

**SUPSI**

It's all about time-series  
observations!

istSOS<sup>2</sup>

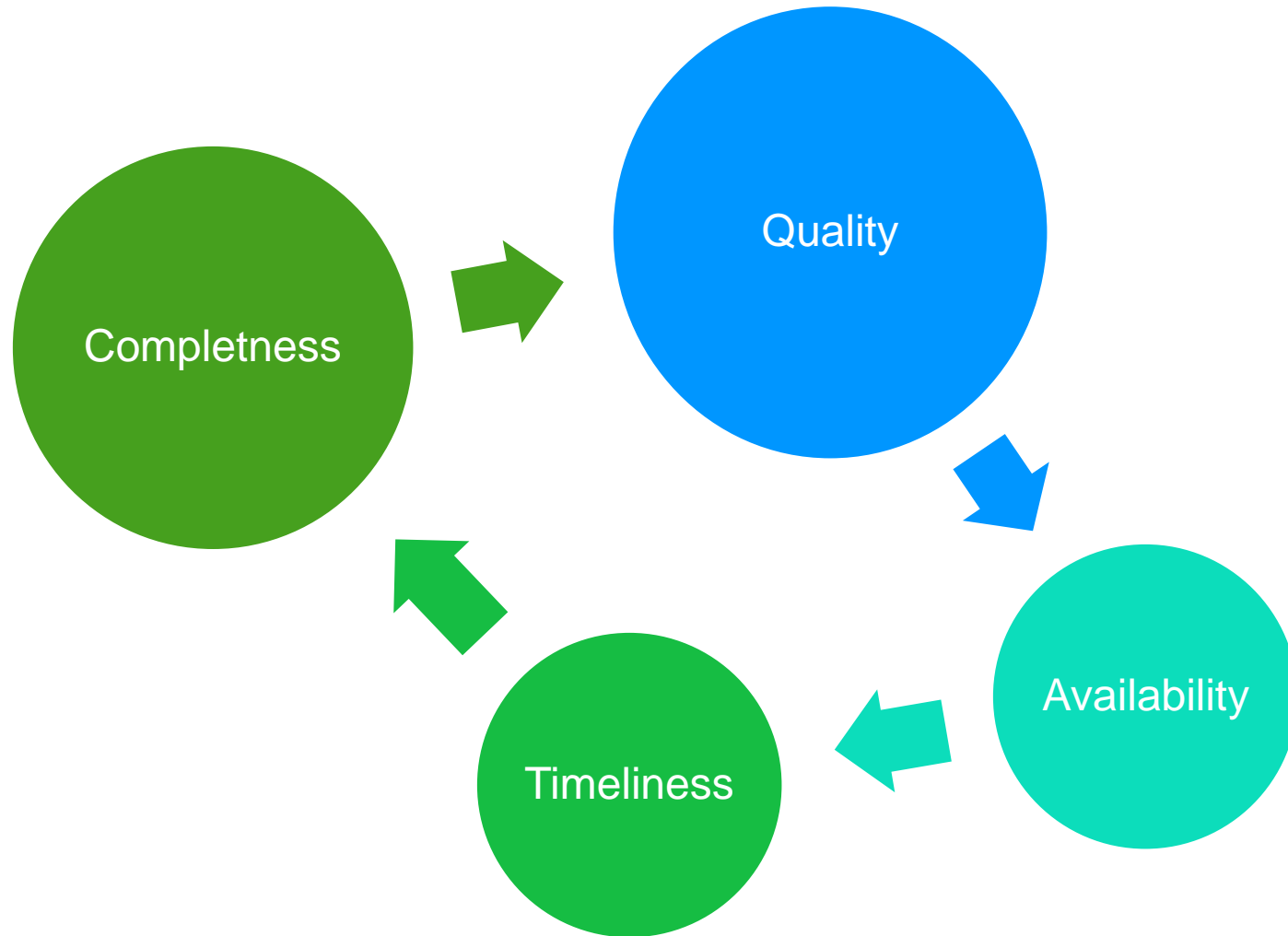
# Content

- Why do we need to monitor?
- istSOS: a SOS compliant software with special features
- istSOS in production
- Next steps



# Why do we need to monitor?

This is a key aspects for wise decisions



Understand the situation and timely react

Are you looking for a solution...

Simple  
Standard Open  
Powerfull  
**(possibly Python... shhh!)**

....then maybe istSOS is what you need

# istSOS<sup>2</sup>

**Easily manage your sensor network and  
distribute your data in a standard way**

IstSOS is an OGC SOS server implementation written in Python.  
istSOS is an OSGeo incubating project distributed under the GPL v2 license.



## SOS Standard

Offer your data according to the Sensor Observation Service standard from Open Geospatial Consortium.



## Administration GUI

Administer your sensors and your data with a comfortable interface.



## RestFul API

Use a complete API for accessing functionalities to makes it easy for new clients to use istSOS application.

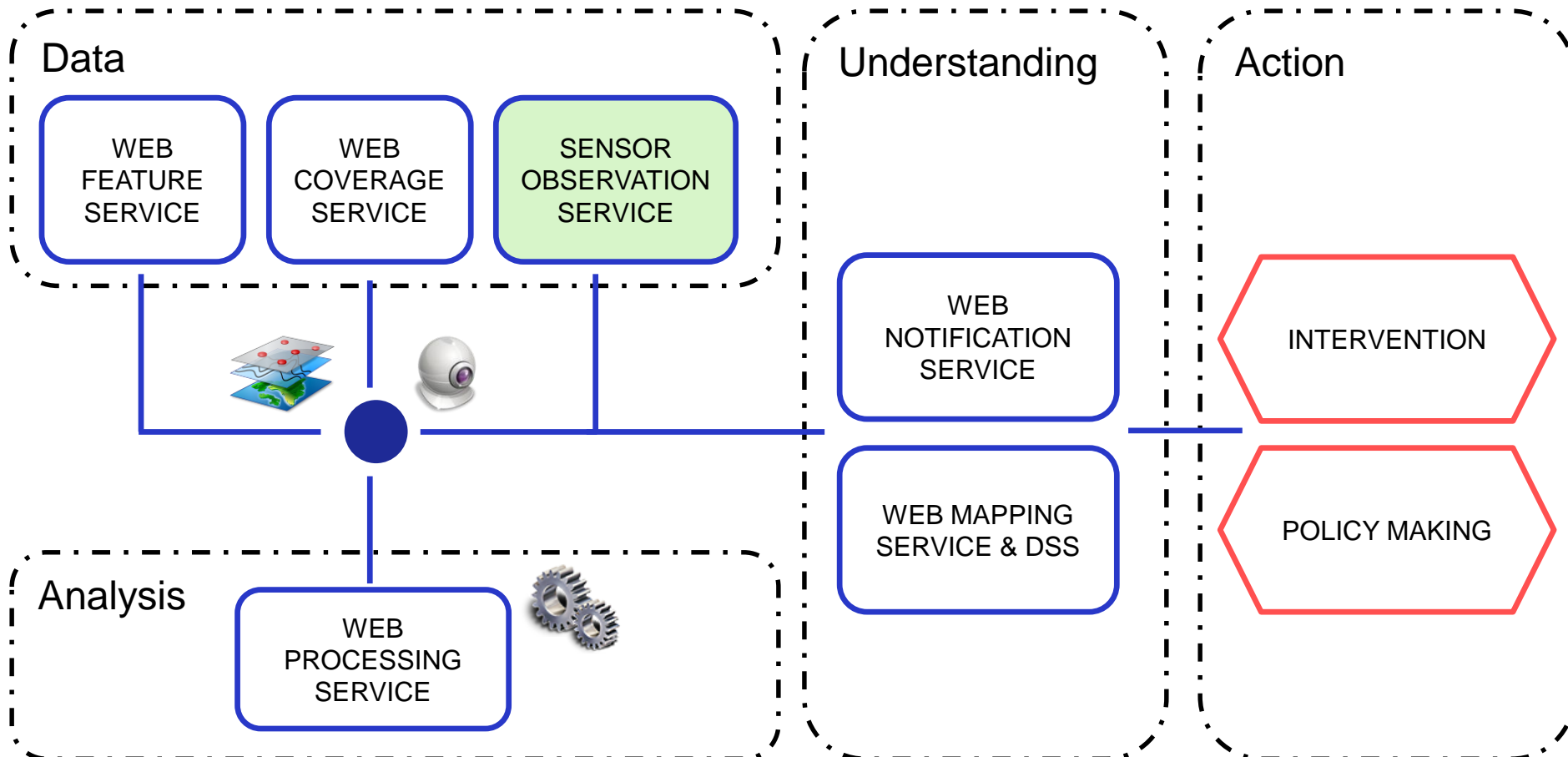


## Notification

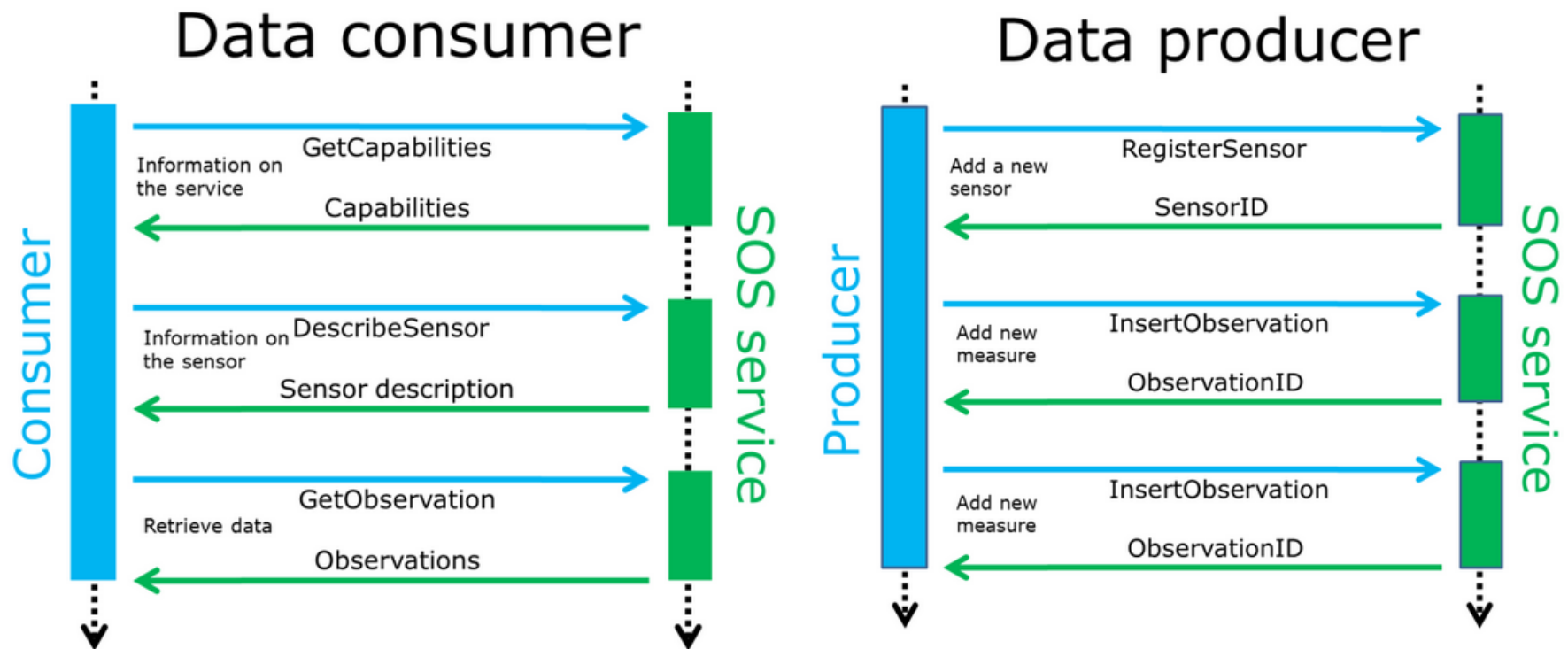
Get notified trough mail, twitter or other social when your sensor data met specific condtions.

# Open architecture

Based on the principles of a Service Oriented Architecture (SOA) and the specification of Open Geospatial Consortium Sensor Web Enablement (OGC - SWE) initiative



# SOS user types and sequence diagrams

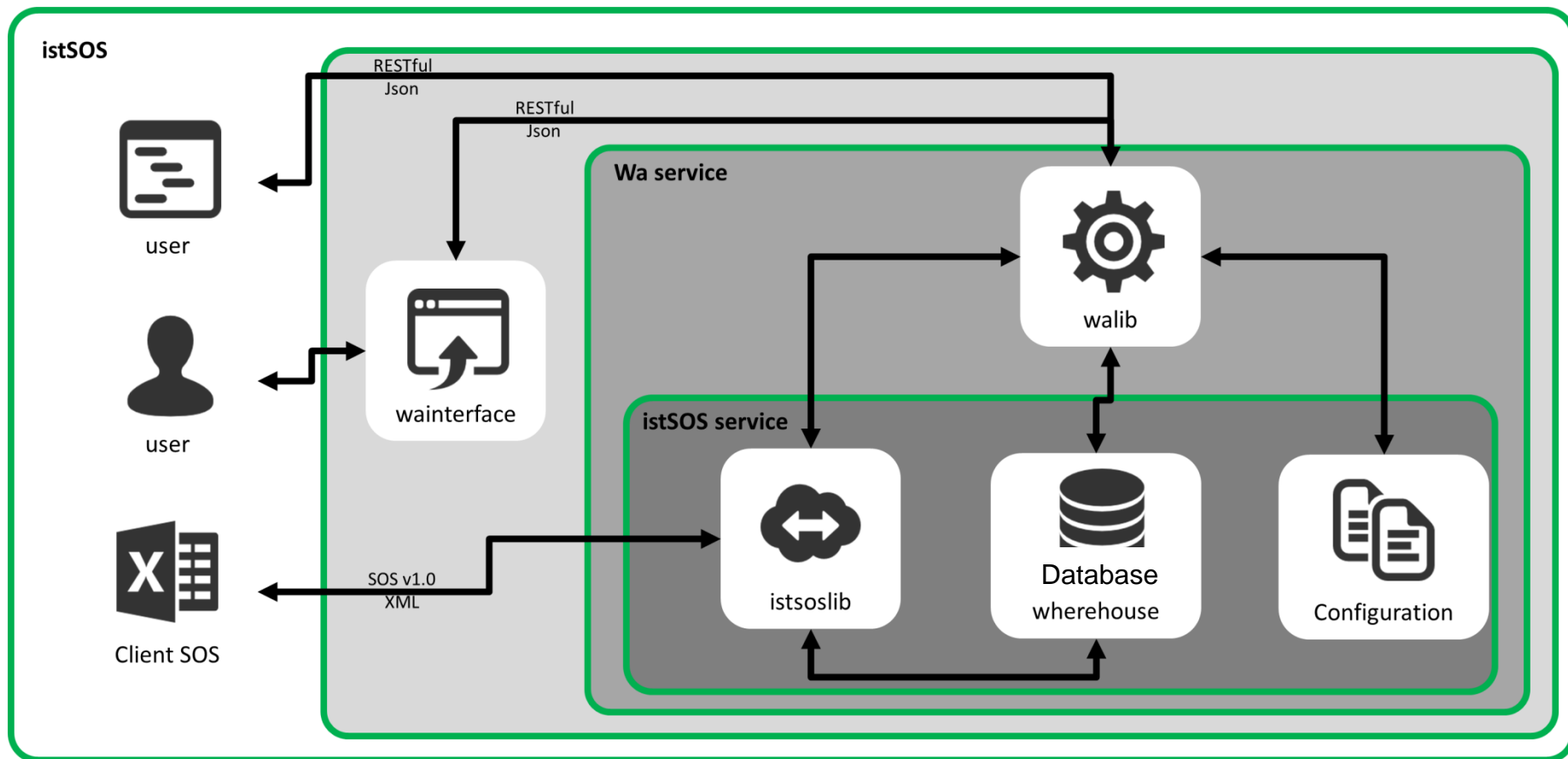




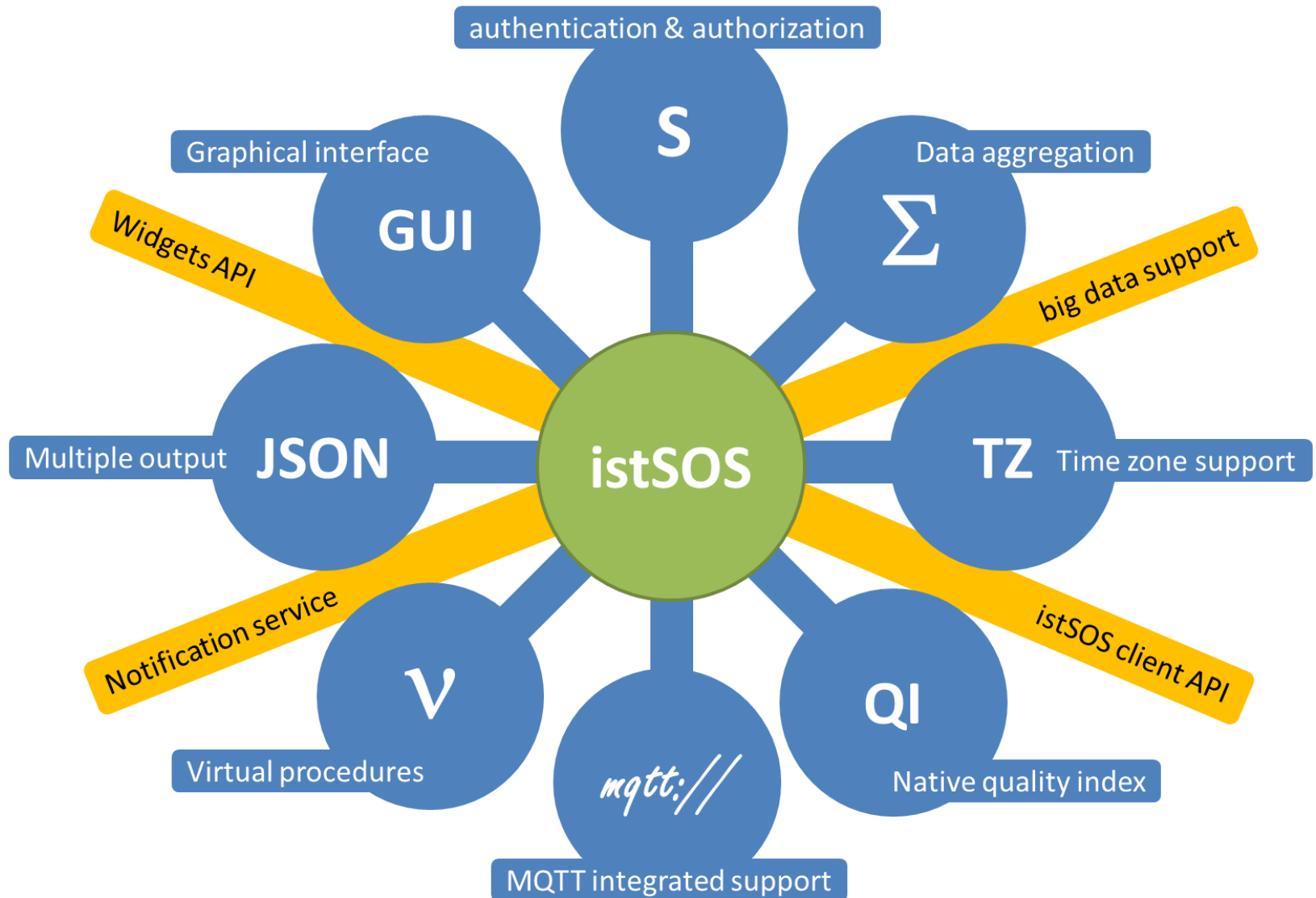
# The istSOS software



isodate  
psycopg2  
pytz



# With istSOS you get...



# Supported system types (up-to-now)

in-situ - fixed - point

in-situ - mobile - points

A blue brick wall with a large, hand-drawn yellow question mark. The question mark is drawn with a thick, slightly irregular line, and there is a small yellow circle below it, also drawn with a thick line. The wall is made of blue bricks with visible mortar lines.

# Can you

# trust

# istSOS

An application in productive



# istSOS service for Canton Ticino HydroMet

Server Services - Data Management Status (beta)

istSOS



Data Editor



Data Viewer

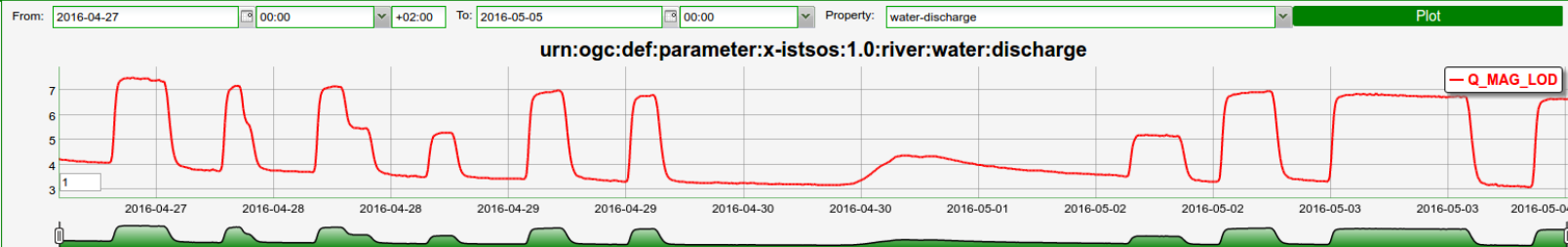
Service:

Offering:

Procedure:

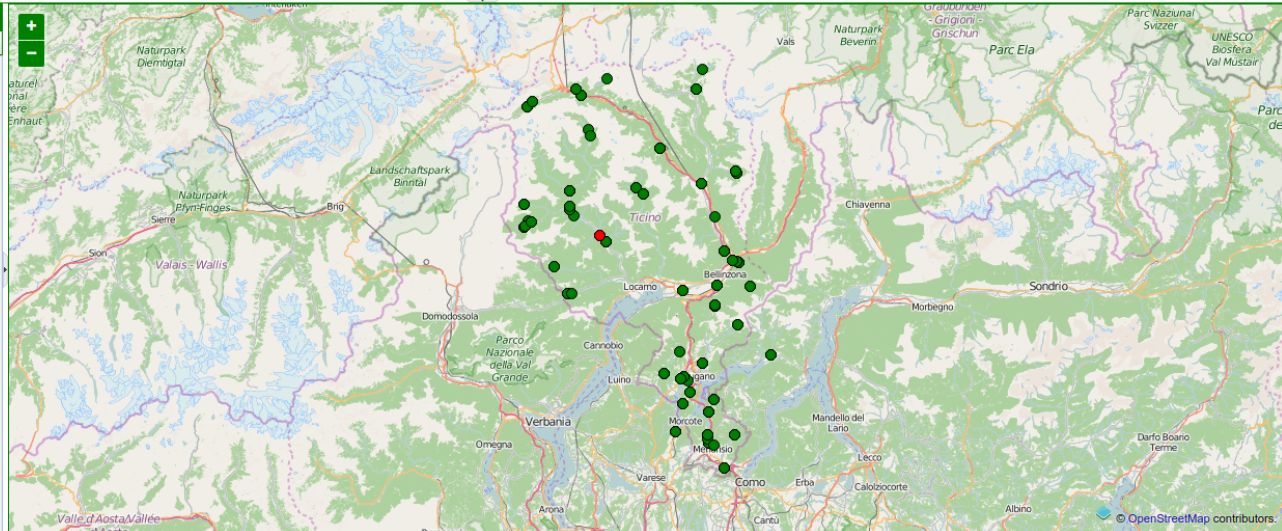
☒ **Q\_MAG\_LOD**

*sos:temporary*  
Fr:2001-10-28T23:00:00.000000Z  
To:2016-05-04T08:40:00.000000Z  
**water-discharge (m3/s)**  
Aggregation: no

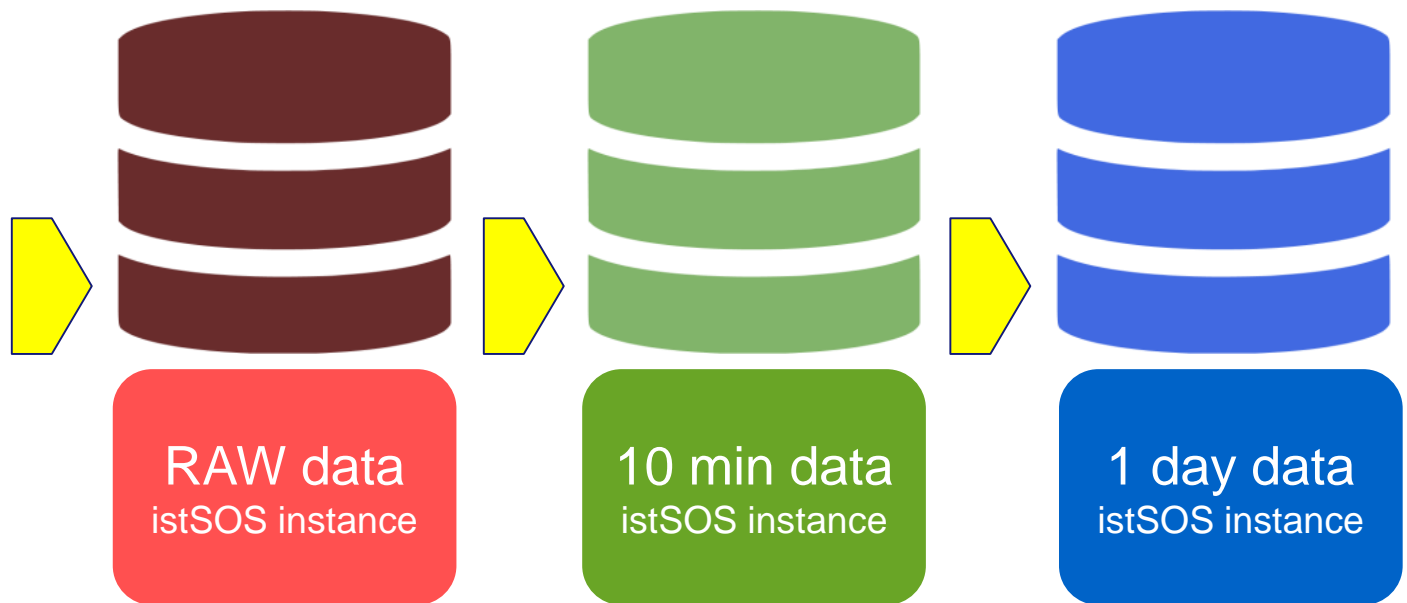


Show CSV

Date	Q_MAG_LOD	QI
2016-04-27T00:10:00+02:00	4.216	210
2016-04-27T00:20:00+02:00	4.216	210
2016-04-27T00:30:00+02:00	4.187	210
2016-04-27T00:40:00+02:00	4.187	210
2016-04-27T00:50:00+02:00	4.187	210
2016-04-27T01:00:00+02:00	4.187	210
2016-04-27T01:10:00+02:00	4.187	210
2016-04-27T01:20:00+02:00	4.158	210
2016-04-27T01:30:00+02:00	4.158	210
2016-04-27T01:40:00+02:00	4.158	210
2016-04-27T01:50:00+02:00	4.158	210
2016-04-27T02:00:00+02:00	4.158	210
2016-04-27T02:10:00+02:00	4.128	210
2016-04-27T02:20:00+02:00	4.128	210
2016-04-27T02:30:00+02:00	4.128	210
2016-04-27T02:40:00+02:00	4.128	210
2016-04-27T02:50:00+02:00	4.128	210
2016-04-27T03:00:00+02:00	4.128	210
2016-04-27T03:10:00+02:00	4.128	210
2016-04-27T03:20:00+02:00	4.128	210
2016-04-27T03:30:00+02:00	4.099	210
2016-04-27T03:40:00+02:00	4.099	210
2016-04-27T03:50:00+02:00	4.099	210



# istSOS service for Canton Ticino HydroMet



# istSOS service for Canton Ticino HydroMet

## CONFIGURATION

**549** registered sensors

**15** observed properties

(air-temperature, air-rainfall, water-height, water-height, air-humidity, water-discharge, water-height, air-pressure, air-radiation, water-conductivity, water-temperature, water-temperature, battery-tension, water-tension, air-relative\_humidity)

**47 years** of data (1970-2017)

**114 Mio** registered observations

**73 GB** of database

## Some stats from the last year (8.2016/8.2017)

### TRAFFIC

**122 GB** of data served

**75 Mio** served requests in 1Y

**1** Internal server error response (500)

### UPTIME

**99.902%** Availability

**9 hours** Downtime



# Bottlenecks

- getCapabilities vs big number of sensors
- Big concurrent users (>1000) vs sever time-out
- Very high frequency data vs Database insertion time



Research

Next applied

# Collaborations



Yann Chemin, International Water Management Institute, teaches participants how to build a mobile weather station during a Focus Day workshop

2016 **UR** Understanding Risk Forum

UR

**BUILD A MOBILE WEATHER STATION IN ONE DAY  
WITH OPEN SOURCE HARDWARE AND  
SOFTWARE**

The session looked at different solutions being implemented to provide first hand experience in the technologies needed to solve local problems by building skills locally, and providing COTS locally. There is tremendous capacity and many of the solutions are already having local building blocks to be discovered within the country where the issue needs to be resolved.


CR

Code for Resilience

IWMI

International Water Management Institute

Global

An initiative of  **GFDRR**  
Global Facility for Disaster Reduction and Recovery

Scuola universitaria professionale della Svizzera italiana  
Dipartimento ambiente costruzioni e design  
Istituto scienze della Terra

2016 **UR** Understanding Risk Forum

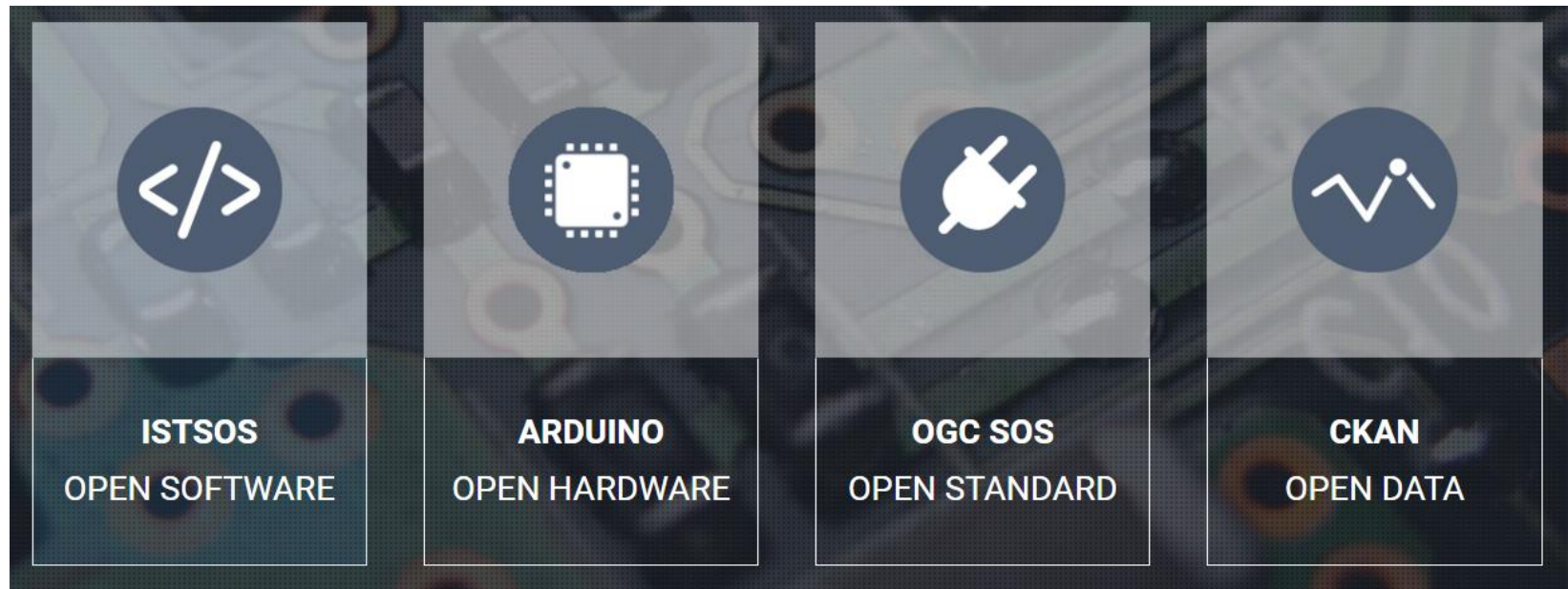
**SUPSI**

Lake flooding risk mitigation in Locarno  
(Switzerland ) using [istSOS](#) as [HydroMet](#) sensor  
data management system

[Massimiliano Cannata](#), [Milan Antonovic](#)

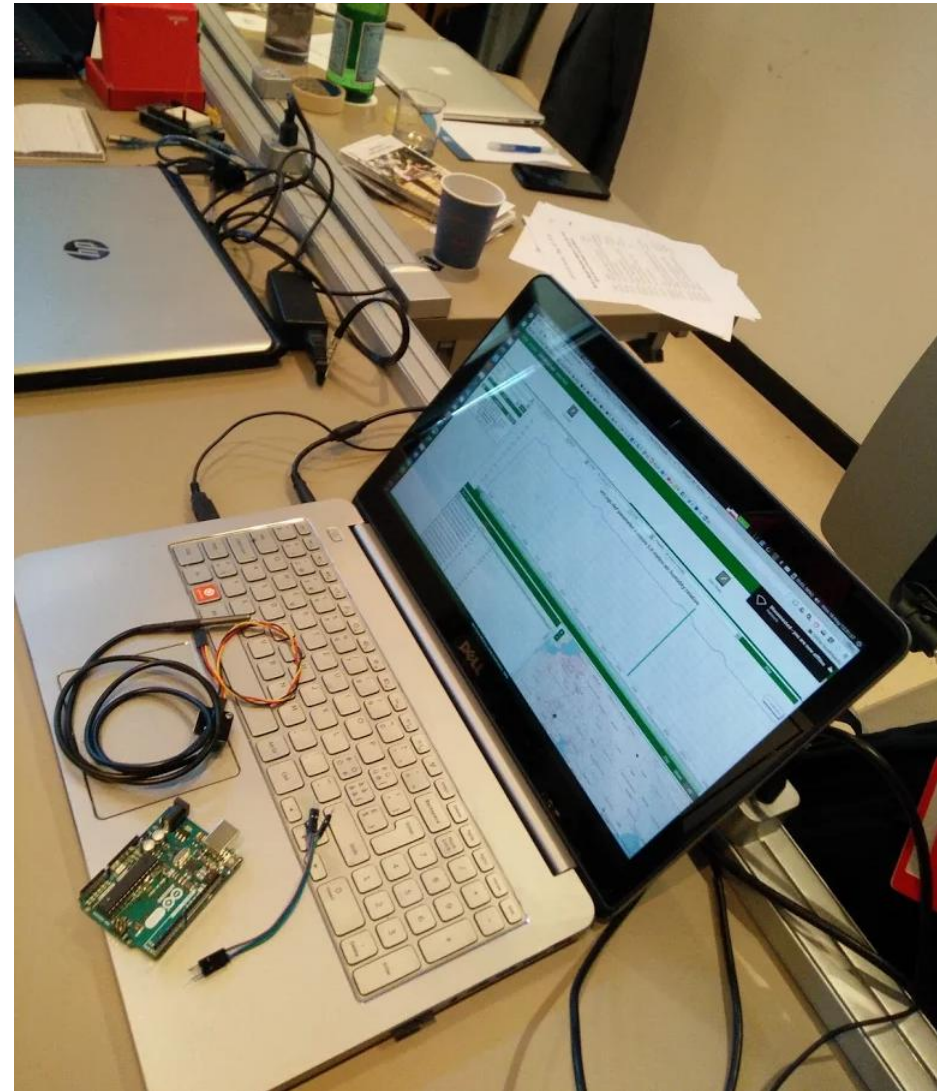
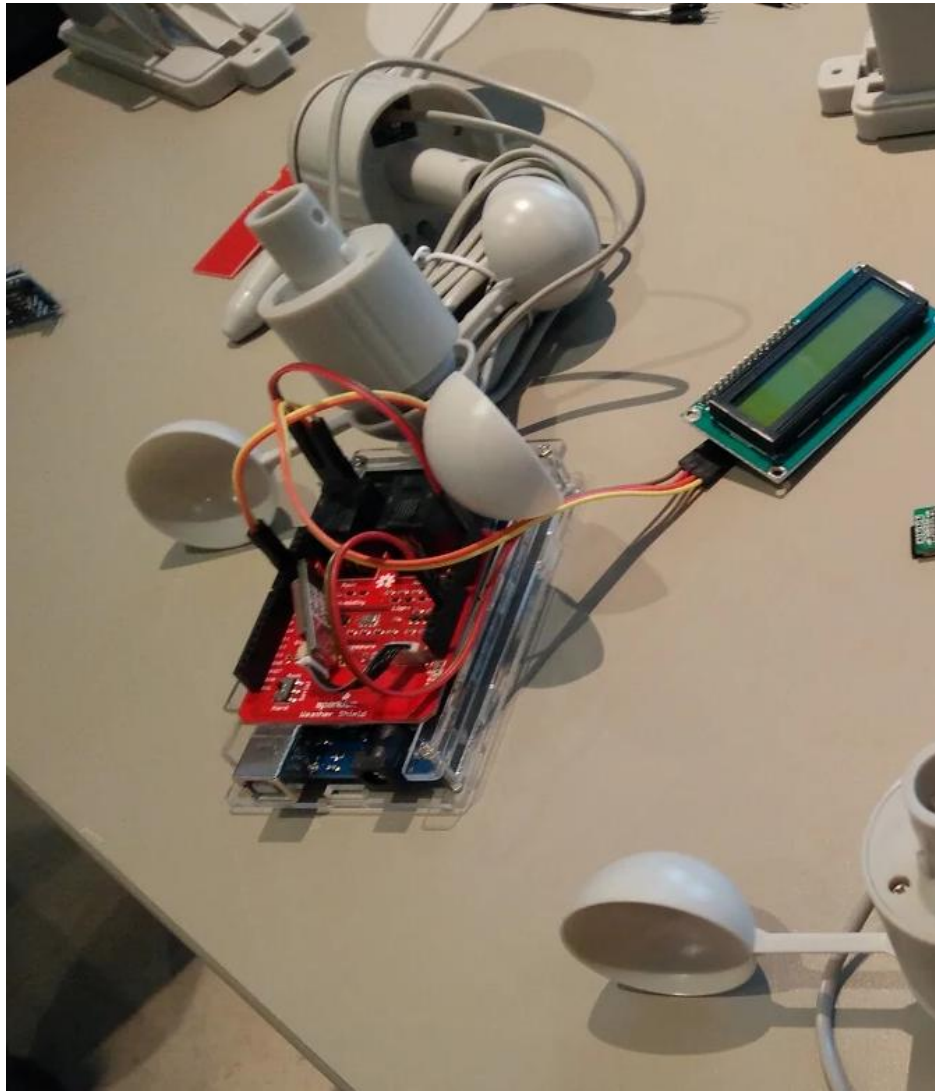
[www.4ONSE.ch](http://www.4ONSE.ch)

4 times **O**pen  
**N**on-conventional system  
for **S**ensing the **E**nvironment





# istSOS workshopy



## Toward istSOS v3 (1st release by end 2017)

- Python 3.X
- Asynchronous programming
- Database independent
- SOS v2
- INSPIRE compliant
- Container independent (Web Server or Desktop application)
- Big-Data support

..... and extremely fast :-D

# Thanks

[www.supsi.ch/ist](http://www.supsi.ch/ist) [geomatica@supsi.ch](mailto:geomatica@supsi.ch)

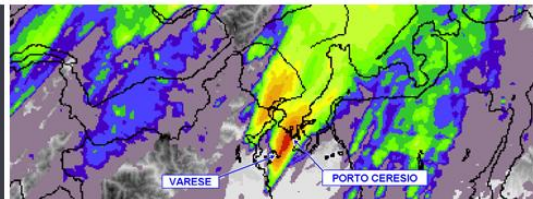
## SUPSI

Dipartimento ambiente costruzioni e design

Istituto scienze  
della Terra

- > Istituto
- > Settori di attività
- > Servizi
- > Dati e pubblicazioni
- > Formazione
- > Eventi e comunicazioni

English version [supsi.ch](#) Rubrica [Area riservata](#)



### In primo piano



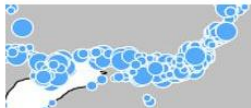
#### Geologia

Ultimi progetti: carta dei dissesti del Cantone Ticino, il quaternario dei fogli geologici Osogna e Grono, foglio geologico Mendrisio.



#### Geomatca

Progetto HELIDEM: creazione di un modello digitale del terreno correttamente georeferenziato e multirisoluzione.



#### Idrogeologia

L'animazione illustra laddove nel corso del tempo sono state rilasciate le concessioni per lo sfruttamento delle acque sotterranee, indistintamente secondo il tipo di utilizzo.



#### Idrologia

Download annuario idrologico, portate dei fiumi principali, dati meteo stazione di Canobbio - Trevano



### News

12 maggio 2014

Presentazione Rapporto annuale SUPSI 2013



7 maggio 2014

Call for entries rivolta a creativi o giovani start-up



[Tutte le news >](#)

### QUICK LINKS

- > [Dati meteo Canobbio - Trevano](#)
- > [Dati portate fiumi principali](#)
- > [Annuario idrologico](#)
- > [Staff](#)
- > [Siti georcheologici dell'Insubria](#)
- > [GESPOS](#)

### CONTATTI

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<http://geoservice.ist.supsi.ch/+geomatics>



<http://geomatica-supsi.blogspot.ch/>

