

# Citizens Observatory for Coast and Ocean Optical Monitoring

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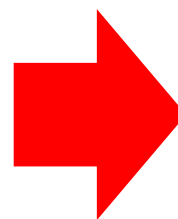
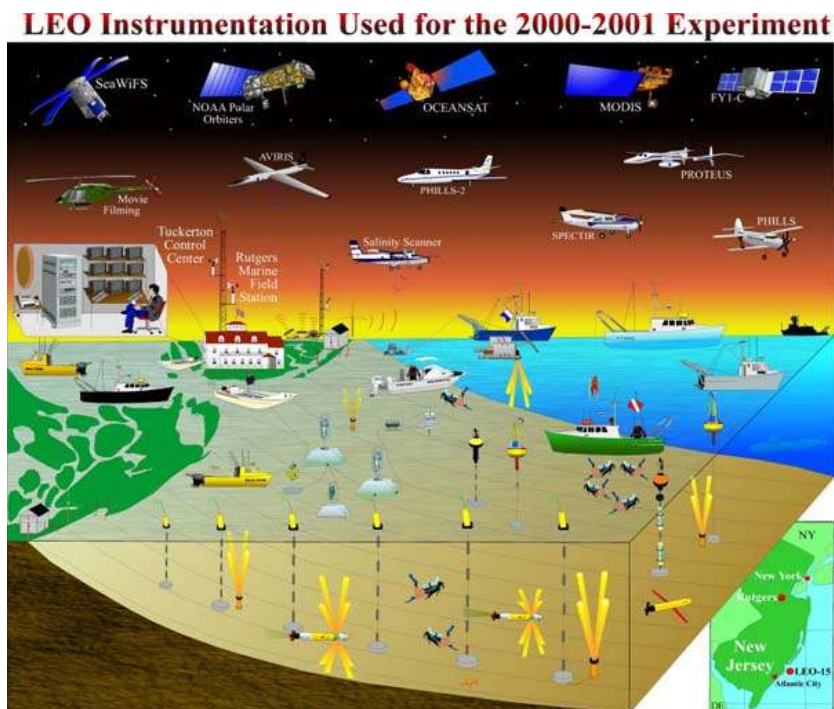
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1. Introduction.
2. Citclops Metadata.
3. Citclops SWE approach.
4. Conclusions.
5. On-Going work.

# 1. Introduction

High resolution oceanographic equipment

Participatory (Citizen) Science



Citizen science projects take advantage of low-cost technologies and citizen collaboration to get big amount of data.

# 1. Introduction

Citclops FP7 European project

[www.citclops.eu](http://www.citclops.eu)

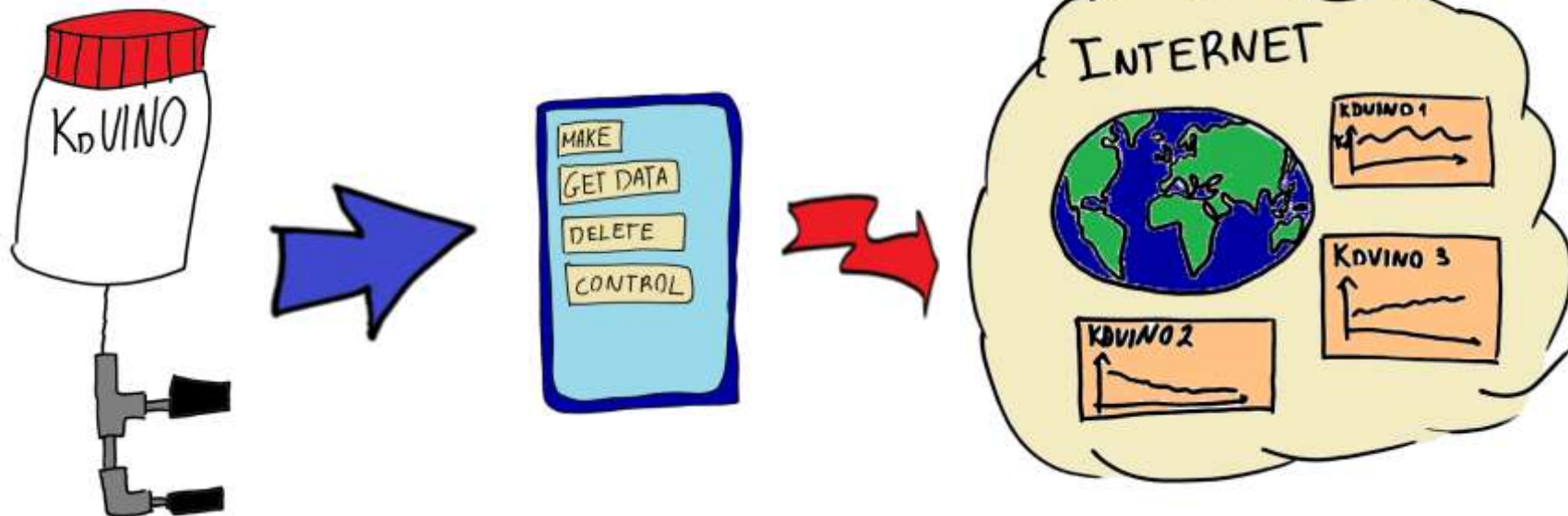
Develop low-cost technologies to estimate parameters related to water optical properties.



**Easy to build! Easy to use!**

# 1. Introduction

## KdUINO



Bluetooth®



ANDROID

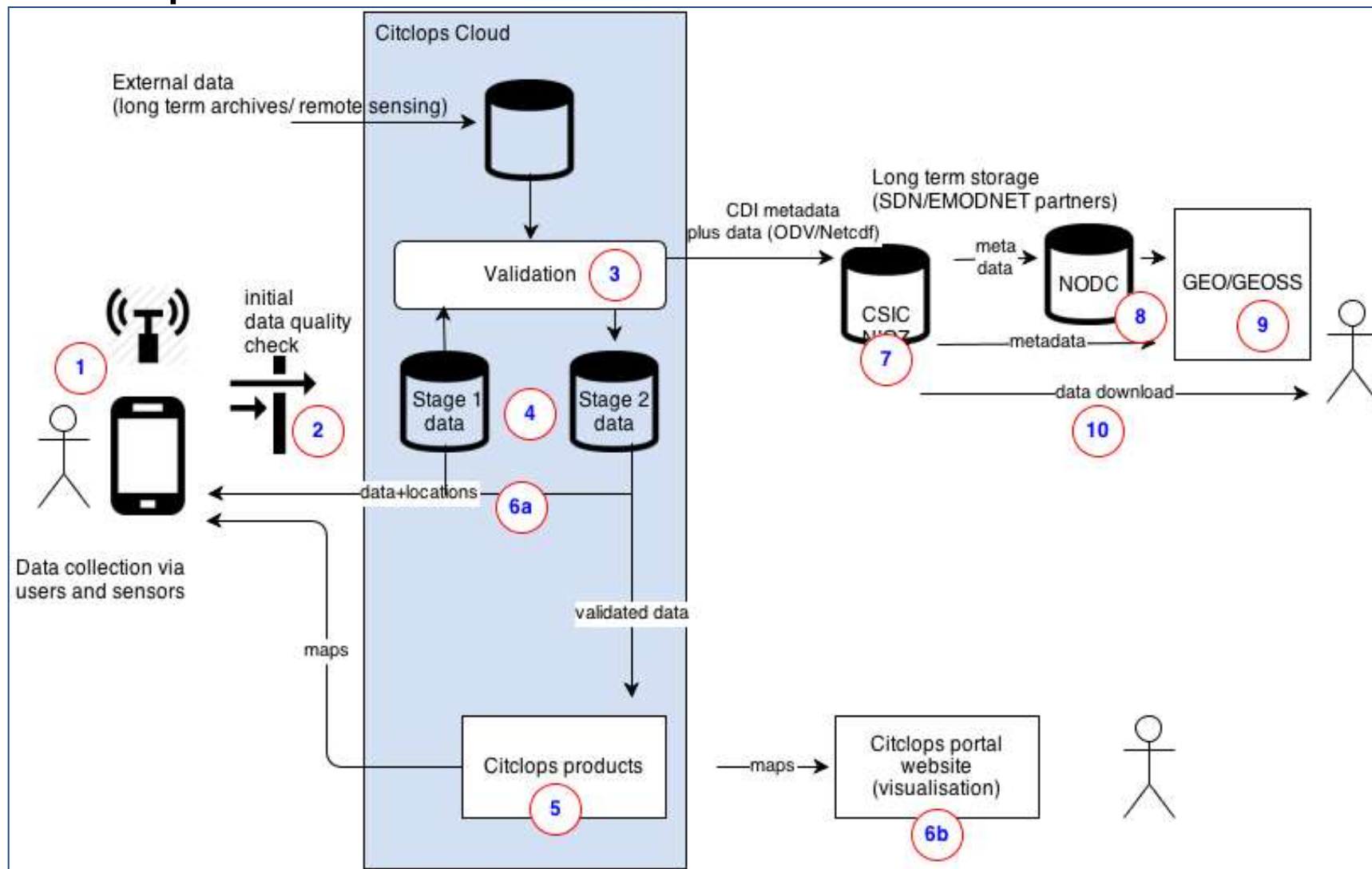


CARTODB  
Geospatial database on the cloud



# 1. Introduction

## Citclops Data Flow



## 2. Citclops Data and Metadata

What is Citclops data?

- **Marine observation data** on seawater colour, transparency, fluorescence, using low-cost sensors integrated in smart phones, so the “**crowd**” can be used to collect observations
- **Data may be of mixed quality, so data quality control is critical.**
- **Contextual information** is important in order to validate the results.
- **Validation** will be done using long-term time series and other data sources.

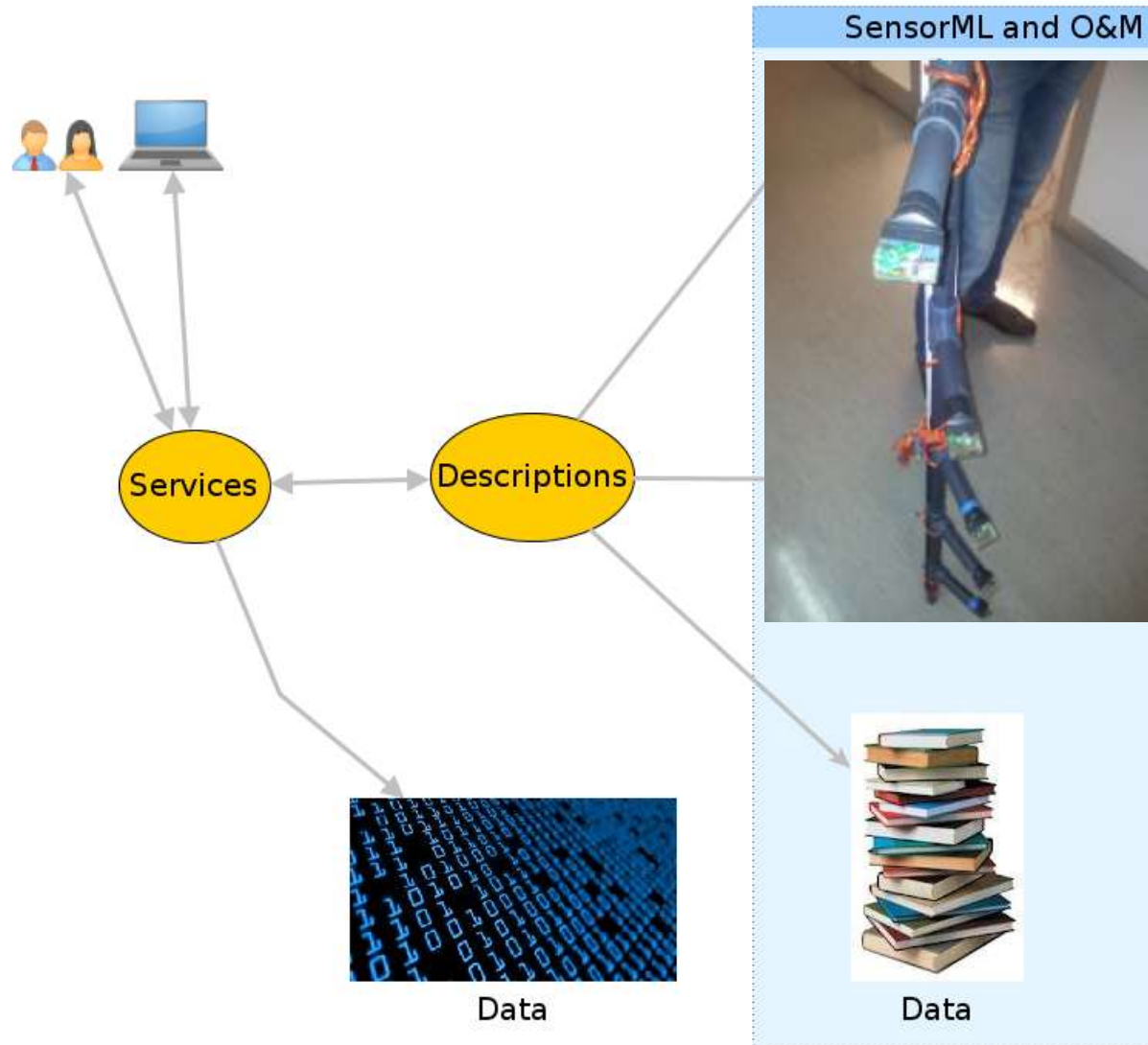
# 3. Citclops SWE approach

## Advantages:

1. To describe a **complex** sensor system.
2. To use the complex but incomplete most used **vocabularies** in marine disciplines.
3. To provide points of contact with the **data** and **metadata** services at the **Data Centers**.
4. To manage the **changes** in instrument set-up over the time.

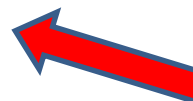
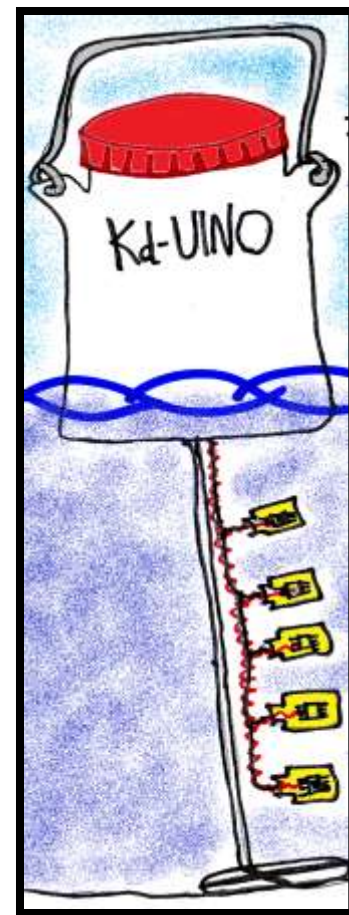
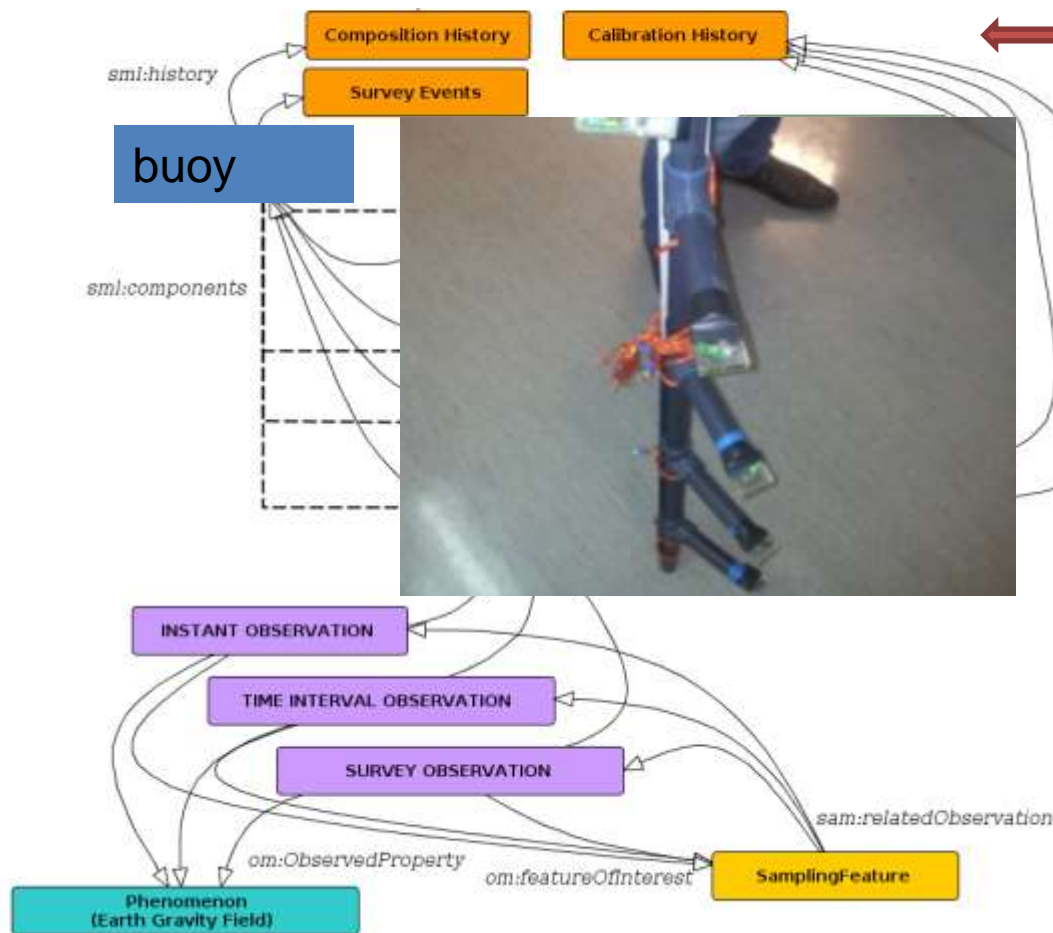


# 3. Citclops SWE approach



# 3. Citclops SWE approach

Independent  
 SensorML files. xlink:href  
 At  
 History



# 3. Citclops SWE approach

<http://www.utm.csic.es/SensorWeb/Descriptions/2.0/fixedStations/kduino.xml>

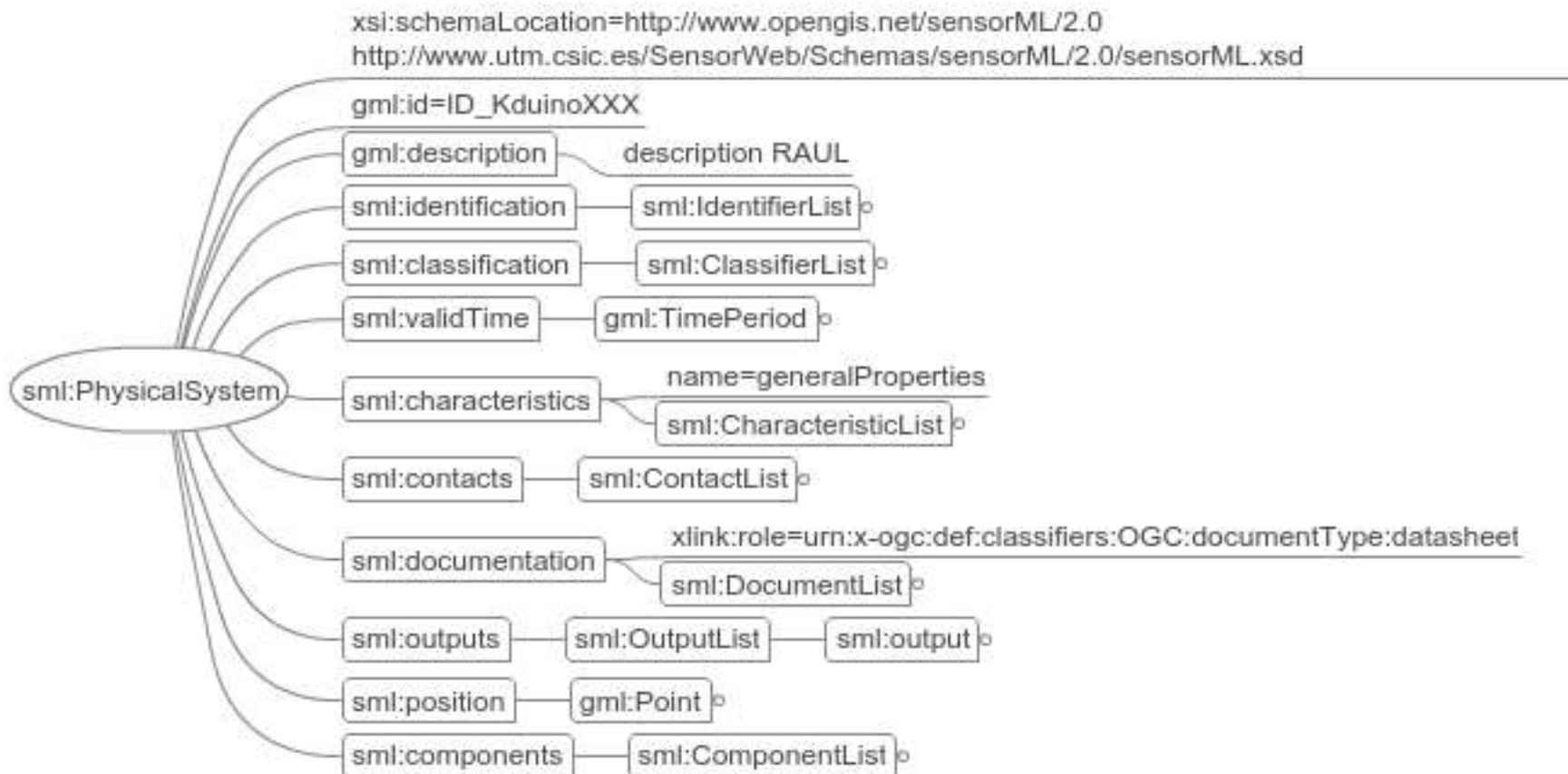
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# 3. Citclops SWE approach

<http://www.utm.csic.es/SensorWeb/Descriptions/2.0/fixedStations/MindMaps/kduino.xml.html>



# 4. Conclusions

## Crowdsourcing projects advantages:

1. A precise description of the sensor: Deployment, Maintenance periods, Malfunction
2. The project will finish. What to do now?
3. Very configurable sensors.
4. Interoperability over projects.

# 5. On-Going Work

- **SensorML Templates:** Schematron



- Hide SensorML XML files: **web forms**
- **Enabling User Interaction with Sensor/equipment:** Implementation of standardized Protocols for communication with sensors or instruments using SWE to describe sensors and instruments.

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The research described in this paper is supported by the Citclops European project (FP7-ENV-308469).

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