The FabSpace 2.0 project received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement no. 693210

Les données FAIR :

Retour d'expérience de FabSpace 2.0

Josiane Mothe (Pr. Univ. Toulouse)

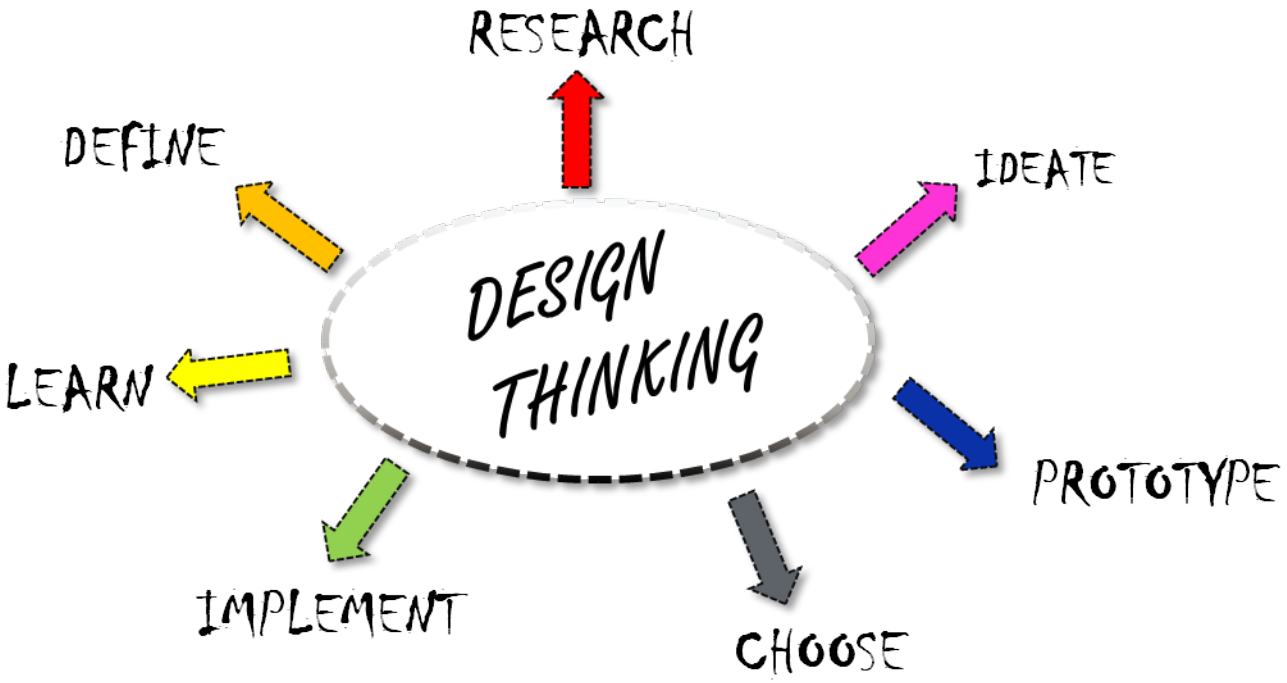
The FabSpace 2.0 project received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement no. 693210

FAB SPACE 2.0

- INTRODUCTION TO THE FABSPACE INITIATIVE -

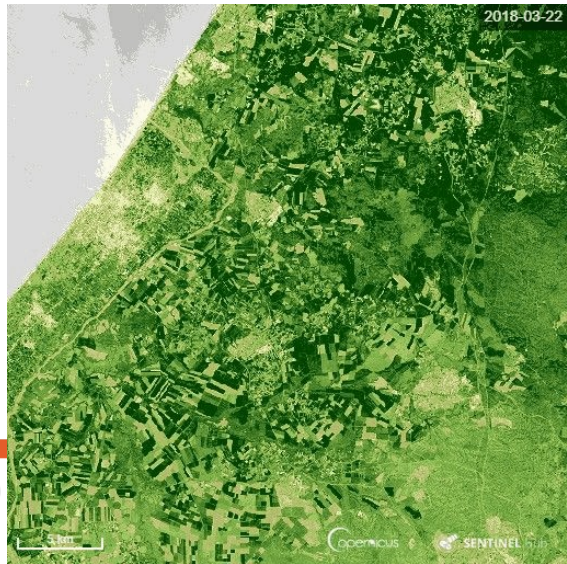
The FabSpace 2.0 project received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement no. 693210

Teams work and interdisciplinarity generate new ideas and applications of the data



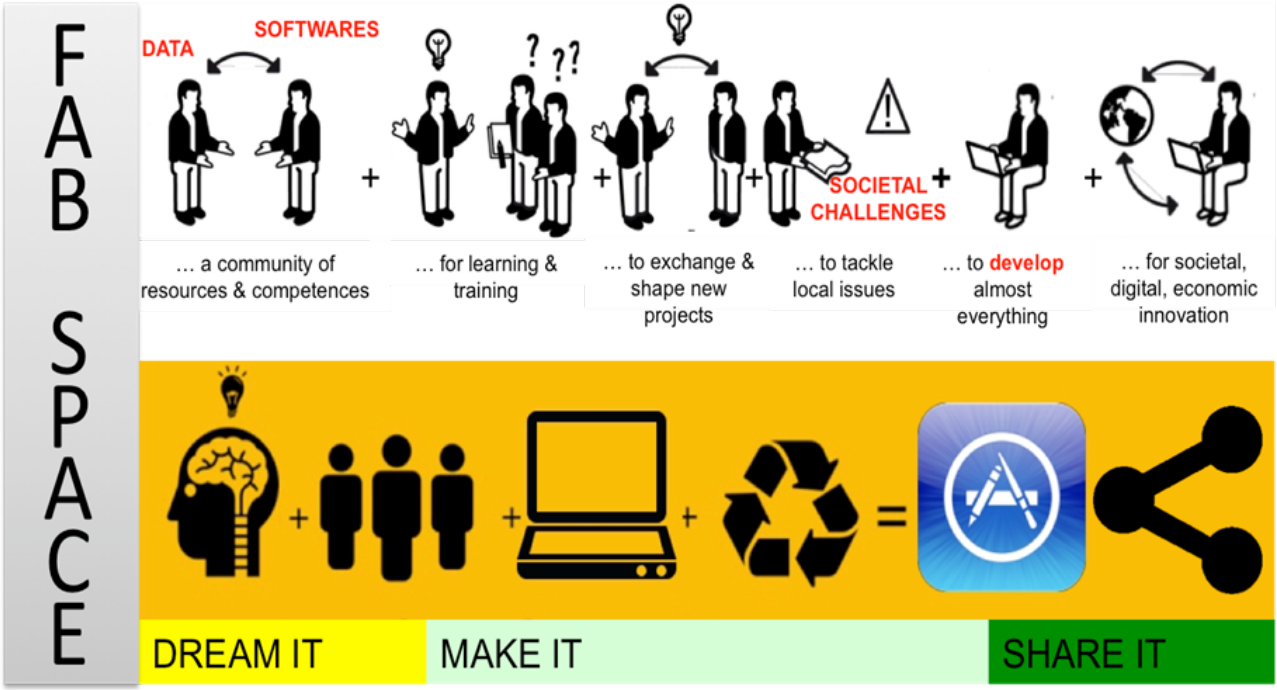
FabSpace:

- FabLab
- EO data
- Copernicus - sentinel



The FabSpace 2.0 project received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement no. 693210

The FabSpace 2 model



FabSpace 2.0 is

- an **open-innovation network** for geodata-based innovation - by leveraging **Space data** in particular, in **Universities 2.0**
- a **one-stop shop-access** to Space data and a wide range of other data as well **as free software and data processing tools** to develop **new digital applications**
- complying with the specific challenge and scope set out in the topic "INSO-4-2015: **Innovative schemes for open innovation and science** 2.0 b) Academia- Business/Public/CSO knowledge co-creation".

The FabSpace 2.0 project received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement no. 693210

FAB SPACE 2.0

Objectives

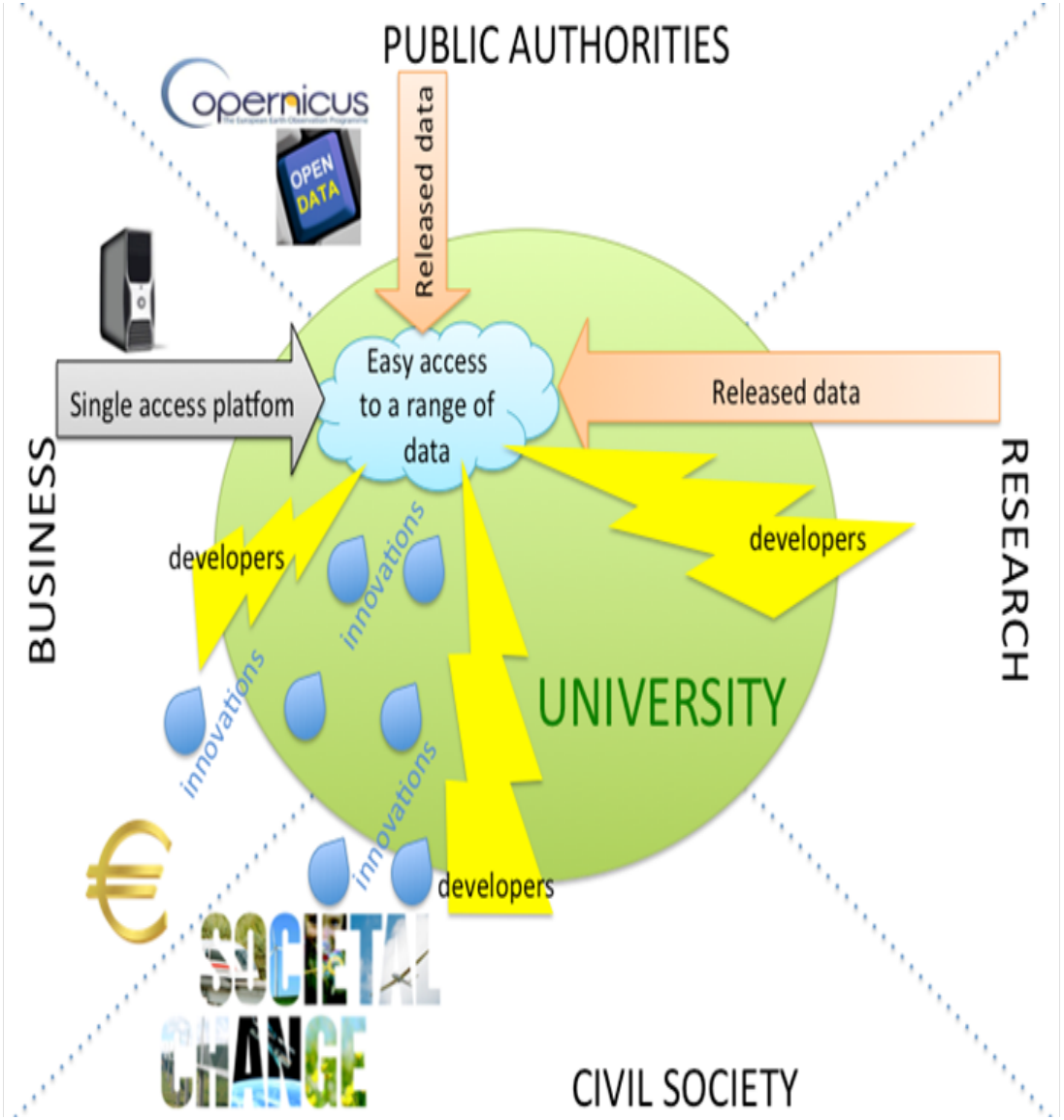
Set up and operate at University a free-access place & service

Train the users to improve their capacity to **process data** and develop **new applications**

Network the users and consolidate their **needs** and **industry requirements**

Foster the co-creation of **new innovative solutions** and support further **business development**

Exploit, sustain and **disseminate the FabSpace**



The FabSpace 2.0 project received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement no. 693210

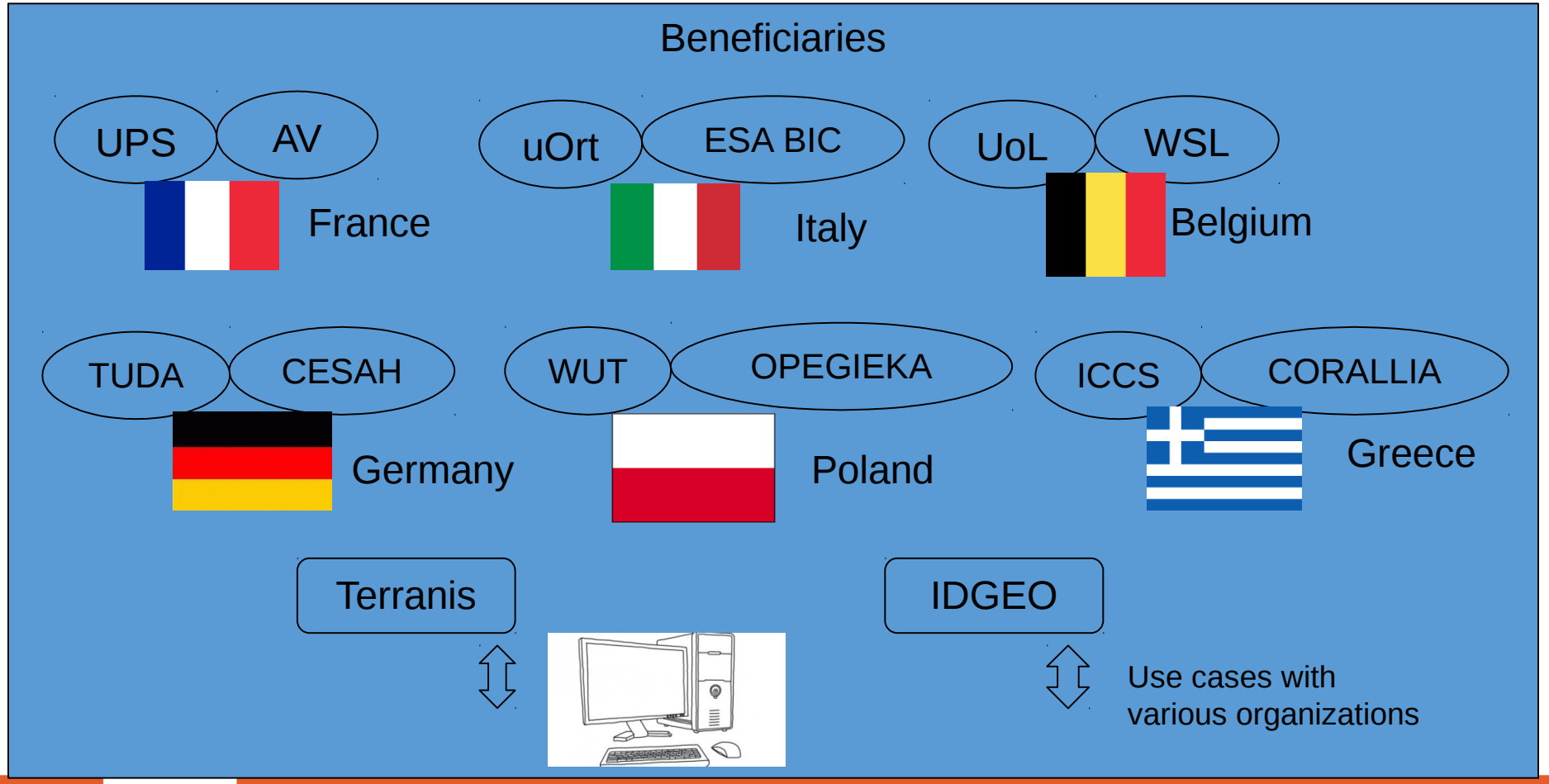
FabSpace Scope

- FabSpace services to targeted audience to promote
  - **EO data-processing capacity**
  - High-quality **applications** development based on EO
  - Willingness and **knowledge**

- **Integrate** FabSpace services **in existing training programs and activities** in universities
- **Reduce the gap** between stakeholders, companies, students
- Enable access to **specific training** (to learners, not only students)
- Development of researchers' **innovation leadership knowledge**
- **Promote entrepreneurship** among students

The FabSpace 2.0 project has received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement no. 693210

Partners and collaborator



The FabSpace 2.0 project received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement no. 693210

FAB SPACE 2.0

European Project financed for 36 months (3,4 M€)

The 6 founding FabSpaces

Network of 35 locatios

The FabSpace 2.0 project received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement no. 693210

FAB SPACE 2.0

- MEANS -

The FabSpace 2.0 project received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement no. 693210

Integration in existing programs

- Integration in current training programs
  - EO and non-EO
  - Technical & Entrepreneurial skills
- Project modules dedicated to FabSpace
  - Answering stakeholder challenges
  - Topics of interest (climate change, green energy,…)
- Integration in Master & PhD thesis

The FabSpace 2.0 project received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement no. 693210

Dedicated training

- **Dedicated Trainings**
  - **Technical Trainings in EO and non-EO**
  - EO trainings: Performed by EO experts (GIS, Image processing,…)
  - non-EO trainings: transversal but applied to EO data processing (e.g. cloud computing, big data analysis, machine learning etc.)

The FabSpace 2.0 project received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement no. 693210

Dedicated training

- **Dedicated Trainings**

  - **Startech**: Promote entrepreneurship to students with **practical experience** and **coaching** - 20 h
    - based on the Lean startup methodology
    - BMC [Business Model Canevas]
    - 10 **coaching sessions** wi ling sessions
    - On-line videos

The FabSpace 2.0 project received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement no. 693210

Dedicated training

- Bootcamps
  Innovation Leadership & Entrepreneurial Trainings
  Combines Technical and entrepreneurial
  Innovation management, marketing, finance etc.
    - 2 sessions: Technical and Entrepreneurial trainings
    - Participation of professors, researchers
    - Level: Bachelor, Master or PhD
    - Also targeting students and profe
      fields
    - With potential to apply EO activiti

The FabSpace 2.0 project received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement no. 693210

Geomatic events

L'Hackathon

The FabSpace 2.0 project received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement no. 693210

Ongoing Challenges

Evaluate urban density according to urbanization levels

Aim :
Detect urban areas according to different levels of urbanization

- Sentinel 1 images/ temporal series to identify 3 types of areas : (1) urban areas, (2) villages and small towns (3) isolated houses
- Data access through a virtual machine on RUS
- fabspace.manager@irit.fr

The FabSpace 2.0 project received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement no. 693210

Ongoing Challenges

Compute water volumes in reservoirs for irrigation purposes

Aim:
Compute water volumes to improve the assessment of water volumes in reservoirs

- Various methods: Lidar, bathymetry, metrics (slope, dykes height, etc.)

- Have a better view of reservoirs' impact on the environment
- Evaluate the quantity of resources available to farmers for irrigation purposes
- Guide public policies, especially polities related to water resources.

The FabSpace 2.0 project received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement no. 693210

Geomatic events

- Conference GED 2017
- Track in ImageCLEF 2017
- Session in CBMI 2018
- Workshop in SAGEO 2018
- Workshop in Inspire 2018

The FabSpace 2.0 project received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement no. 693210

FAB SPACE 2.0

- DATA -

The FabSpace 2.0 project received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement no. 693210

FAIR Data

Findable

- Data is catalogued in the platforms (data: Geoserver – metadata:

Accessible

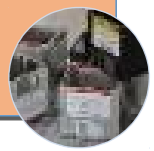
- Datasets are available on the platforms and published on Zenodo

Interoperable

- Datasets are compliant with international standards (WFS, WMS, and WCS) and can be combined with other datasets

Re-usable

- Datasets are open and access takes into account potential restrictions from the owners



The FabSpace 2.0 project received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement no. 693210

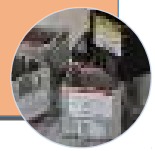
FAIR Data

Findable
- Data is catalogued in the platforms (data: Geoserver – metadata:

Accessible
- Datasets are available on the platforms and published on Zenodo

Interoperable
- Datasets are compliant with international standards (WFS, WMS, and WCS) and can be combined with other datasets

Re-usable
- Datasets are open and access takes into account potential restrictions from the owners



Data catalogued in the project platform:

- Meta data
- Categorized
- Query language

The FabSpace 2.0 project received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement no. 693210

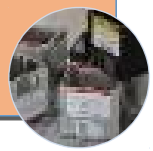
FAIR Data

Findable
- Data is catalogued in the platforms (data: Geoserver – metadata:

Accessible
- Datasets are available on the platforms and published on Zenodo

Interoperable
- Datasets are compliant with international standards (WFS, WMS, and WCS) and can be combined with other datasets

Re-usable
- Datasets are open and access takes into account potential restrictions from the owners



Zenodo:

- Open Science
- Commissioned by the EC
- CERN, 2013

The name

Zenodo is derived from Zenodotus, the first librarian of the Ancient Library of Alexandria and father of the first recorded use of metadata, a landmark in library history.

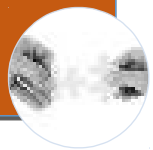
The FabSpace 2.0 project received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement no. 693210

FAIR Data

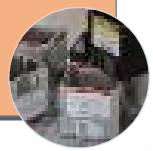
Findable
- Data is catalogued in the platforms (data: Geoserver – metadata:

Accessible
- Datasets are available on the platforms and published on Zenodo

Interoperable
- Datasets are compliant with international standards (WFS, WMS, and WCS) and can be combined with other datasets



Re-usable
- Datasets are open and access takes into account potential restrictions from the owners



International standards:

- Web Feature Service (WFS),
- Web Map Service (WMS),
- Web Coverage Service (WCS).
- Web Map Tile Service (WMTS)
- Catalogue Service (CSW)
- Web Processing Service (WPS).

The FabSpace 2.0 project received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement no. 693210

FAIR Data

Findable

- Data is catalogued in the platforms (data: Geoserver – metadata:

Accessible

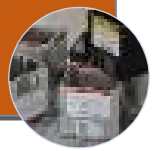
- Datasets are available on the platforms and published on Zenodo

Interoperable

- Datasets are compliant with international standards (WFS, WMS, and WCS) and can be combined with other datasets

Re-usable

- Datasets are open and access takes into account potential restrictions from the owners



Re-usable:

- Associated tools
- Associated document: exercises, challenge guideline, ...

The FabSpace 2.0 project received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement no. 693210

Data Management Plan

Content

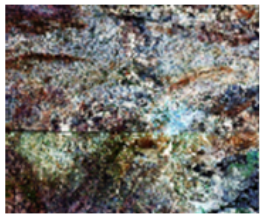
- Administration details
- Data summary
  - Purpose of the data and relation to the objectives of the project
  - Origins, types and formats of data generated and collected
- FAIR data
  - Making data findable, including provisions for meta-data
  - Making data openly accessible
  - Making data interoperable
  - Increasing data re-use
- Allocation of resources
- Data security
- Ethical aspects
- Other issues
- Data exchange and repository
- Datasets

The FabSpace 2.0 project received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement no. 693210

Data Management Plan

2. "Population" data set (UPS)

This data set is composed of three parts each having its proper origins, formats and rights. This data set can be used to estimate the population of an area of interest by using Copernicus earth observation data (i.e. free Sentinel-2 satellite images) to plan disaster responses for instance. It has been used in the 1rst FabSpace 2.0 European contest and embedded in the ImageCLEF international forum (imageclef.org/2017).

	Data summary	Origins, Types and Formats	Making data	Increase data re-use	Data Security	Image
Optical satellite images - Part 1 of 3 of the dataset	Sentinel-2 satellite image are produced as part of the EU Copernicus program. The data collected are satellite datasets coming from Sentinel-2 mission (optical instrument). To create the new dataset, data from this source are collected from the ESA Scientific Hub of Copernicus in ESA SAFE format (S2 MSI L1C). The data is useful to extract biophysical parameters from algorithms (including artificial infrastructures such as roads, dwellings).	**Provider :** ESA Scientific Hub of Copernicus **Product format:** ESA SAFE format **Type:** multispectral satellite images (raster file) **Description :** multi-spectral satellite image with 13 bands (resolution between 10 and 60 meters) **Size :** One tile for the area, one date, all bands, raw data, level L1C : 600MB **Link:** https://sentinel.esa.int/web/sentinel/user-guides/sentinel-2-msi	***Findable, including provisions for metadata*** Information describing data is used to create metadata files ; as an example, there are : - Metadata file creation date - Version of the data - Bounding box - Projection - Resolution - Acquisition date This information is useful for discoverability of the data. Metadata are available in the catalogue of the platform. ***Openly Accessible*** Only project partners interested in this challenge have permissions to access the data. All the data, associated metadata and documentation are deposited into the FabSpace platform of Toulouse. Only web browser and Internet access are needed to access the data. ***Interoperable*** The data is in jp2000 format with associated metadata and provided through REST API or WMS services.	This data set comes with additional information for the FabSpace 2.0 network, which is the complete guideline to run a hackathon or local challenge. The full package was used at the CLEF challenge (https://www.imageclef.org/2017/remote) and thus can be re-used as a FabSpace 2.0 activity in the all network.	The data is accessible through the ESA Scientific Hub of Copernicus. Registration in FabSpace is needed to learn how to access the data and there is no restriction for data re-use.	

The FabSpace 2.0 project received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement no. 693210

Conclusion and lessons learnt

- Challenges
  - Data
    - Domain structuration (e.g. shared and acknowledged meta data)
    - Indexing and quering
  - Standards
    - Level of use
  - Help re-usability

The FabSpace 2.0 project received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement no. 693210