

CITIZEN SCIENCE

SDG

CONFERENCE

14.–15.10.2020

Knowledge for Change: A decade  
of Citizen Science (2020–2030)  
in support of the Sustainable  
Development Goals



# INSPIRE Hackathon – Results from the citizen science challenges

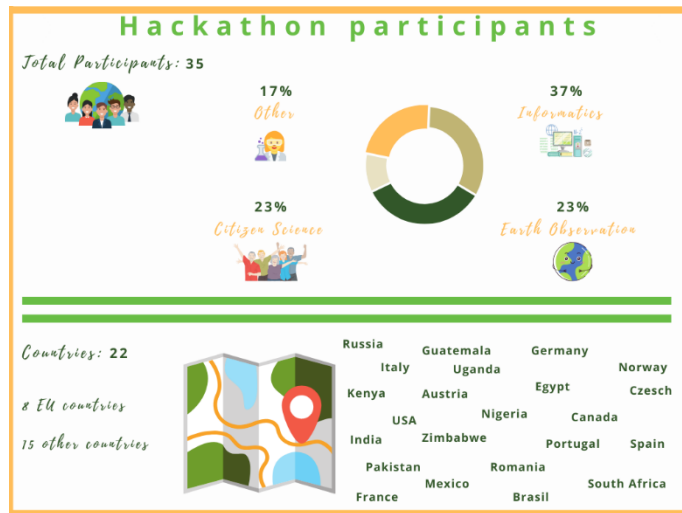
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# INSPIRE Hackathon – Citizen Science Challenges

- March – May 2020
- Dubrovnik INSPIRE Hackathon
- 3 Citizen Science challenges
- Improve interoperability, accessibility and discoverability of COs and CS data
- 35 participants | 22 different countries



Promote collaboration and sharing of experience in the domain of spatial data/services and citizen-science while showcasing their utilisation and uptake to different application domains and themes.



# INSPIRE Hackathon – Citizen Science Challenges

## “Cataloging citizens’ observatories data and results”



### Key topics:

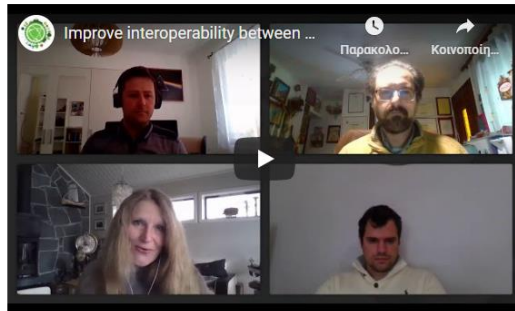
- Management of citizen-generated data
- Data cataloguing and practical information for data providers
- Benefits of using CKAN and OpenSearch API

WHAT IS IT ABOUT?

WHY DOING IT NOW?

WHO IS THE WEBINAR FOR?

## “Improve interoperability between methods for sharing in-situ and citizen-sourced data”



### Key topics:

- Approaches for modelling citizen-science data through the OGC SensorThings API
- Representation and visualisation of resources in the context of existing applications
- SensLog solution for sensor data, integration of data from different sources

WHAT IS IT ABOUT?

WHY DOING IT NOW?

WHO IS THE WEBINAR FOR?

- Organisation of webinars
- Collaborative space for topic development
- Communication channels to support interactions between mentors and participants
- Online meetings & hands on sessions



## INSPIRE Hackathon – Results from the citizen science challenges

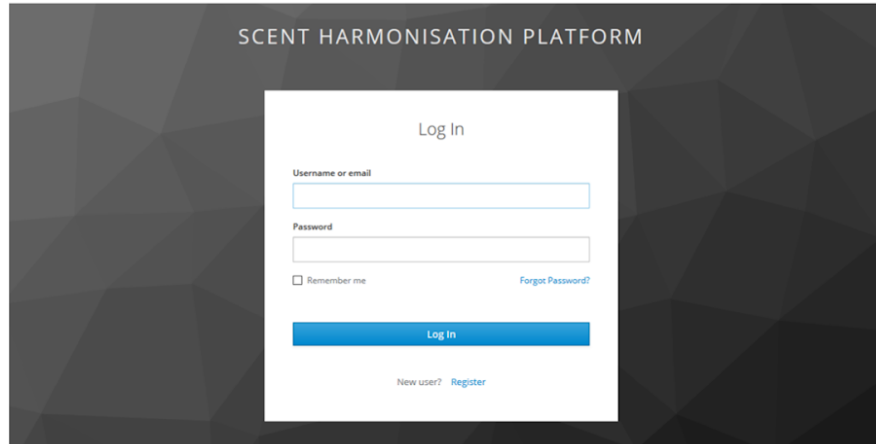
# Citizen Science and EO authentication systems

- Enhance geospatial and/or INSPIRE enabled web-based or mobile application so as to connect to either Citizen Science and/or Earth Observation data;
- Improve accessibility to protected resources while also enabling their direct consumption and utilisation by third party applications.



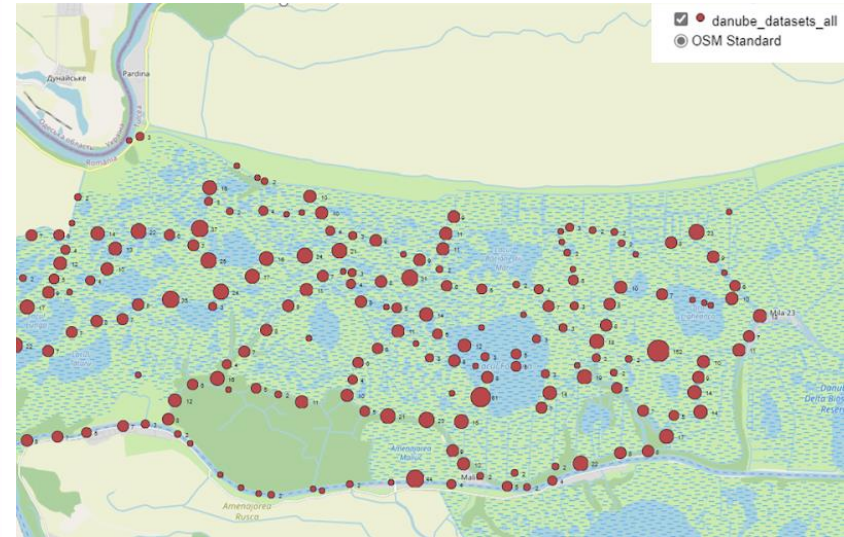
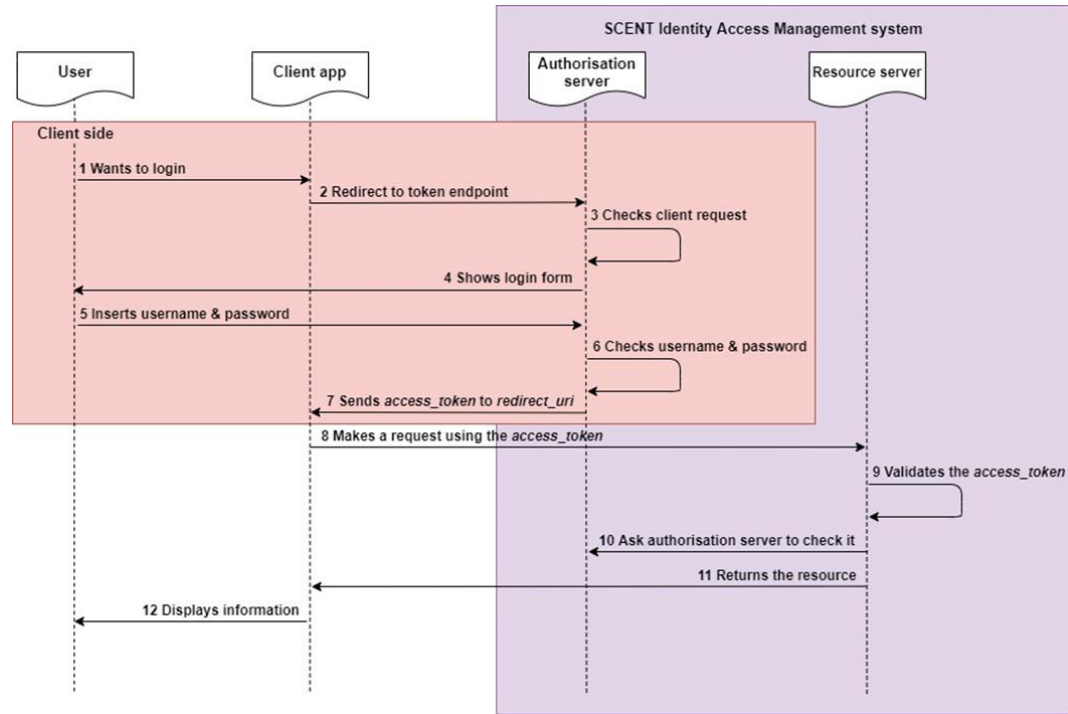
# Citizen Science and EO authentication systems

- Existing infrastructure from Citizen Observatories (SCENT, LandSense) and EO projects (NextGEOSS)
- Front-end JavaScript applications were able to connect with the SCENT Harmonisation platform Identity Access Management system by applying Implicit Grant Type of authorisation.



The image shows a login interface for the SCENT HARMONISATION PLATFORM. The background is dark grey with a geometric pattern. A white rectangular box in the center contains the login form. At the top of the box is the title 'Log In'. Below it are two input fields: 'Username or email' and 'Password'. Under the password field is a checkbox labeled 'Remember me' and a blue link 'Forgot Password?'. A blue 'Log In' button is at the bottom of the form. Below the button is a link 'New user? Register'.

# Citizen Science and EO authentication systems



INSPIRE Hackathon – Results from the citizen science challenges

Valantis Tsiakos | Institute of Communication and Computer Systems

# Connection of Citizen Observatories with central catalogue

- Enable the integration of the H2020 Citizen Observatories (i.e. LandSense, GroundTruth2.0, GROW, SCENT) datasets with the NextGEOSS catalogue as an approach to connect citizen science into GEOSS.



# Connection of Citizen Observatories with central catalogue

- Analysis of existing infrastructure and endpoints that enable machine-to-machine access to resources.
- Documenting data and resources involving community-based environmental monitoring citizen science projects.
- Implementation, testing and deployment of a data harvester for a part of SCENT citizen-science data, aiming to constitute a prototype for the ingestion of citizen-science resources (metadata) into a centralised catalogue.

NEXTGEOSS

Catalogue / Data Providers





Catalogue Data Collections Datasets **Data Providers** Thematic Area

## Data Providers

NextGEOSS engages the main providers of earth observation data, including Copernicus Collaborative Ground Segments and Core Services. The data hub draws upon resources provided by public, commercial, and research institutions working with satellite, aerial, and in situ measurements.

The following data providers are currently integrated in the NextGEOSS system:

27 data providers found Order by: Name Ascending

 SCENT 16462 Datasets	 SIMOCEAN 670 Datasets	 Static EBVs 2 Datasets	 USGS 53601 Datasets
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# Connection of Citizen Observatories with central catalogue

[Dataset](#) [Thematic Areas](#) [Activity Stream](#) [Manage](#)

## scent\_danube\_image\_34541

Published by SCENT  
Part of collection SCENT Danube Image



Using SCENT Explore and SCENT Measure apps, volunteers completed collecting important information about Danube Delta parameters, such as images of land-cover/land-use.

### Spatial Extent



### Data and Resources



#### Product Download

URI for accessing the image file

**JPEG**

[More info](#) [Download](#)



#### Image tags

URI for accessing the application file containing the different tags information

**JSON**

[More info](#) [Download](#)

SCENT



SCENT is a European Union research project funded under the Horizon 2020 programme. The project runs between 2016 and 2019 and comprises 10 partner organisations across 6 countries. The project demonstrates the huge potential of citizen observation and monitoring of the environment. A people-led online observation movement captures land-cover use and changes through user-friendly tools and technologies. The Scent Toolbox The Scent Toolbox is a crowd-sourcing platform, gaming applications, an authoring tool, an intelligence engine and numerical models, allows citizens, policy makers and other users to freely use Scent technologies to contribute to the aims of the project.

▼ Filters

Thematic Areas

There are no Thematic Areas that match this search

Data Collections

SCENT Danube Image 6130

SCENT Kifissos Image 2009

SCENT Danube Moisture 1968

SCENT Danube Temperature 1854

SCENT Danube Video 1552

SCENT Kifissos Moisture 911

SCENT Kifissos Temperature 911

SCENT Kifissos Video 111

16,462 datasets found 


Order by: Relevance

scent\_kifissos\_moisture\_15d0cfbd3g9e135\_85188474

Data Provider: SCENT

Data Collection: SCENT Kifissos Moisture


It refers to soil moisture measurements collected from volunteers through the use of portable sensors in the context of H2020 Scent project (<https://scent-project.eu>) in Kifissos.



scent\_kifissos\_moisture\_15d0cfbc8g12e04\_41319279

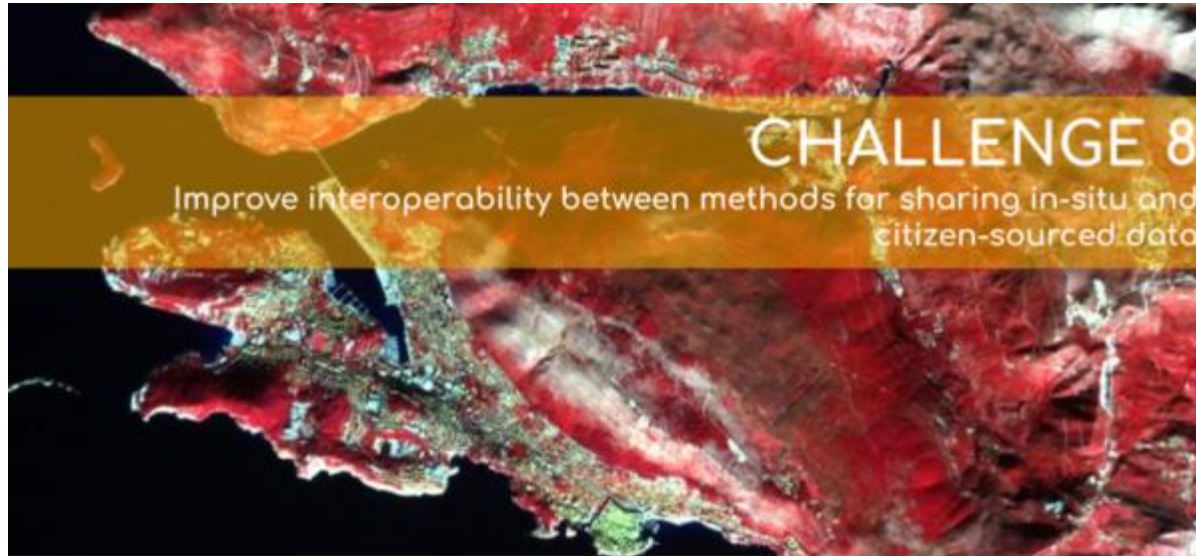
Data Provider: SCENT

Data Collection: SCENT Kifissos Moisture



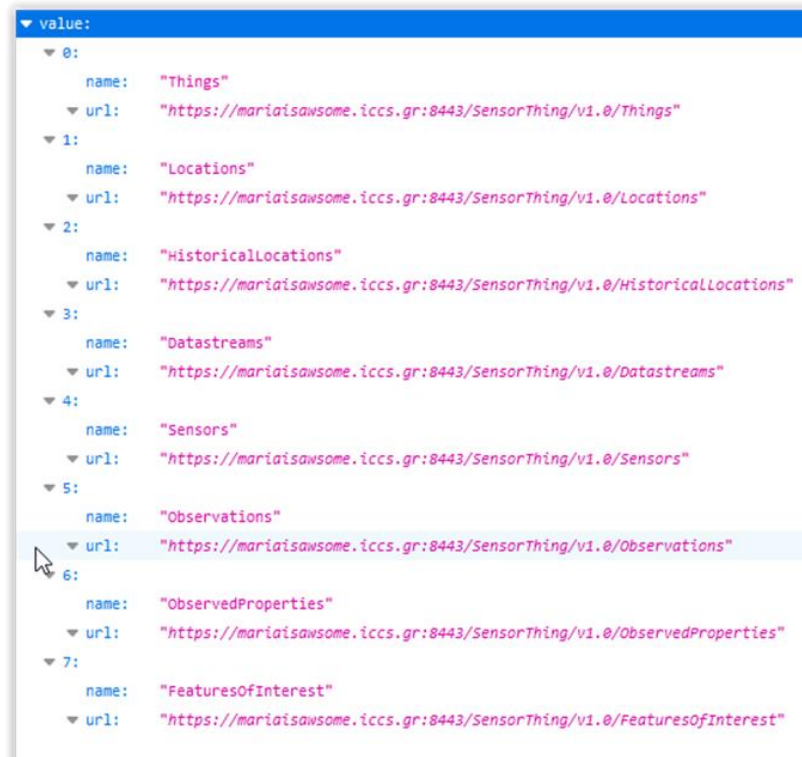
# Interoperability for sharing in-situ and citizen-sourced data

- Improve interoperability and standardised access to citizen-science resources
- Design & implementation of “data translators” that will facilitate the conversion of resources exposed from various data models to OGC SensorThings API compatible schemas
- Integration of different environmental data by utilization of special “data translators”



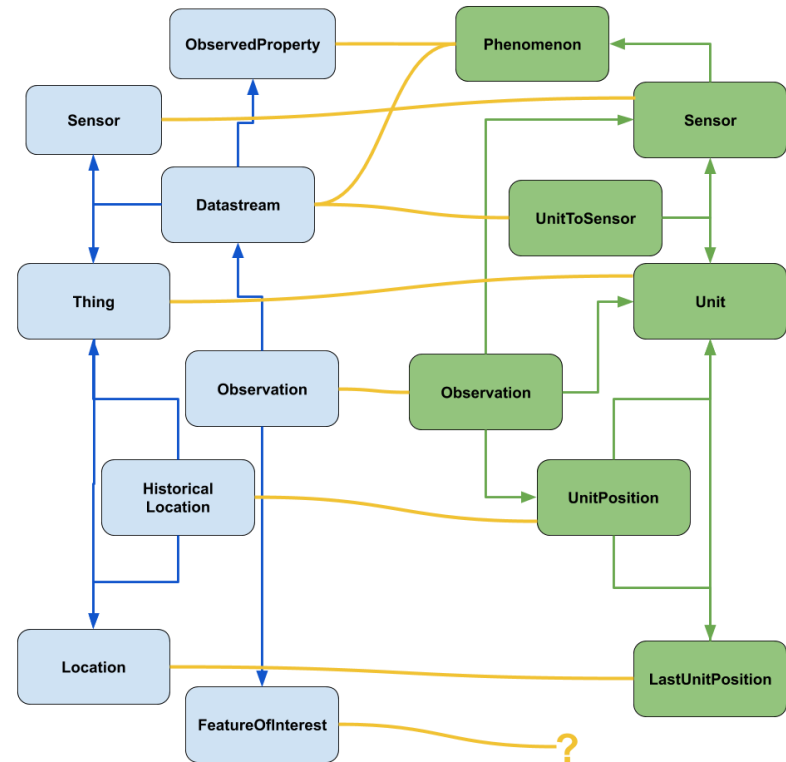
# Interoperability for sharing in-situ and citizen-sourced data

- Ensuring interoperability
- Challenge: ‘Moving Sensors’
- Modelling independently the sensor, from the volunteer and from the location that the measurement was collected
- Heterogeneous measurements collection
- HTTP POST, DELETE, PUT & PATCH requests enabling the creation, update & deletion of entities



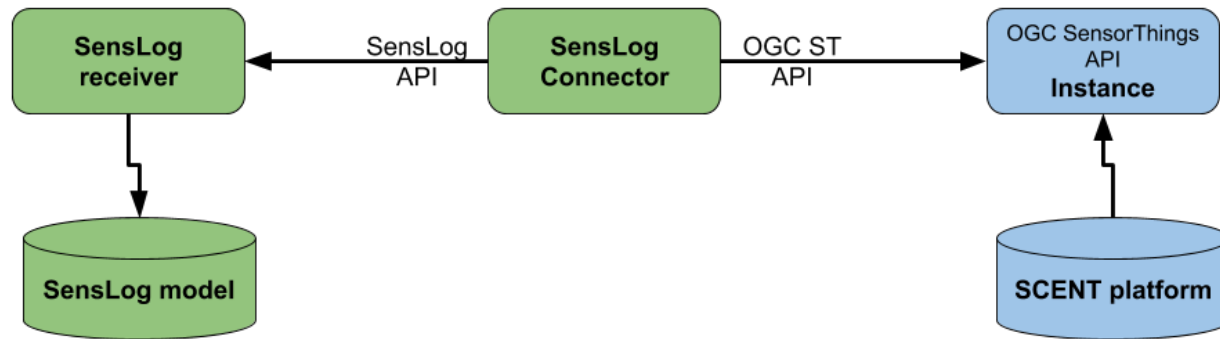
# Interoperability for sharing in-situ and citizen-sourced data

- > Mapping between data models OGC SensorThings API and SensLog
- > Core part of SensLog data model – based on ISO O&M standard
- > Different names of entities – similar meaning
- > 70 % of attributes adopted 1:1,
- > 20 % by calculations



# Interoperability for sharing in-situ and citizen-sourced data

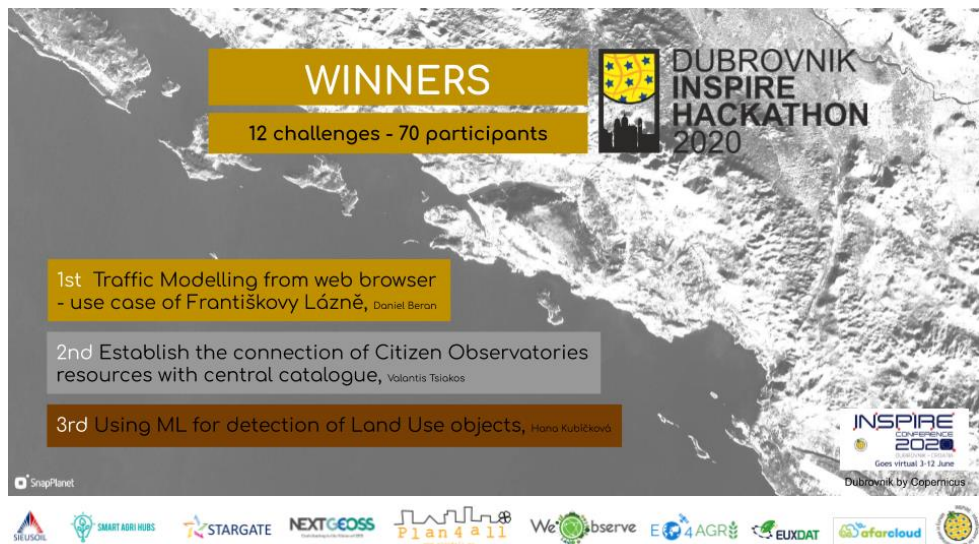
- › Integration of an environmental dataset by utilization of an instance of SensLog Connector
- › SensLog Connector translates API of external endpoint to SensLog API
- › Design of SensLog Connector allows to implement external API by implementing interface template
- › Design to push or pull data from/to external data storage



# Impact

- Tackle fragmentation of citizen-science projects and resources;
- Maximise the value of citizen-science data by facilitating the discoverability and usability along with EO and other in-situ data;
- Efficient modelling of IoT enabled, crowd-sourced and in-situ measurements through the OGC SensorThings API;
- Contributing to the integration and utilisation of citizen-science data towards monitoring and implementing SDGs;
- Support and streamline the uptake and combination of citizen-science data with existing information systems and legacy data sources and subsequently lead to improved monitoring of relevant indicators

# INSPIRE Hackathon – Citizen Science Challenges

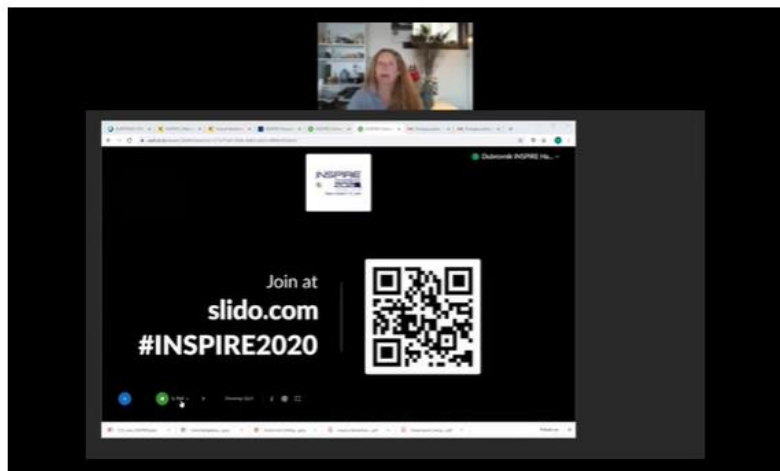


Learn more:

<https://www.weobserve.eu/marketplace/dubrovnik-inspire-hackathon-2020-citizen-science-and-earth-observation-challenges/>

- › INSPIRE Conference
- › Online workshop (June 11)
- › Challenge 7 was awarded the second prize!

“Dubrovnik INSPIRE Hackathon 2020 – Final workshop”



**INSPIRE Hackathon – Results from the citizen science challenges**

Valantis Tsiakos | Institute of Communication and Computer Systems