



An introduction to the INOS project

Katerina Zourou, Web2Learn, for the INOS partnership

INTEGRATING OPEN AND CITIZEN SCIENCE INTO
ACTIVE LEARNING APPROACHES IN HIGHER EDUCATION



The INOS Project

“Integrating Open and Citizen Science into Active Learning Approaches in Higher Education”, 2019-2022

- We aim to:
 - **MODERNISE** Higher Education curricula
 - **UPSKILL** Higher Education academic and library staff, and students

inos-project.eu



4 key concepts

“RESPONSIBLE RESEARCH AND INNOVATION is a **transparent, interactive process** by which **societal actors and innovators become mutually responsive to each other** with a view to the (ethical) acceptability, sustainability and societal desirability of the innovation process and its marketable products (in order to allow a proper embedding of scientific and technological advances in our society).” - von Schomberg, 2011

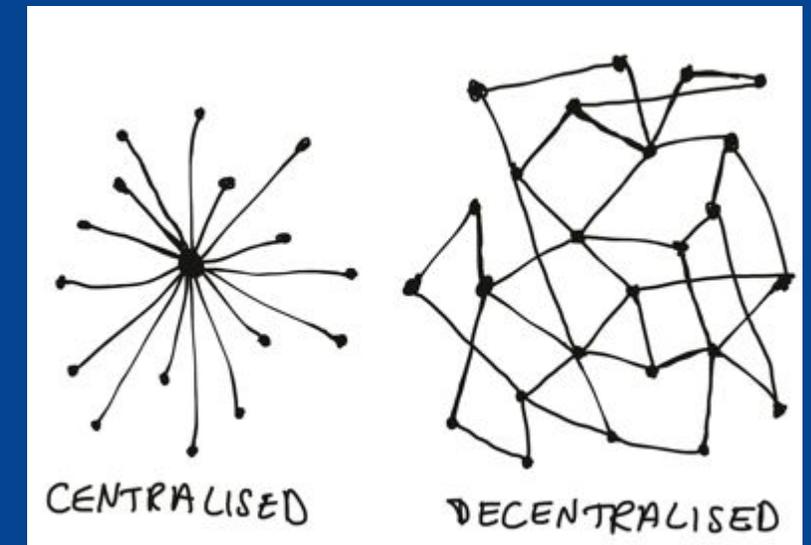
“OPEN SCIENCE is the practice of science in such a way that **others can collaborate and contribute**, where research data, lab notes and other research processes are freely available, under terms that enable reuse, redistribution and reproduction of the research and its underlying data and methods” – FOSTER

“CITIZEN SCIENCE refers to the general public engagement in scientific research activities when **citizens actively contribute to science** either with their intellectual effort or surrounding knowledge or with their tools and resources” - Sanz et al., 2014

“OPEN INNOVATION occurs where knowledge flows beyond the boundaries of a single organization and where a high degree of cross-border organizational collaborations take place... **end-users, policy makers, industry and academic institutions work together** to advance scientific knowledge or to develop new solutions and prototypes” - Simeone et al., 2017

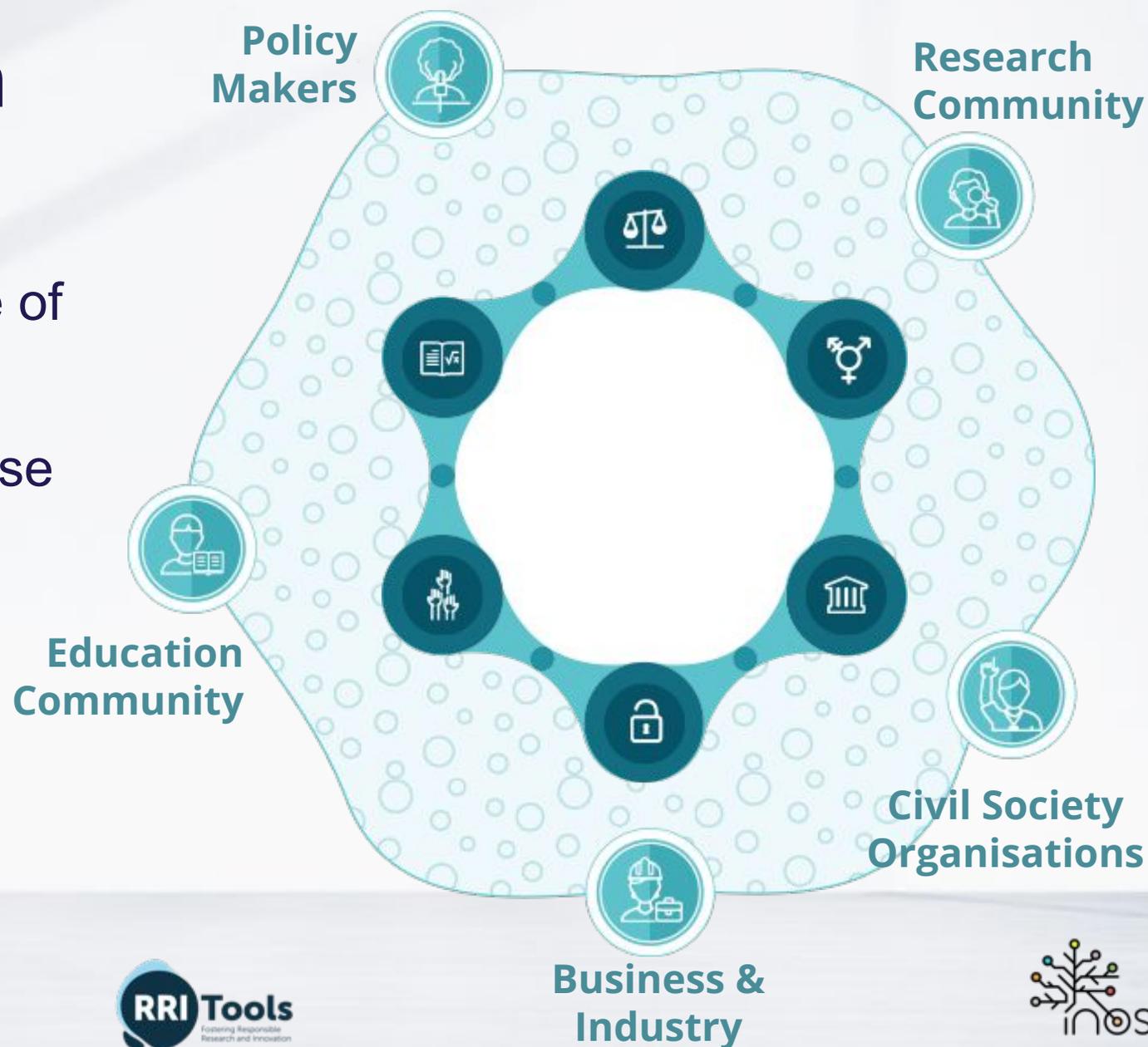
Main point:

- RRI, OS, CS and OI all involve the **decentralisation of science and innovation and its**



Our ambition for open science

- Open Science engages a range of stakeholders
- Universities and libraries organise more activities where these stakeholders interact and collaborate.



Open science: what does it look like?



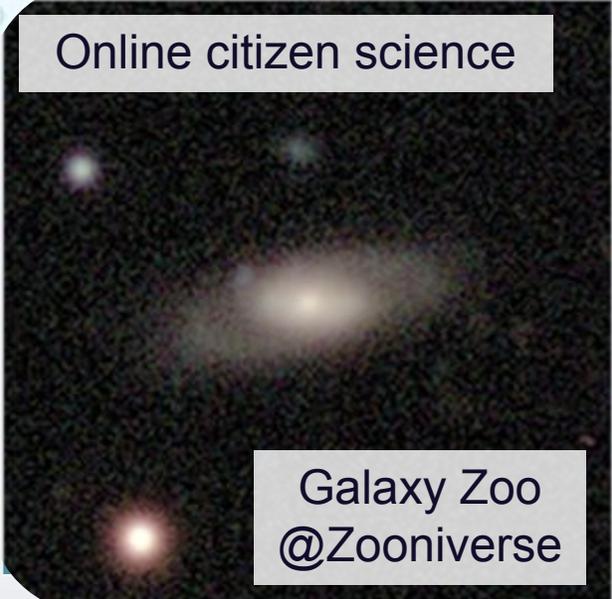
Public talks



Citizen science

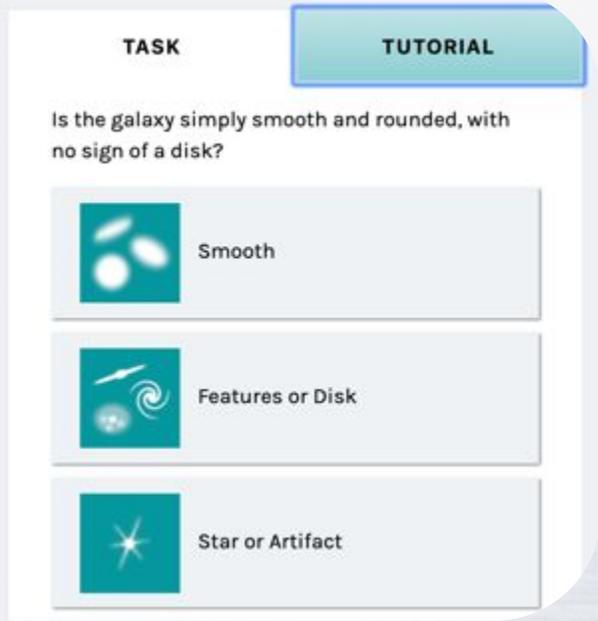


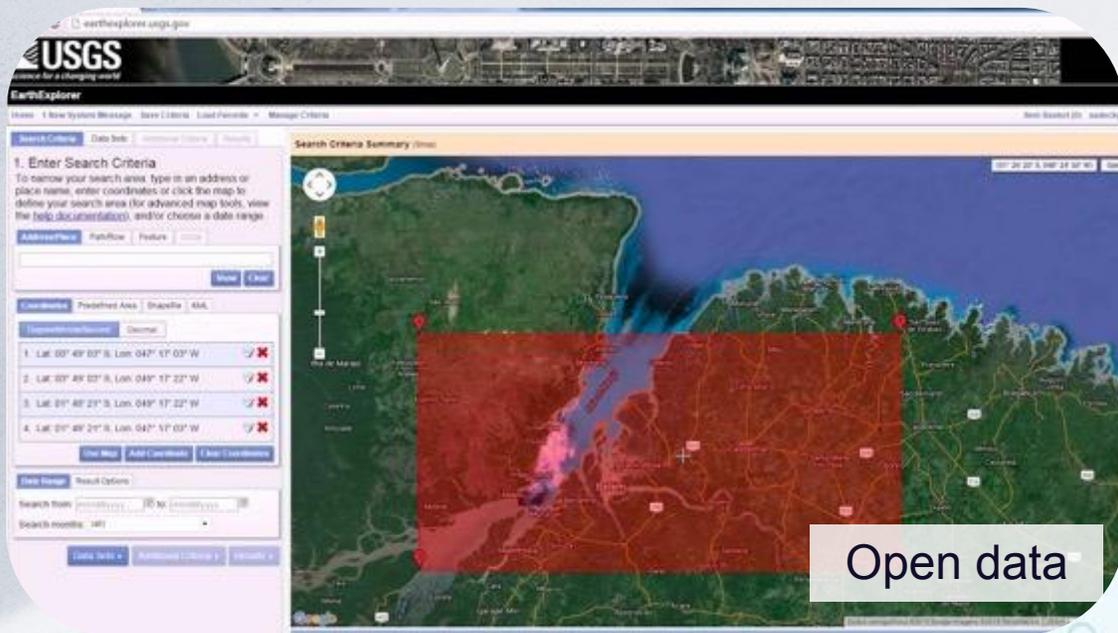
Online citizen science



Online citizen science

Galaxy Zoo @Zooniverse





Open data



Public forum



Hackathon

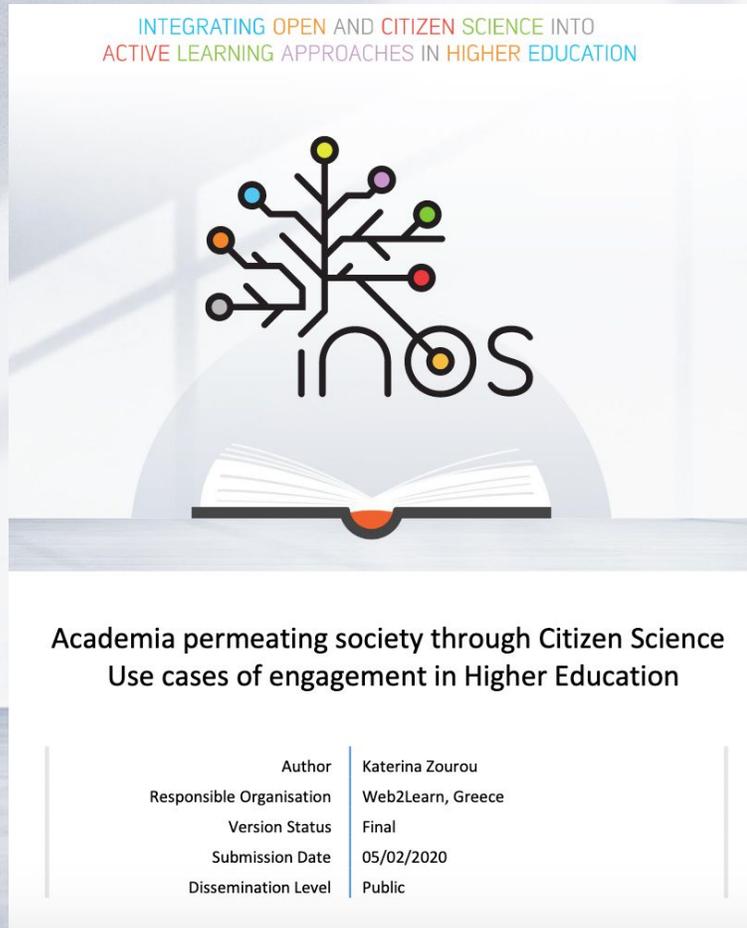


Interdisciplinary projects

Business
Industry

Analyzing common features across open science projects

Results of a landscape analysis of 20 OS projects



1. Epidemium
2. Aalborg University's Megaprojects
3. Collecting litter and data to combat plastic pollution in Denmark
4. Tallinn University LIFE projects
5. Ocean i3
6. Project Discovery: Citizen science with Eve Online
7. Citizen science activities organised by Tartu University Natural Science Museum
8. #DataOnTheStreets Rally and the Better Budget Dataquest
9. iScape Living Labs
10. Mosquito Alert
11. NASA's GLOBE Observer
12. Smartfin
13. Europeana Transcribathon
14. Flint Water Study
15. Open Seventeen
16. Open source electric vehicle
17. DigiEduHack
18. Climathon
19. AirCitizen
20. Citizen science in Helsinki's Central Park

And now what?

Integrating OS in Higher Education

9 WAYS TO INTEGRATE OPEN & CITIZEN SCIENCE INTO ACTIVE LEARNING APPROACHES IN HIGHER EDUCATION



The INOS Project

Open Science & Citizen Science are key catalysts in shaping research and society in the European Union and the world.

The INOS Project aims to modernize Higher Education Institutions' curricula through civic engagement in Open & Citizen Science.

Consortium

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universit  BORDEAUX



TALLINN UNIVERSITY

Web2Learn
open social learning

1 Engage with university students to meet ambitious social objectives.

Whereas university staff may be involved in Open & Citizen Science projects, university students are much less involved.

2 Adopt innovative approaches in academic engagement for civil society.

Academic & library staff should go beyond mainstream solutions to reach out to new, ground-breaking initiatives.

4 Develop curricula that embrace Citizen Science, Open Science & public participation in shaping science.

Include Open & Citizen Science in higher education curricula as a means to mainstream it in university learning & teaching practice.

3 Involve academic & library staff in the design and implementation of Citizen & Open Science.

Adopt more diversified roles at various stages of Open and Citizen Science projects, beyond the 'observer' role of scientific validation or external evaluation.

5 Support local communities seeking scientific advice.

Collaboration between scientists & citizens is of critical importance in addressing complex issues, such as environmental justice & public health advocacy.

6 Extend Open and Citizen Science projects to many stakeholders.

Broad collaboration is needed to tackle social issues.

8 Engage in Open Innovation.

Universities & their libraries are expected to commit to new knowledge creation, thus becoming a key source of innovation in society.

7 Build trust & sustainability by including citizens.

Higher Education Institutions & academic libraries should look beyond the end of an Open/Citizen Science project: take sustainability measures, strengthen community uptake & build trust with volunteers.

9 Leverage the role of universities in financial transparency initiatives.

Social movements asking for more financial transparency on national & global levels should be supported by universities through Open & Citizen Science.

Learn more at inos-project.eu



A learning design approach (to shape OS at HEIs and beyond)

~20 Pilot events
(2020-2022)

Analysis of case studies

Framework and guidelines
for organising OS Activities



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State-of-the-art analysis of the pedagogical underpinnings of open science, citizen science and open innovation activities

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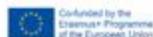
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INTEGRATING OPEN AND CITIZEN SCIENCE INTO
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The INOS Learning Design Framework: Fostering the Educational Value of Open Science, Citizen Science and Open Innovation Activities

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Some findings from the analysis of OS activities in various Higher Ed contexts

Advantages of Open Science Activities

1. Authentic experience

- Authenticity is a strong motivator for learning
- Practical experience and real-world impact

2. Research students learn key OS soft skills

- Collaboration with diverse stakeholders
- Experience in public outreach



Advantages of Open Science Activities

3. Students learn key OS technical skills

- ❑ Open data
- ❑ Open tools/software/hardware

4. Higher quality research and higher research impact (academic and non-academic audiences)

- ❑ Opportunities for students to share research with others
- ❑ Students build networks





Challenges of Open Science Activities

- 1.** “Trade-off” between learning technical and soft skills.
 - E.g. Team coordination takes time.
- 2.** Additional workload on top of existing courses and projects.

INOS Webinar

From open and citizen science to activism: roles of academic staff

Thursday, July 7
13h30-15h CET



Laura Horn
Roskilde University



Gianluca Grimalda

Scientist Rebellion



Luigi Ceccaroni
Earthwatch



Jaume Piera
Institute of Marine studies/CS



Katerina Zourou
Web2Learn



Michael Peter Edson
Cultural Strategist
Moderator



Register here: <https://bit.ly/INOSwebinar>



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Next INOS webinar, July 7

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