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One million and one labs

HIGHLIGHTS

100001 Labs is a **research and innovation SME** based in Barcelona, Spain.

We build solutions based on **artificial intelligence, standards** and **interoperability** to:

- predict the **evolution of ecosystems**
- improve **environmental management** systems
- improve **quality control** in **citizen science**

We empower citizen science via:

- **rich graphical interfaces**
- **dissemination** in **education**

100001 Labs (one million and one labs, 1M1L) is a leading SME for intelligent, machine analysis of citizen-science data. It is specialized in advanced systems of decision support, recommendation, personalization and **internet of things** applied to the environment domain.

Its research and innovation staff includes the principal investigator and coordinator of the **Citclops** project, a 5M€ European project about a citizens' observatory for coast and ocean monitoring, and also includes software engineers and researchers who participated in various other European projects, and experts in the area of internet of things.

100001 Labs is a member of the Board of Directors of the **European Citizen Science Association (ECSA)**. 100001 Labs represents the European Citizen Science Association in the liaison among ECSA, ACSA and CSA via a common *Data and Metadata Working Group*. The purpose of this working group is to support, advance, and facilitate data interoperability among ontologies, projects and data repositories, and promote collaboration via the development and improvement of international standards for data and metadata. In its continuous effort to disseminate citizen science, 100001 Labs has recently joined the ECSA *Learning and Education in Citizen Science working group*.

Ontologies, standards and interoperability

100001 Labs is developing a service that monitors environment quality for the aquaculture industry. The service is designed to **combine information** from in-situ monitoring stations, Earth-observation satellite data, biological and physical oceanic models, and citizens. 100001 Labs is also leading the design of a marine-monitoring **offshore lab** (Andromeda).

The data **interoperability** framework proposed by 100001 Labs, in collaboration with SINTEF, CSIC, CREAM and other organizations, is based on an **ontology mapping**, with a citizen-science ontology and an enhancement of the ISO 19156 / OGC *Observations and Measurements* model for the support of citizen-science observations in synergy with the GBIF vocabulary, where the enhancements of ISO 19156 is proposed as a future ISO/TC 211 standard revision. The service interoperability is based on an open service-architecture, following the principles of the August 2015 revision of ISO 19119 *Geospatial services* and CEN/TC 287 *Spatial Data Infrastructure* (CEN/TR 15449-1-4:2012). The architecture is based on the EC's **Future Internet service principles** with RESTful and web services.

Predict the evolution of ecosystems

100001 Labs allows automatically detecting **patterns** across data. Users can zoom in and out using a visual timeline to spot trends and spikes, and respond to important events, as they occur. 100001 Labs provides support in **classification, decision making, prediction** and **recommendation**: users can automatically discover knowledge from citizen-science data, adding context and meaning to these data by identifying, naming and tagging fields and data points.

100001 Labs enables any user to automatically discover relationships in the data, **define data models** that describe them, and build powerful reports. It also enriches results integrating information from external open-access databases.

Improve environmental management systems

100001 Labs allows **alerts** and threshold conditions to be used to monitor environmental systems. By applying **artificial-intelligence tools**, the observing systems where data come from become more efficient and users have access to added-value information.

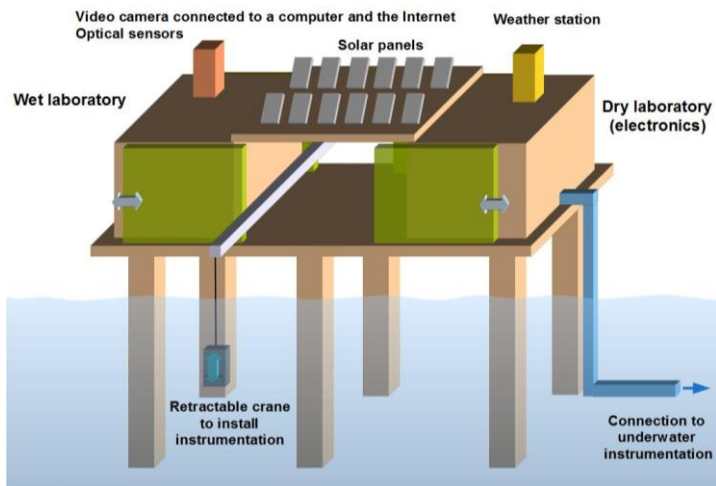
Improve citizen science and empower citizens

1000001 Labs has expertise in engaging and retaining citizens in activities of citizen science, with emphasis not only on data collection, but above all on information analysis and its delivery to end users.

With an increasing number of citizen-based initiatives, a coordinated approach for the integration of citizens' observation systems is becoming necessary as a key **support tool** for decision makers involved in the management of domains such as the environment, disaster risk and emergency. Decision support is indeed strategic for a coherent approach that allows benchmarking and pinpointing best practices, identifying barriers and synergies, promoting standards, facilitating integration and stimulating uptake by **public authorities**.

1000001 Labs coordinates initiatives in the urban symbiosis, energy, water, ecosystems, and biodiversity areas. Data are collected from wherever they are generated, including physical, virtual and cloud environments, in order to monitor and analyze them in real time, gaining operational intelligence with critical insights. **Intuitive interfaces** guide the user through previewing and preparing data for further research and analysis.

Dissemination and educational workshops are part of 1000001 Labs day-to-day activities. We highlight our activities in the [Barcelona Citizen Science Day](#), [Sonar+D](#), [Hack The Expo](#), and with the [Barcelona Maker Community](#).



Some of the calls in which 1000001 Labs is interested in participating

Horizon 2020 - Work program 2016-2017

SC5-18-2017	Novel in-situ observation systems
SwafS-11-2017	Science education outside the classroom
SCC-02-2016-2017	Demonstrating innovative nature-based solutions in cities

Our values

Project focus

- Partner in European projects and expertise in preparing successful project proposals
- Fast decision-making
- Solutions to generate explicit knowledge from the tacit knowledge in the data ([Water Trends](#))
- Expertise in interoperability

Innovation

- Development of prototypes ([Hydroino](#))
- Participation in national and international networks of experts and in standardization initiatives
- Innovative solutions for societal benefits

Experience and reliability

- Team of international, experienced and competent staff
- Experience in the **environment, education** and personalized healthcare domains
- Industry-leading SME in citizen science and artificial intelligence

Integrity

- Ethics as a core part of business plans
- Strong corporate social and environmental responsibility policies
- Democratic participation according to a cooperative model

Key research facilities, infrastructure and equipment

1000001 Labs is developing Andromeda, which will be the first marine monitoring hackerspace. It has been designed together with CSIC and Plàncton to support local decision making related to aquaculture.



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