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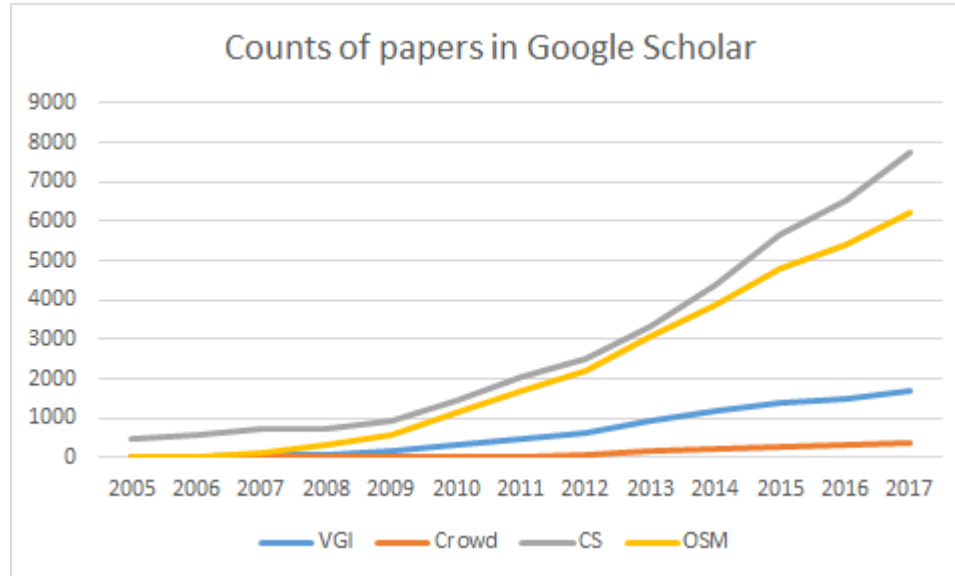# Open Data and Open Software in Building Technical Capacities

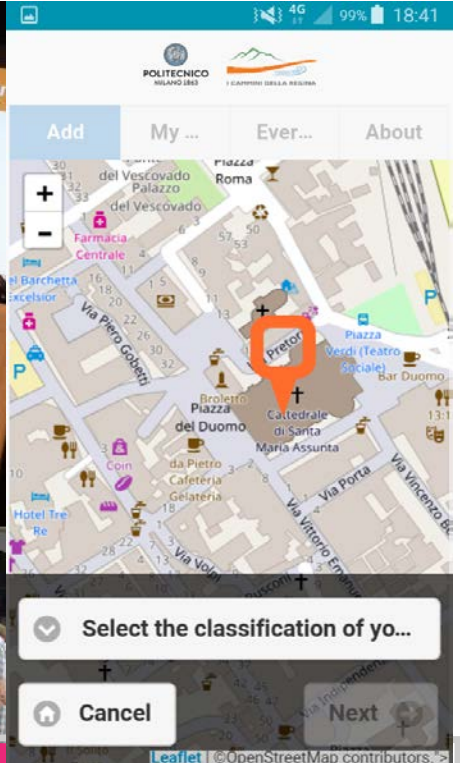## M. A. Brovelli - Politecnico di Milano, Milan, Italy

CITIZEN SCIENCE

- The term was first reported in Wikipedia in 2005 and entered the Oxford English Dictionary in 2014 with the following description: "**scientific work** undertaken by members of the **general public**, often **in collaboration** with or **under the direction** of **professional scientists** and scientific institutions"

Counts of papers in Google Scholar

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M. A. Brovelli

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United Nations Headquarters, New York, 5 August 2019
M. A. Brovelli

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COMMUNITY SCIENCE

- **Community science**, involving a more significant commitment of citizens also in designing and planning the project activities in a more egalitarian (if not bottom-up) approach between scientists and citizen scientists (Jepson & Ladle, 2015; Nascimento, Guimarães Pereira, & Ghezzi, 2014; Breen, Dosemagen, Warren, & Lippincott, 2015), which can be divided into:
  - **participatory sensing**, where citizens use the sensors integrated into mobile computing devices to carry out sensing tasks;
  - **Do It Yourself (DIY) science**, which implies participants create their scientific tools and methodology to carry out their researches;
  - **civic science**, "which is explicitly linked to community goals and questions the state of things" (Haklay et al., 2018).
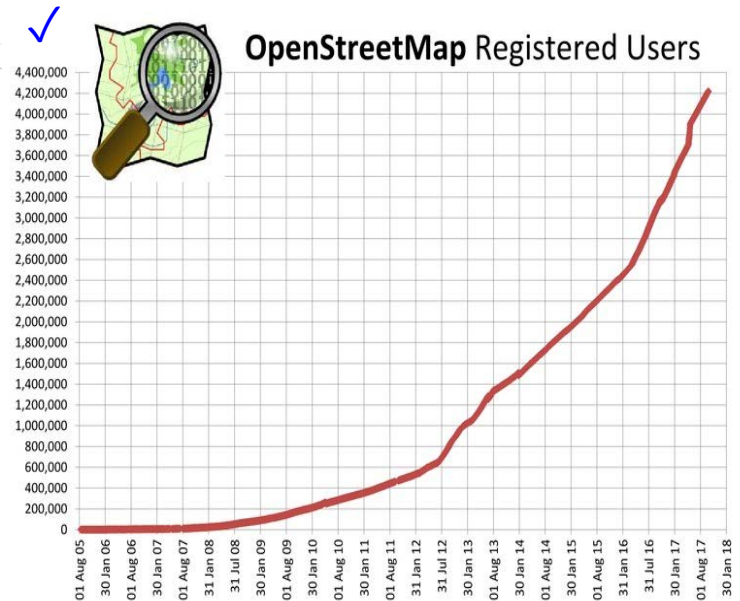
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OPENSTREETMAP (OSM)

- OpenStreetMap is open data, licensed under the Open Data Commons Open Database License (ODbL) by the OpenStreetMap Foundation (OSMF).

OpenStreetMap Registered Users

You are free:

To Share: To copy, distribute and use the database.

To Create: To produce works from the database.

To Adapt: To modify, transform and build upon the database.

As long as you:

Attribute: You must attribute any public use of the database, or works produced from the database, in the manner specified in the ODbL. For any use or redistribution of the database, or works produced from it, you must make clear to others the license of the database and keep intact any notices on the original database.

Share-Alike: If you publicly use any adapted version of this database, or works produced from an adapted database, you must also offer that adapted database under the ODbL.

Keep open: If you redistribute the database, or an adapted version of it, then you may use technological measures that restrict the work (such as DRM) as long as you also redistribute a version without such measures.

OSM ECOSYSTEM

Humanitarian
OpenStreetMap
Team

youth mappers

GEOCHICAS

Missing
Maps

CROWD2MAP
TANZANIA
Putting rural
Tanzania on the map

crowd2map.org

OSGeo

Commercial OSM Software

and Services

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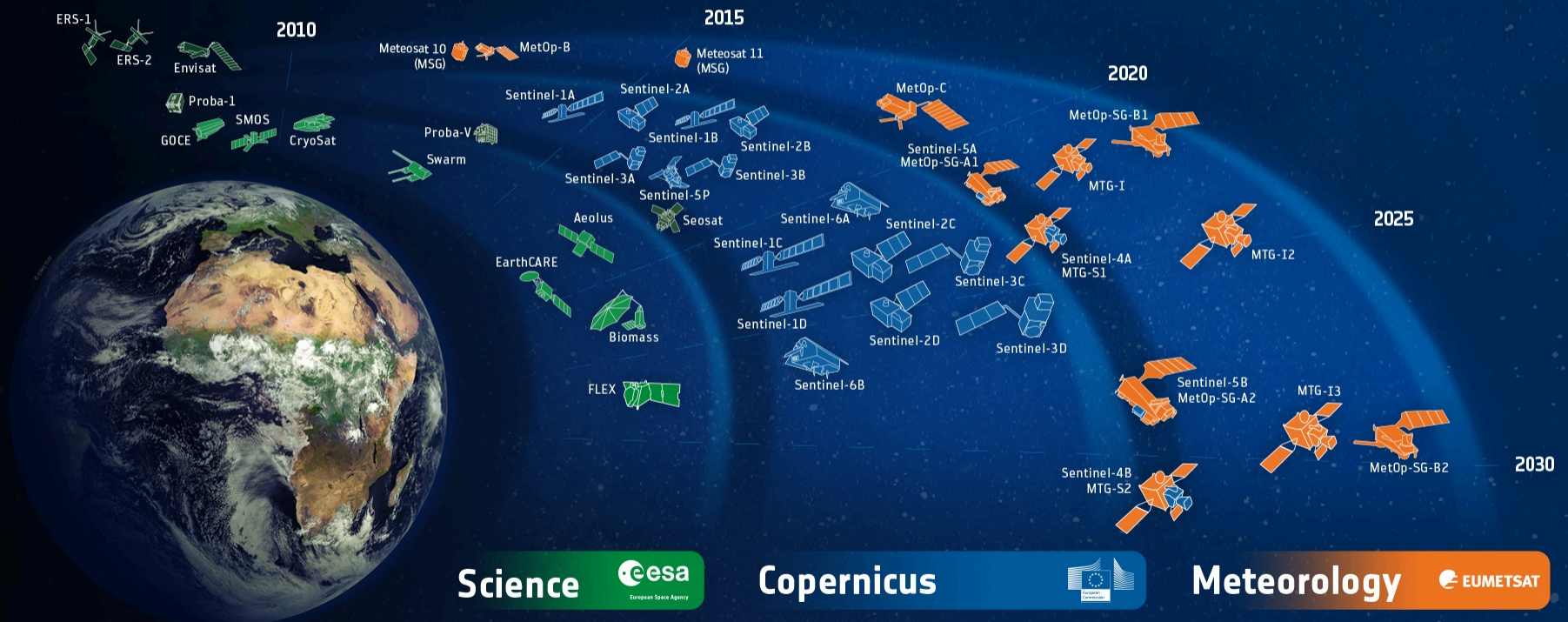*United Nations Headquarters, New York*, 5 August 2019
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OPEN DATA

✓ Collection of medium-high resolution free and open data

✓ A list of free and open data is available here (*); the table is far from being exhaustive and **anyone is invited to add other available geospatial datasets** (metadata: topic; name of collection/database; abstract; indicators; producer/collector; owner; license; format; scale; edition; CRS; coverage; URL)

✓ [(*) https://wiki.osgeo.org/wiki/Training_Material_for_UN_Open_GIS_OpenData](https://wiki.osgeo.org/wiki/Training_Material_for_UN_Open_GIS_OpenData)

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OPEN DATA

Credit Image: ESA

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OPEN PLATFORMS

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OPEN SOURCE SOFTWARE

OSGeo

OSGeo Projects

OSGeo Projects ›

Community projects ›

View all projects ›
Choose a project ›

Content Management Systems
GeoNode

Metadata Catalogs
GeoNetwork
pycsw

Desktop Applications
Marble
gvSIG Desktop
QGIS Desktop
GRASS GIS

Other
OSGeoLive

Web Mapping
MapServer
MapGuide Open Source
mapfish
deegree
Geomajas
OpenLayers
GeoMoose
Mapbender
PyWPS
GeoServer

Geospatial Libraries
OSSIM
GeoTools
Orfeo ToolBox
GDAL/OGR
GEOS

Spatial Databases
PostGIS

www.osgeo.org

Training material freely available on the software websites + workshops at FOSS4G Events

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OSGeo UN COMMITTEE

✓ **UN OPEN GIS INITIATIVE** : Spiral 2 «Capacity Building» more than 100 UN staff took courses of QGIS and POSTGIS thanks to GeoForAll (OSGeo Committee for Educational outreach) and Politecnico di Milano web education platform.

✓ **OSGeo UN COMMITTEE EDUCATIONAL CHALLENGE**

OSGeo UN Committee Educational Challenge

Proposals for developing open geospatial educational material for three challenges are invited. Prize money of USD 3.000 for each challenge is sponsored by OSGeo and Boundless.

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OSGeo UN COMMITEE EDUCATIONAL CHALLENGE

- 2018

    - Challenges 1 and 2 were directly related with the UN Open GIS Initiative.

    - Challenge 3 was about **Open geospatial data and software for UN sustainable development goals**

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

Indicator 9.1.1: Proportion of the rural population who live within 2 km of an all-season road

    - https://wiki.osgeo.org/wiki/Training_Material_for_UN_Open_GIS_OpenData

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OSGeo UN COMMITEE EDUCATIONAL CHALLENGE

- 2019

    - Challenges 1: UN Open GIS Initiative: upgrade of POSTGIS TRAINING course

    - Challenge 2 is about **Open geospatial data and software for UN sustainable development goals**

SUSTAINABLE DEVELOPMENT GOAL 16
Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

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Thanks for your attention!

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