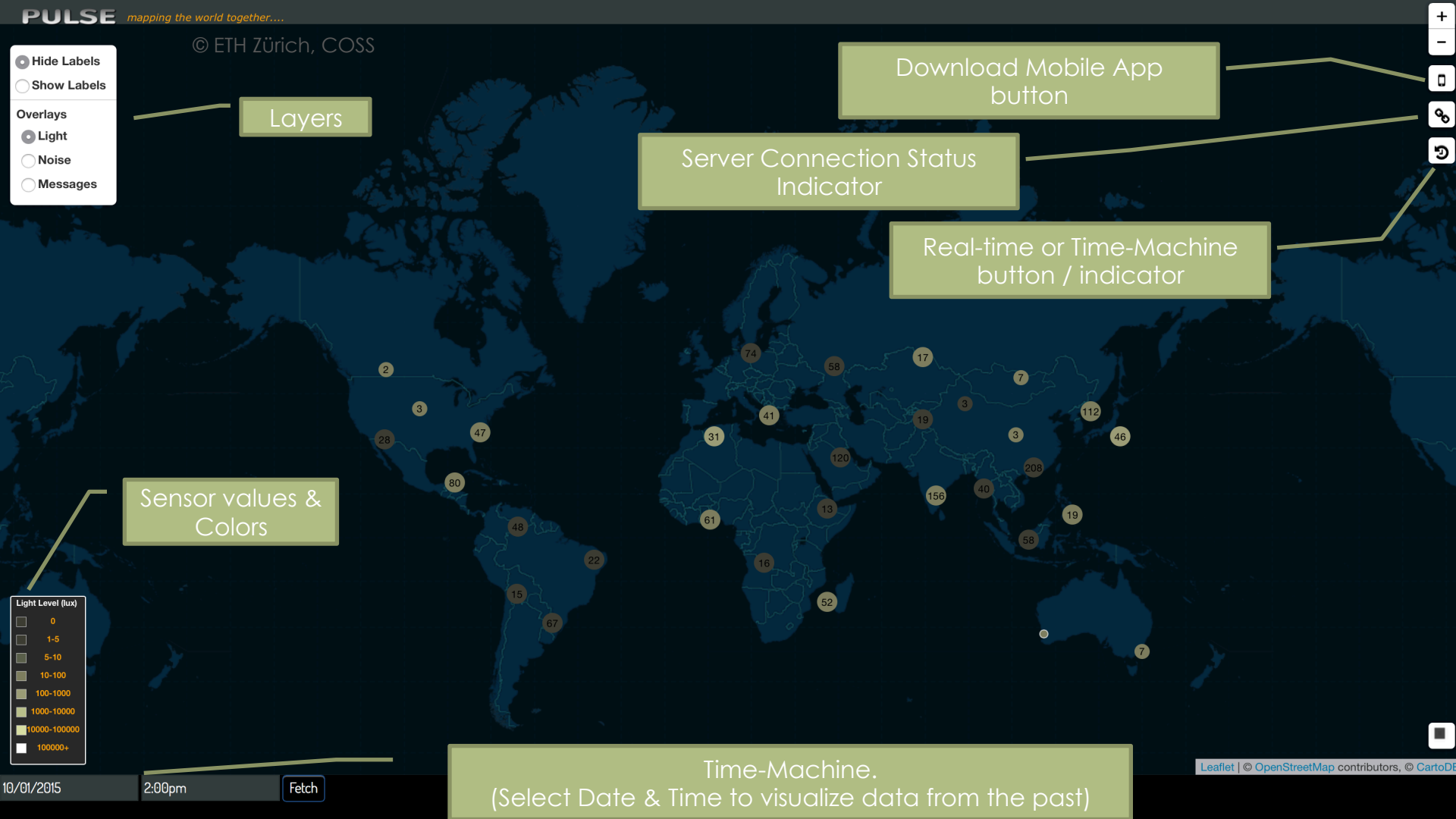
Hide Labels
Show Labels
Overlays
Light
Noise
Messages
Light Level (lux)
0
1-5
5-10
10-100
100-1000
1000-10000
10000-100000
100000+
2
3
28
47
80
48
22
15
67
74
58
17
7
41
3
19
112
31
3
46
120
208
156
40
13
61
19
58
16
52
7
Leaflet | © OpenStreetMap contributors, © CartoDB
10/01/2015
2:00pm
Fetch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Hide Labels
Show Labels
Overlays
Light
Noise
Messages
Layers
Download Mobile App button
Server Connection Status Indicator
Real-time or Time-Machine button / indicator
Sensor values & Colors
Light Level (lux)
0
1-5
5-10
10-100
100-1000
1000-10000
10000-100000
100000+
10/01/2015
2:00pm
Fetch
Time-Machine.
(Select Date & Time to visualize data from the past)
Leaflet | © OpenStreetMap contributors, © CartoDB

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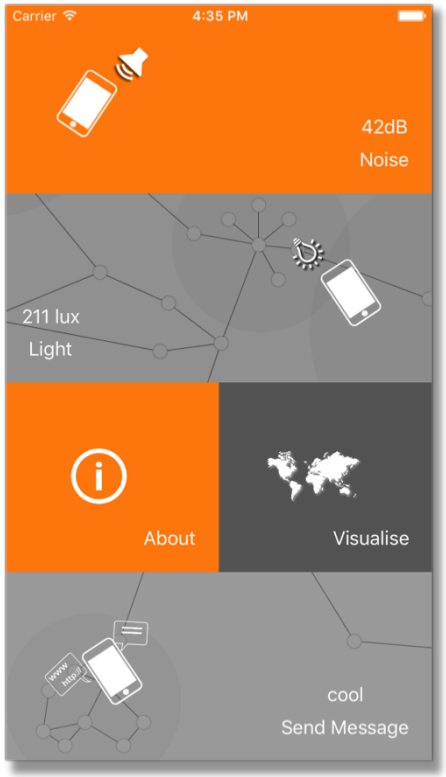

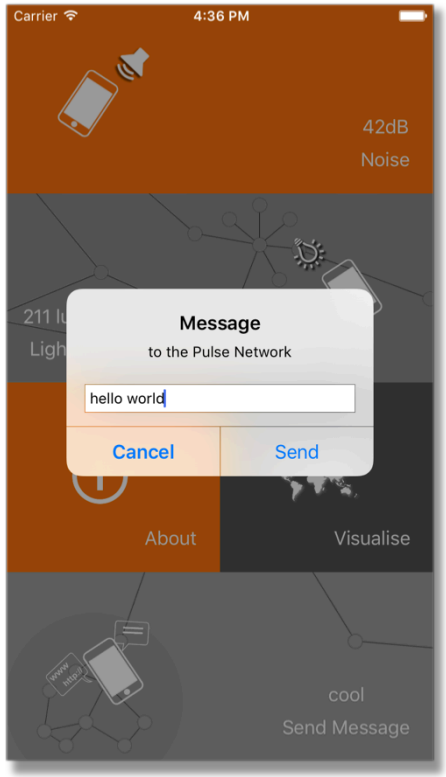

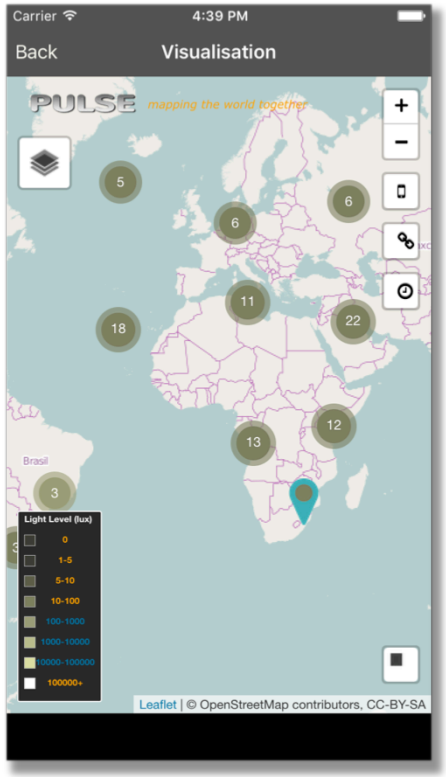

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Sample Video

https://youtu.be/lU_3XKqWesE