.hack

Hack@EO L'Aquila

May - July 2021

.hack eo L'Aquila 2021

City Sustainability Indices for Citizens

in collaboration with

TERRITORI APERTI

esa

Associazione Italiana per l'Intelligenza Artificiale

GMATICS
BIG GEOSPATIAL DATA MADE READY

Powered by OpenSearch Tech

Sponsor

Comune dell'Aquila

University of L'Aquila

CETEMPS

D4Science

So Big Data

CGIL

CISL

UIL

TERRITORI APERTI

.hack

Powered by openSEARCH TECH

Hack@EO

Hack@EO was born from the idea of continuing the experience of Hack@MI and to analyze satellite images of Italy (EO-Earth Observation) to understand how we are using the Earth's resources and how our way of living is changing.

Thanks to the collaboration with **ESA (European Space Agency)**, **AIxIA** and **Gmatics**, **Hack@EO** aims to increase the awareness of the population on issues of social interest through the analysis of satellite image data.

The **Hack@EO** hackathons are aimed at a **STEM (A)** community: Science Technology Engineering, Mathematics & Arts and Human Sciences.

TERRITORI APERTI

.hack

Powered by OpenSearch TECH

Hack@EO - L'Aquila 2021

Hack@EO L'Aquila 2021 | City Sustainability Indices for Citizens is the Data Driven answer of Territori Aperti to post-earthquake questions to verify if the data, its analysis and its story can help us make sustainable choices after a natural disaster.

HACK@EO L'Aquila 2021 is aimed at the italian **STEM(A)** community in the world and is composed of:

- 3 Data Challenges to solve 3 sustainability problems
- 2 Months of online qualifying competitions
- 1 Final Dashboard for Institutions

Each Data Challenge will have two problems, a STEM one and a Humanistic one.

Each Challenge will be held on Open DataPlayground

TERRITORI APERTI

.hack

Powered by

The Partners

Territori Aperti

- It is an interdisciplinary center for **documentation**, **training** and **research**
- Was born from an idea shared between the **Municipality** and the **University of L'Aquila**. It is funded by CGIL, CISL, UIL Italian labor unions.
- Its **aim** is to act as a promoter of a national and international network of expertise on all aspects of the **prevention** and **management of natural disasters** as well as the processes of reconstruction and development of the affected areas.

esa

- The **European Space Agency** (ESA) is Europe's gateway to space. Its mission is to shape the **development of Europe's space capability** and ensure that investment in space continues to deliver **benefits** to the citizens of Europe and the world.
- ESA is an **international organization**, with **22 Member States**. Thanks to the coordination of the financial and intellectual resources of its members, the Agency is able to undertake **programs** and **activities** far superior to those possible for individual European nations.

AIxIA

- Is a **non-profit scientific** association.
- Its aim is **promoting research** and dissemination of the techniques **of Artificial Intelligence** through seminars, targeted initiatives and sponsorship of events.
- Since 2014 it promotes activities and reflections on the **impacts** of Artificial Intelligence **on** the **economy**, **society** and the **environment**.

Gmatics

- Is a **start-up** created to introduce a new business model based on the offer of **systematic monitoring services for** the **territory**, the **environment** and **infrastructures**.
- Makes **use of** different **Artificial Intelligence** techniques to develop innovative applications **on Earth Observation data** and other geo-spatial data to offer services by subscription to a large **customer base** of the **PA** and **industry** at very competitive prices
- Developments and innovation are performed under contracts with the European Space Agency and the European Commission.

Powered by

Open Search Tech

Open Search Tech is an **HR technology** company with the aim of developing an innovative technological offer (proprietary and from third parties of which Open Search Tech is a premium reseller) for the development, assessment and empowerment of STEM(A) profiles researched by Italian companies.

Open Data Playground

- is the first proprietary product launched in 2019: a **Hackathon and Data Challenge platform** aimed at solving concrete business and corporate social responsibility problems.
- Open Data Playground favors the development of data skills, making them more sustainable and available to the business community.

HackAt

- is the innovative **communication and event format** of Open Search Tech, declined in different thematic editions, through which it is possible to discover the Data Challenges and hackathons organized on Open Data Playground.
- HackAt is also a channel of events, webinars and content focused on the analysis of niche issues in the Italian data sector.

TERRITORI APERTI

.hack

Powered by OpenSearch Tech

Open Data Playground & Past Hackathons

On **Open Data Playground** it is possible to organize:

- recruitment competitions to solve real, social and business problems and evaluate the skills of candidates in an analytical way through real recruitment games
- Hackathons to participate in **sector events** and **Data Philanthropy** competitions.

C1A0 2019

- **When:** Nov 2019
- **Where:** Genova / Onsite
- **Type of hackathon:** 24h
- **Event:** C1A0 - Regione Liguria
- **Sponsor:** IREN

40 players divided into 8 teams found solutions to three real problems relating to the electric energy market.

HACK@MI 2020

- **When:** Mar-May 2020
- **Where:** Milan / Online
- **Type of hackathon:** Qualification Challenges & Final
- **Event:** STEMintheCity 2020 - Comune di Milano
- **Sponsor:** SAP, Nexi, Illimity, AXA, Docebo, ESA

4 qualification races and 1 final race saw more than 80 participants involved in solving Social Sustainability problems.

First Year 2019-2020 Results

- 24 Data Challenges
- 3 Hackathon
- 18 New Sponsors
- 576 New Single Players

TERRITORI APERTI

.hack

Powered by

Hack@EO - L'Aquila 2021

The Data Challenges will be structured by the team of experts in the Data Science field, organized by **Open Search Tech** in collaboration with the teams of **Territori Aperti**, **the European Space Agency (ESA), Gmatics** and the **Italian Association for Artificial Intelligence (AIxIA).**

The problem that each competition will face will consist of two parts: a mathematical problem and a data storytelling problem, so all the **STEM(A)** disciplines will be included.

01 MAY 2021	17 MAY 2021	02 JUNE 2021	18 JUNE 2021
Data Challenge 01	**Data Challenge 02**	**Data Challenge 03**	**Final**
Air quality	Walkability	Accessibility to services	City Sustainability Dashboard for Citizens/Institutions

TERRITORI APERTI

.hack

Powered by openSEARCH TECH

Hack@EO - L'Aquila 2021

DC01 Data Challenge - Air quality

01/05/2021 - 15/05/2021

This challenge will require to combine different data sources (Sentinel-5P, Sentinel-3, Local air quality stations) to evaluate effects of post-earthquake building reconstruction on air quality in the city of L'Aquila.

Input Data

Sentinel-2 L1C Products
Sentinel-3 SYNERGY Level 2 AOD products Aerosol Optical Depth of AERONET

Output STEM Expected

neural network to predict the aerosol optical depth parameter at 10m

Output A Expected

Data Storytelling
Air quality index

TERRITORI APERTI

.hack

Powered by openSEARCH TECH

Hack@EO - L'Aquila 2021

DC02 Data Challenge - Walkability

17/05/2021 - 31/05/2021

This challenge will require to define a the Walkability index [from Wikipedia: Walkability is a measure of how friendly an area is to walking] of the City of L'Aquila.

Input Data

- Local geospatial databases
- Satellite images: WorldView 02 Bundle 4 bande;
- Road graph in gpickle and JSON formats
- Air Quality [DC01]

Output STEM Expected

Predictive approach that estimates the Walkability Index - represented by the pair of subjective and objective indicators, both in the range [1,5].

Output A Expected

Data Storytelling
Walkability index

TERRITORI APERTI

.hack

Powered by openSEARCH TECH

Hack@EO - L'Aquila 2021

DC03 Data Challenge - Accessibility to Services

02/06/2021 - 16/06/2021

Starting from the two indices found in the previous races, you will be asked to calculate the Accessibility Index to services, taking into account architectural barriers, of the City of L'Aquila.

Input Data

- Local geospatial databases
- Satellite images: WorldView 02 Bundle 4 bande;
- Road graph in gpickle and JSON formats
- Walkability [DC02]

Output STEM Expected

Predictive approach that estimates the Accessibility Index - represented by the pair of subjective and objective indicators, both in the range [1,5].

Output A Expected

Data Storytelling
Index Accessibility

TERRITORI APERTI

.hack

Powered by

Hack@EO - L'Aquila 2021

Final - City Sustainability Dashboard for Citizens/Institutions

18/06/2021 - 01/07/2021

The Final involves the creation of a Dashboard to display the Indices on Air Quality, Walkability and Accessibility to services.

Awards 09/07/2021

Input Data	Output STEM Expected	Output A Expected
Air Quality [DC01] Walkability [DC02] Accessibility [DC03]	Well-being index, determined as a function (weighted) of the 3 sustainability indicators + Data Visualization Dashboard of the 4 sustainability indexes	Data Storytelling Project Hack@EO L'Aquila 2021

TERRITORI APERTI

.hack

Powered by

Hack@EO L'Aquila 2021 - Value proposition

Participating in **Hack@EO L'Aquila 2021** allows you to:

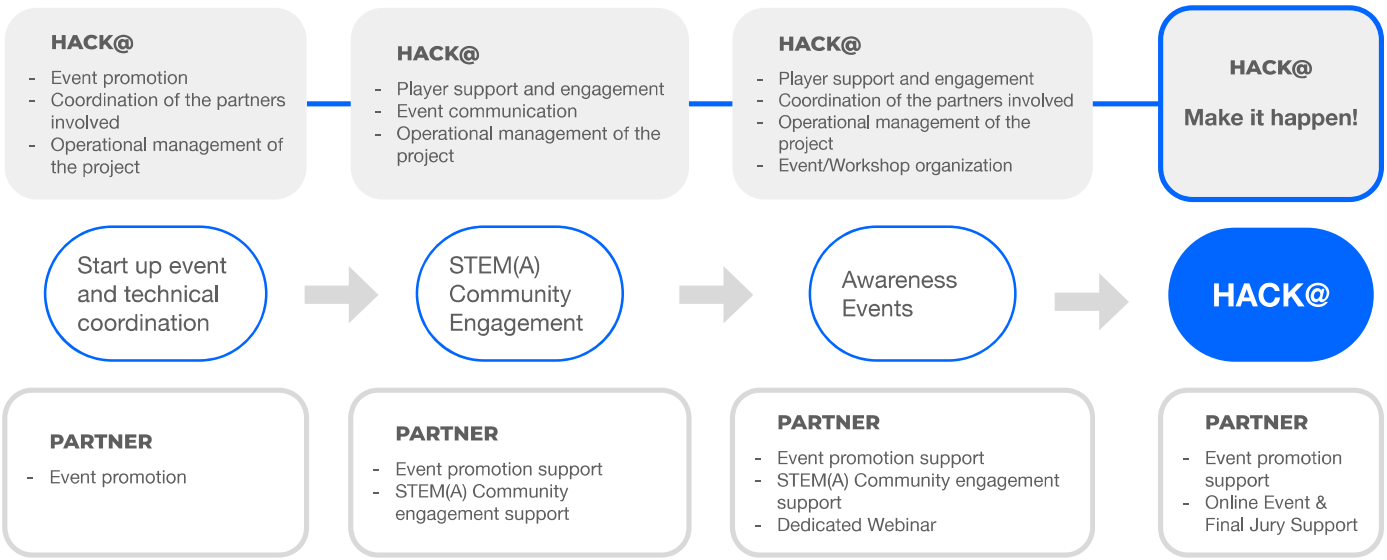
- Increase the visibility of your Brand within the Italian STEM(A) community
- Evaluate and hire candidates with the best skills and increase the visibility of your brand within the Italian STEM(A) community
- Participate in the solution of a social and environmental sustainability problem and contribute to the creation of a more sustainable future for future generations (Corporate Social Responsibility)

TERRITORI APERTI

.hack

Powered by

Hack@EO L'Aquila 2021 - Project Phases

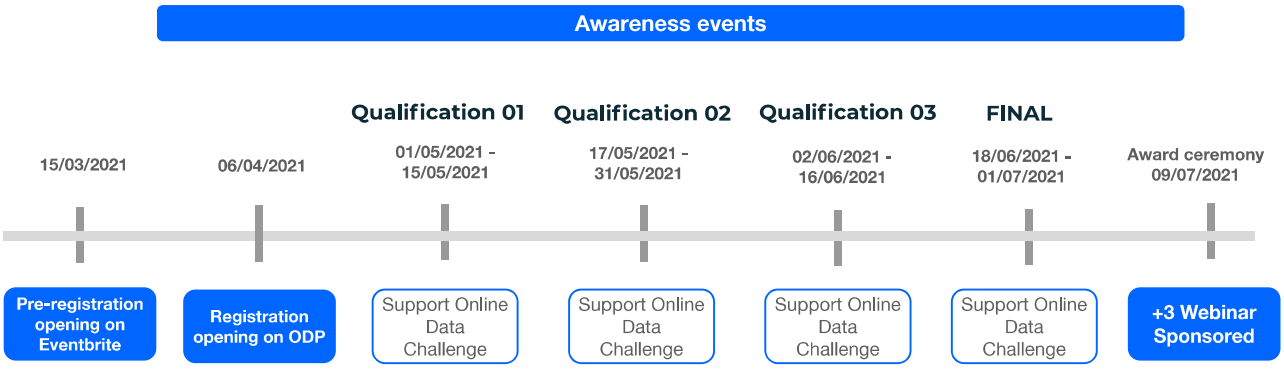


TERRITORI APERTI

.hack

Powered by

Road to Hack@EO L'Aquila 2021



Hack@EO Aquila 2021
User story: Player

Hack@EO Aquila 2021
User story: Sponsor

Timeline

- Communication plan from 8/03/2020
- Registration open from 15/03/2020
- Registration open from 6/04/2021

Event Rules

- Minimum 2 women in the team
- Minimum 2 humanities degrees
- Team size: min 4 people / max 6 people

TERRITORI APERTI

.hack

Powered by OpenSearch TECH

Hack@EO L'Aquila 2021 - Sponsorship Packages

DIAMOND	PLATINUM	GOLD	DATA ECOSYSTEM
(Max 3) € 7.500 + VAT Data Challenge Package	€ 5.000 + VAT Recruitment Package	€ 1.000 + VAT Logo Visibility Package	FREE Reserved for associations, organizations and universities

TERRITORI APERTI

.hack