



WHAT IS CITIZEN SCIENCE AND HOW TO APPLY IT IN R&I

dr. Monika Mačiulienė

*Head of the Lithuanian Citizens' Science Association
Head of the Citizen Science Hub at VILNIUS TECH*





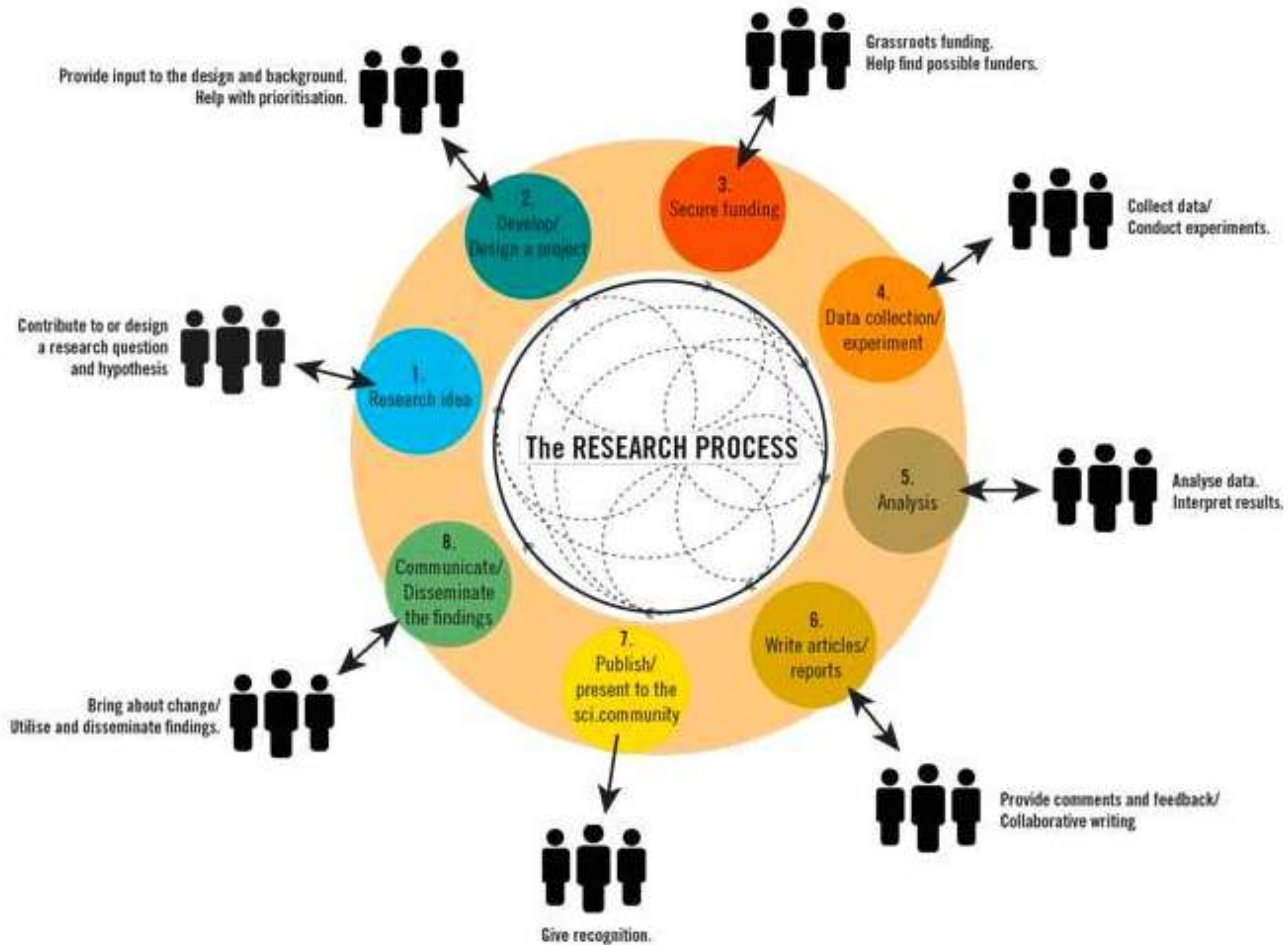
definition:

CITIZEN SCIENCE

A LOT of definitions available
Field is still growing & evolving

In the most basic sense:

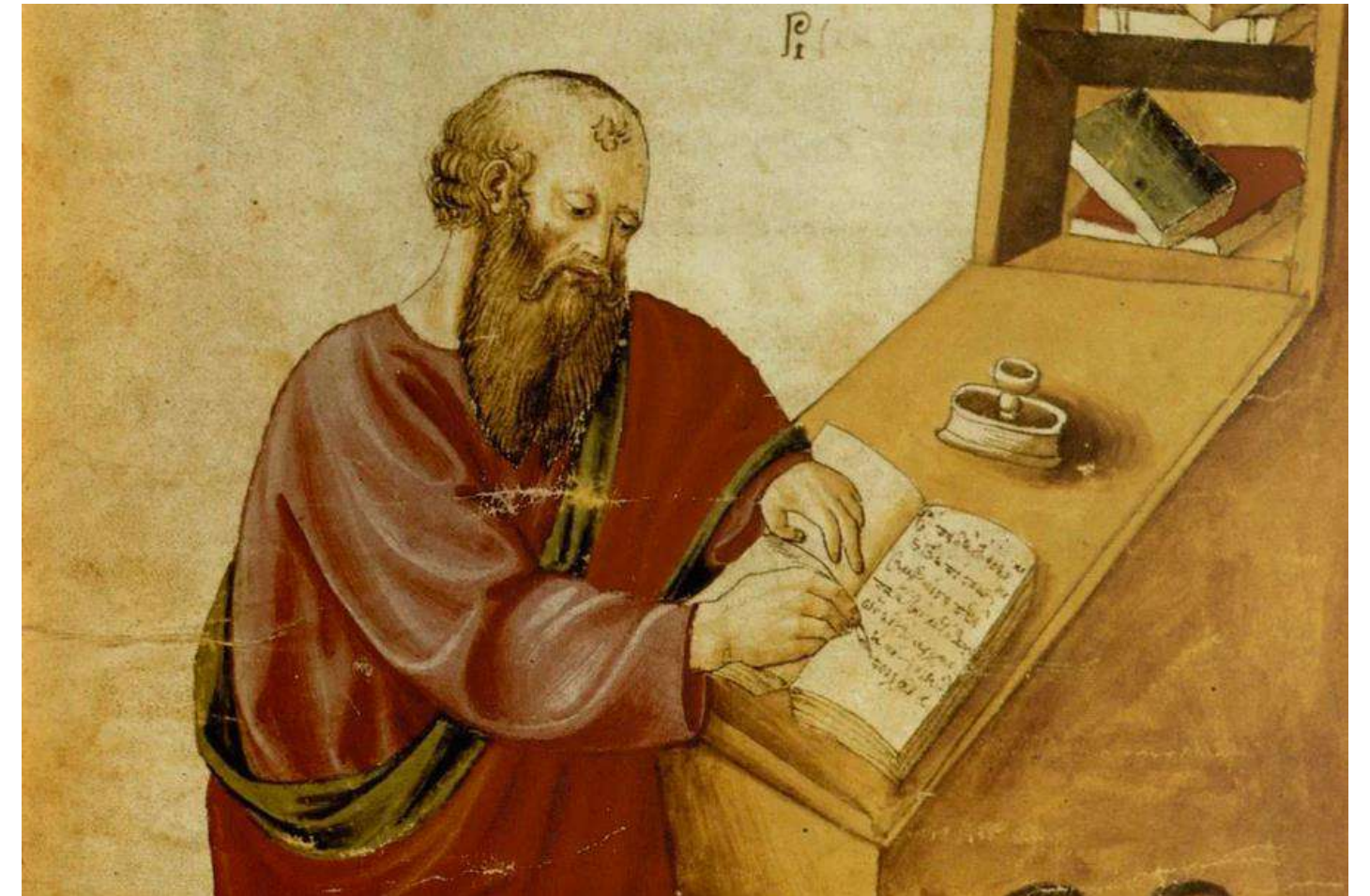
Citizen science is when the public voluntarily helps conduct scientific research.



Ancient and Medieval Eras



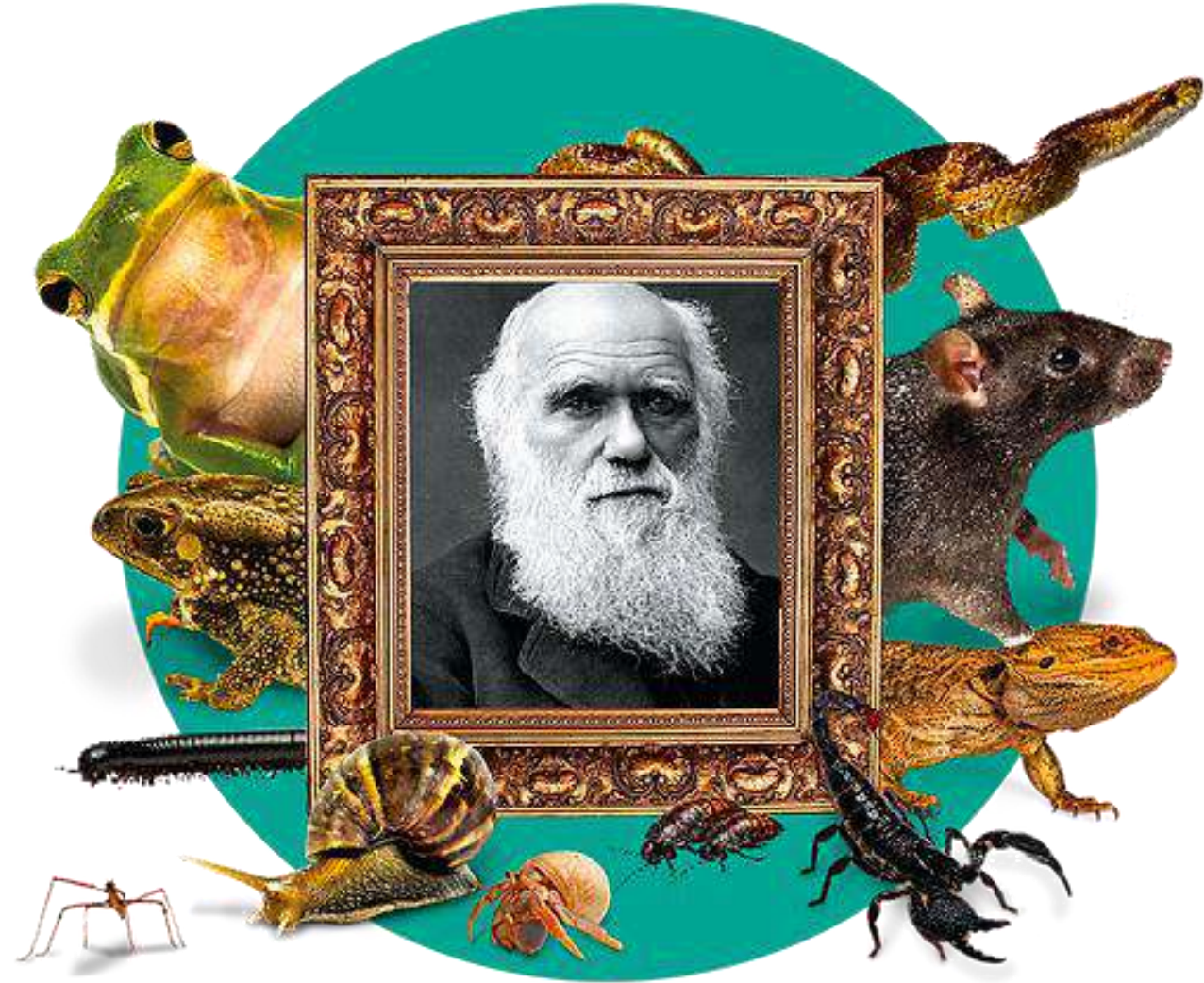
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[Image source](#)

While the term "citizen science" wasn't used, throughout ancient and medieval times, many observations of natural phenomena (like lunar eclipses or comets) were conducted by laypeople or by those whose primary profession was not science.

18th and 19th Centuries



[Image source](#)



[Image source](#)

Natural history was a prominent field where amateurs played a significant role. Many enthusiasts collected plant and animal specimens and communicated their findings through informal networks or scientific societies. Birdwatching became a popular hobby, especially in Britain, which led to large-scale data collection on bird migrations and distributions.

20th century

The advancement of technology made data collection more sophisticated. Tools like the radio allowed amateurs to engage in activities like tracking satellites or meteors. The amateur astronomy community contributed significantly to data collection, tracking stars, and discovering comets. Environmental movements also triggered more participatory research activities, such as water quality assessments or biodiversity counts.

Amateur radio: experiments and regulations



[View item information](#)

"Ham Radio and Equipment Operator at Short Creek," 1953. Courtesy Utah State Historical Society, via Mountain West Digital Library.

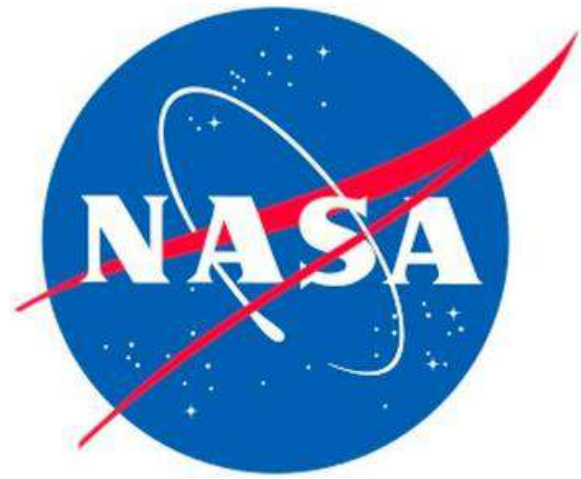
[Image source](#)

Citizen science and the rise of digital

The rise of the internet and smartphones revolutionized citizen science. Platforms like Zooniverse allowed laypeople to participate in projects ranging from categorizing galaxies to transcribing historical documents + Many institutions started formalizing the role of citizen science in research. Examples include the European Citizen Science Association (ECSA) or the Citizen Science Association (CSA) in the U.S. These associations promote best practices, connect different projects, and support the growth of the field.



examples of
large scale
citizen science
projects world
wide



DOWNLOAD iNATURALIST
 Download the free app from your app store




SEE IT
Find any wild plant, animal, or fungi



SNAP IT
Take a photo





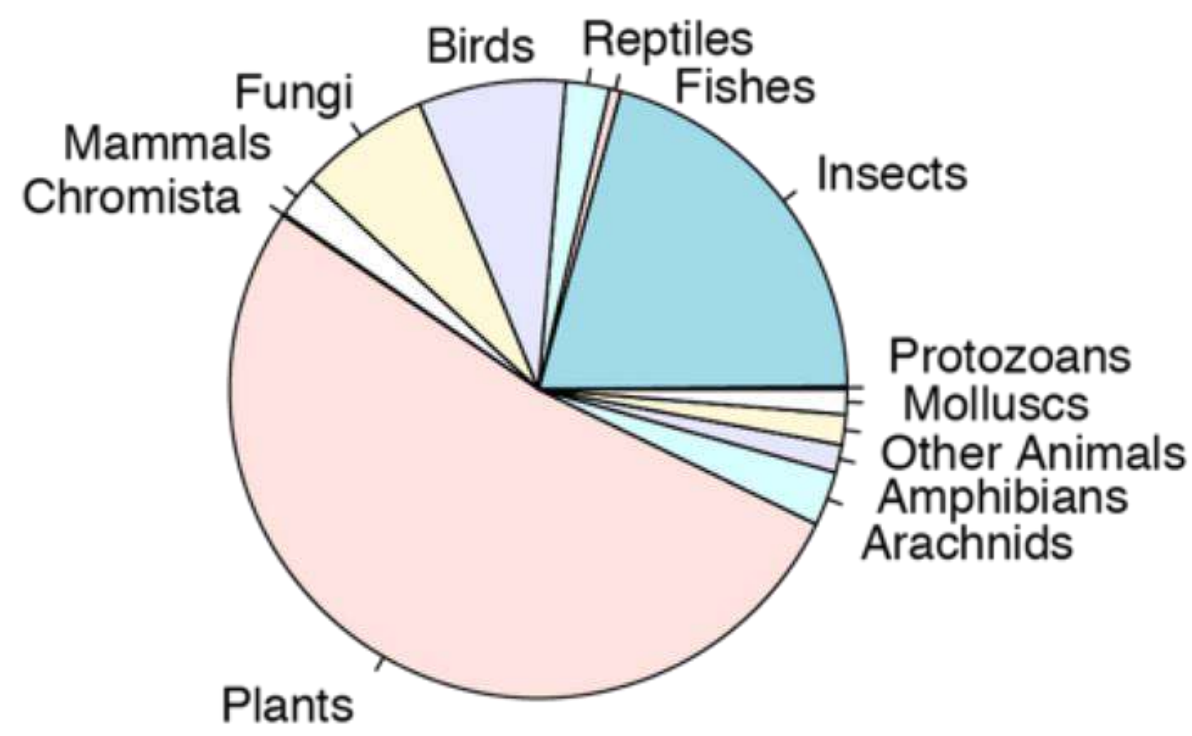
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Share your photo on the iNaturalist app

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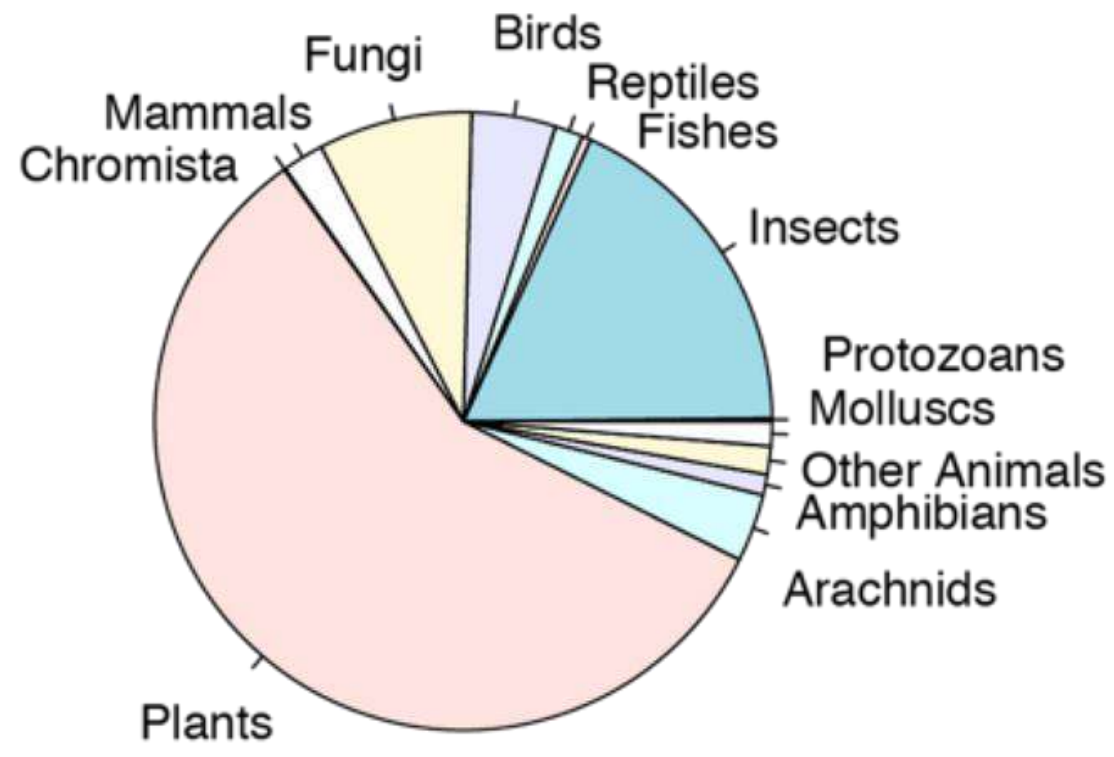


The Nicest Place Online? It Might Just Involve Identifying Sea Slugs.

iNaturalist Mobile



Seek



source: iNaturalist



Lithuania Country

- Species
- Observations
- Projects
- People
- About Lithuania

Flag This Place

73 of 116 confirmed

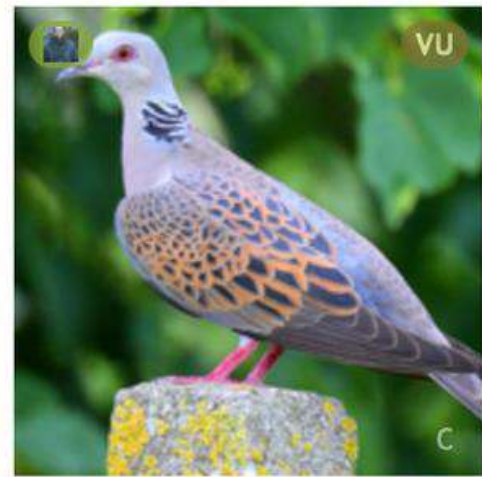
Search for Species Establishment

Threatened

- All life
- Life
 - Animals
 - Arthropods
 - Chelicerates
 - Arachnids
 - Hexapods
 - Insects
 - Chordates
 - Vertebrates
 - Ray-finned fishes
 - Amphibians
 - Birds
 - Mammals
 - Reptiles



Common Quail
(*Coturnix coturnix*)



European Turtle-Dove
(*Streptopelia turtur*)



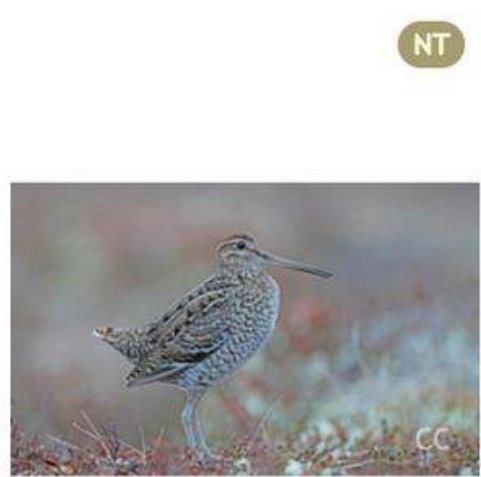
Red Knot
(*Calidris canutus*)



Curlew Sandpiper
(*Calidris ferruginea*)



Eurasian Curlew
(*Numenius arquata*)



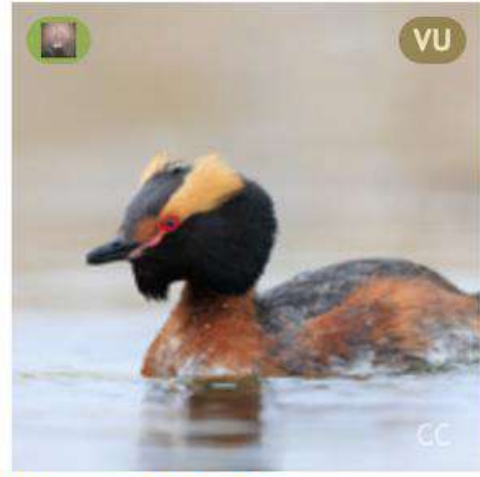
Great Snipe
(*Gallinago media*)



Black-tailed Godwit
(*Limosa limosa*)



Bar-tailed Godwit
(*Limosa lapponica*)



Horned Grebe
(*Podiceps auritus*)



Razorbill
(*Alca torda*)



Atlantic Puffin
(*Fraterecula arctica*)



Red-footed Falcon
(*Falco vespertinus*)



Published papers that use iNaturalist data - wiki 3 (2022 and 2023)

■ General

Community

Topics

More

Categories

Bug Reports

Educators

Feature Requests

General

Nature Talk

News and Updates

Tutorials

All categories

Tags



2023

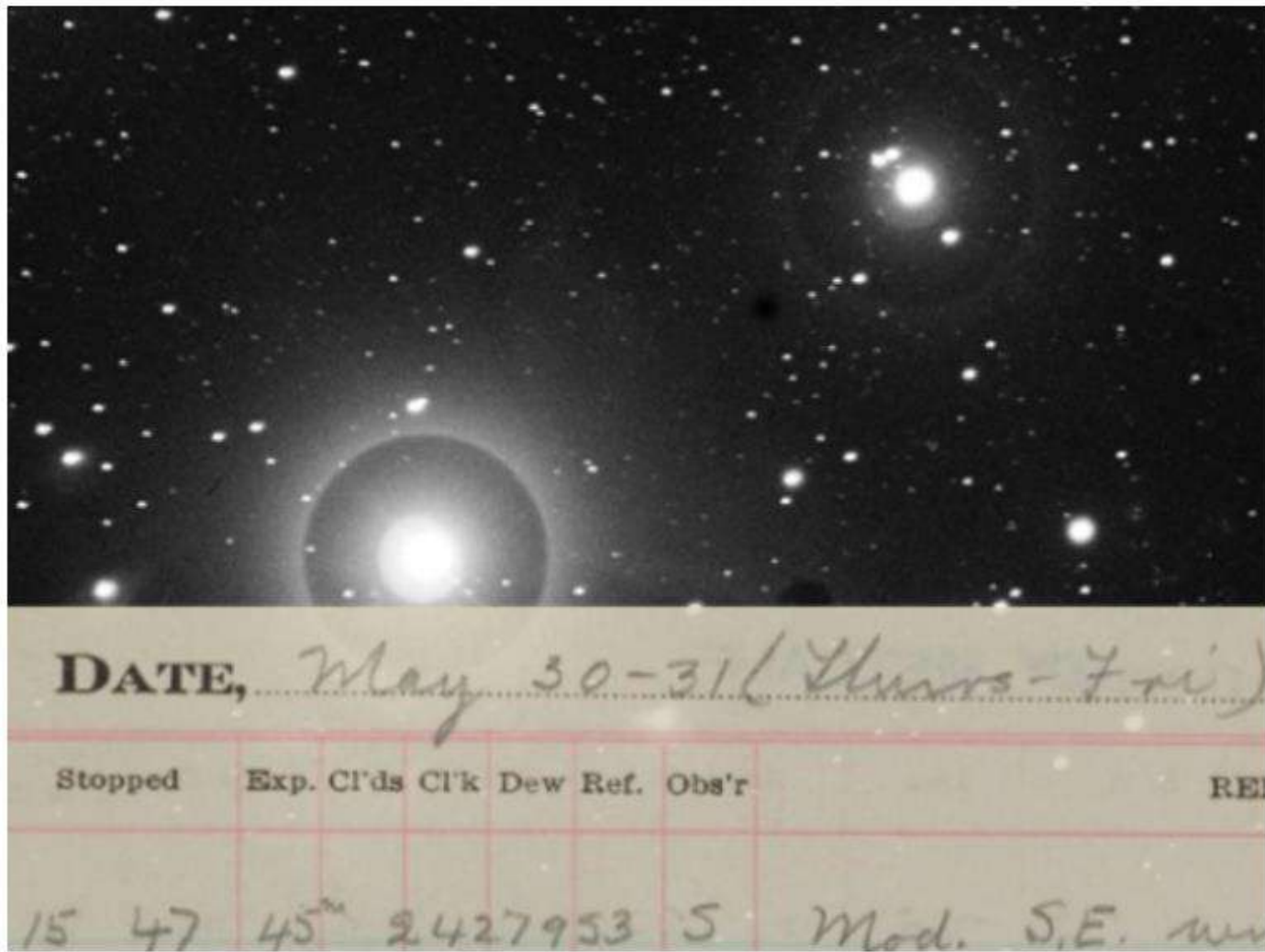
Bravo, G.; Kaminsky, J.; Bagur, M.; Alonso, C.P.; Rodríguez, M.; Fraysse, C.; Lovrich, G.; Bigatti, G. (2023) [Roving Diver Survey as a Rapid and Cost-Effective Methodology to Register Species Richness in Sub-Antarctic Kelp Forests](#) ¹. *Diversity*, 15 , 354. <https://doi.org/10.3390/d15030354> ²

Forti, L.R. (2023) Students as citizen scientists: project-based learning through the iNaturalist platform could provide useful biodiversity data, *Biodiversity*, <https://doi.org/10.1080/14888386.2023.2174595> ¹³

Forti, L.R. & Szabo, J. K. (2023) The iNaturalist Platform as a Source of Data to Study Amphibians in Brazil. *Anais da Academia Brasileira de Ciências* 95(1): e20220828. DOI 10.1590/0001-3765202320220828 - available at <https://www.scielo.br/j/aabc/a/4pKNrwDdDP89DTN5XWQcxxF/?lang=en> ⁴

Fogel, N, Thompson F, Muñiz P, and Camilo G. (2021; available 2023) [The Prevalence and Manifestation of Wing De-melanization in the Eastern Carpenter Bee \(Hymenoptera, Apidae *Xylocopa virginica*\) Associated with Urban Areas](#) ¹⁵ *Journal of the Kansas Entomological Society* 94(4) 235-266 [Project](#) ³

Gaier, A.G. & Resasco J. (2023) [Does adding community science observations to museum records improve distribution modeling of a rare endemic plant?](#) ¹⁶ *Ecosphere* 14:3:e4419

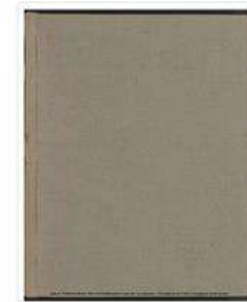


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Join our distinguished corps of Digital Volunteers and make the Smithsonian's vast scientific collections accessible for research and education. Our award-winning online platform offers opportunities for enthusiasts to transcribe critical data contained in specimen collection records and transcribe full text of field books and other archival materials significant to the history of science. Whether you're fascinated with botany or astronomy or the experience of women in science, you'll find meaningful projects on the Transcription Center.

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The Harvard Computers were a team of women working as skilled workers to process astronomical data at the Harvard College Observatory in Cambridge, Massachusetts, United States. The team was directed by Edward Charles Pickering (1877 to 1919) and, following his death in 1919, by Annie Jump Cannon.



70% Complete

224 Total pages
35 Contributing members

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Project PHaEDRA - Annie Jump Cannon - Annie Cannon Notebooks #179

At Harvard College Observatory (now the Harvard-Smithsonian Center for Astrophysics), Women Astronomical Computers studied glass plate photographs of the night sky. Here they cataloged stars, identifying variables, interpreting stellar spectra, counting galaxies, and measuring the vast distances in space. Several of them made game-changing discoveries in astronomy and astrophysics. In these books, follow the work of Annie Jump Cannon, who in 1901 devised a robust and elegant stellar classification scheme that astronomers still use today. Interested in historical women? Love astronomy? Help us transcribe the work of the Harvard Observatory's women computers and see which stars shine the brightest. PLEASE NOTE: The **Project PHaEDRA Instructions for Women Computers Notebooks** were heavily revised and republished on August 18, 2023. Please take a moment to familiarize yourself with the new instructions.

[Browse projects by Harvard-Smithsonian Center for Astrophysics](#)



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Project PHaEDRA - Annie Jump Cannon - Annie Cannon Notebooks #201

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[Browse projects by Harvard-Smithsonian Center for Astrophysics](#)

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At Harvard College Observatory (now the Harvard-Smithsonian Center for Astrophysics), Women Astronomical Computers studied glass plate photographs of the night sky. Here they cataloged stars, identifying variables, interpreting stellar spectra, counting galaxies, and measuring the vast distances in space. Several of them made game-changing discoveries in astronomy and astrophysics. In these books, follow the work of Annie Jump Cannon, who in 1901 devised a robust and elegant stellar classification scheme that astronomers still use today.

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1124	4 ^h	58.1	-2° 52	9.
1122	4 ^h	57.9	-2° 52	9.
1120	4 ^h	57.6	-2° 48	9.
995	4 ^h	57.2	-3° 15	9.
994	4 ^h	57.0	-3° 13	9.
989	4 ^h	56.5	-3° 26	9.
988	4 ^h	56.5	-3° 28	9.
988	4 ^h	56.3	-3° 11.0	9.
984	4 ^h	55.7	-3° 52	9.

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32[[/strikethrough]]08|4^[[h]] 5[[strikethrough]]
9.3[[/strikethrough]]6.1|-2[[symbol - degree symbol]]
13[[strikethrough]]5[[/strikethrough]]|9.
[[strikethrough]]5[[/strikethrough]]2|
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degree symbol]] 59|9.3|
|74|-1[[symbol - degree symbol]] 786|4^[[h]] 55.9|-1[[symbol -
degree symbol]] 51|9.5|
|75|-1[[symbol - degree symbol]] 787|4^[[h]] 55.9|-1[[symbol -
degree symbol]] 54|9.2|
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Transcription Notes:

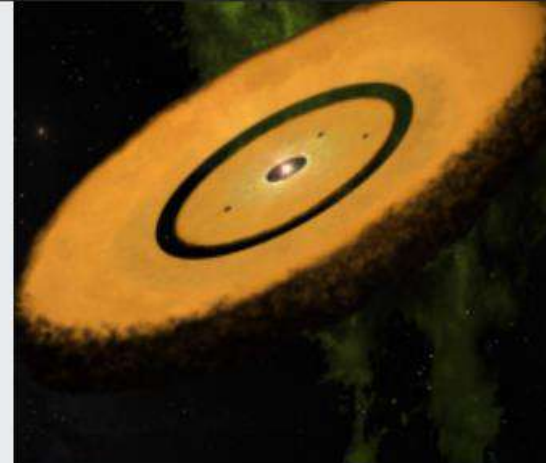
PLEASE READ NEW INSTRUCTIONS FOR THESE SPECIAL PHAEDRA PAGES! I can see transcriber has not done so. There are many errors that need to be fixed. Columns are not done correctly. Need to add another too.

New instructions:

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headings needed, even if blank.
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[Go to Project Website](#)



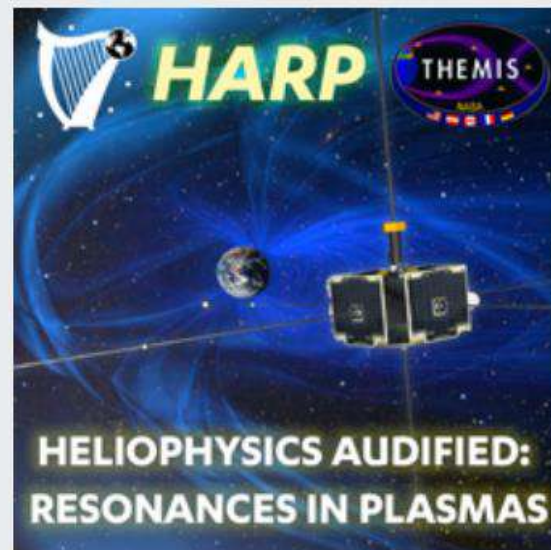
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**Heliophysics Audified:
Resonances in
Plasmas...**



HELIOPHYSICS AUDIFIED:
RESONANCES IN PLASMAS

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Aurorasaurus



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Active Asteroids



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New planet as big as Jupiter discovered by 'citizen scientists'

The planet TOI-2180 b is 379 light-years away from Earth and is 105 times denser than our planet

Adam Smith • Tuesday 18 January 2022 06:45 • [3 Comments](#)

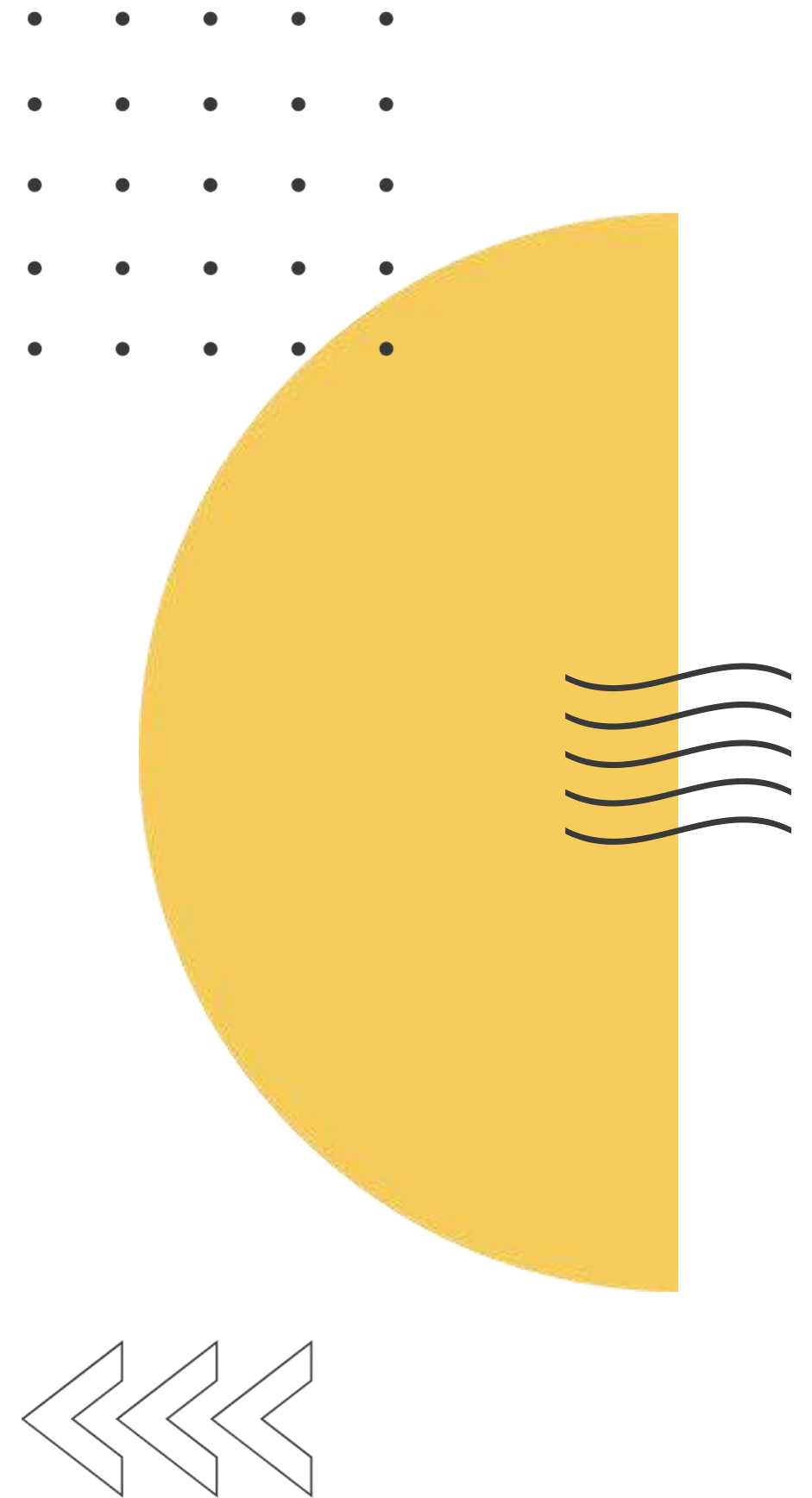




CITIZEN AND OPEN SCIENCE IN EU

H2020 = pilots of Open Science and citizen engagement activities
Horizon Europe = the importance of openness in science
established

Open science is not limited to freely available research data and open-access databases. Openness is also sought through collaboration - by expanding the audiences, developing new methods of research organization and engaging the public in various forms.



1. Creating high-quality new knowledge
2. Strengthening human capital in R&I
3. Fostering diffusion of knowledge and Open Science

Scientific Impact



4. Addressing EU policy priorities & global challenges via R&I
5. Delivering benefits & impact via R&I missions
6. Strengthening the uptake of R&I in society

Societal Impact



7. Generating innovation-based growth
8. Creating more and better jobs
9. Leveraging investments in R&I

Economic/ Technological Impact



Mutual Learning Exercise on Citizen Science Initiatives- Policy and Practice

An increasing number of citizen science projects and initiatives are being implemented across Europe. They mostly taking place at local or national level, but some are co-ordinated internationally. This rapidly emerging mode of research and innovation shows a big potential to achieve greater societal impact and increase trust in science by leveraging collective societal capabilities, enlarging the scope of the R&I and increasing relevance, responsiveness and transparency. However, existing national and regional policies to support them are still at an early stage of development in many countries. Europe would benefit from a greater attention towards the promotion of citizen science within Member States and regions, and from a greater cooperation and shared approaches across the European Research Area.

01 DEC	28 FEB
2021	2023

PSF Geo coverage

Norway Austria Belgium
France Germany Hungary
Italy Portugal Romania
Slovenia Sweden

PSF Exercise type

Challenge/ MLEs



CITIZEN SCIENCE IN ERC PROJECTS

MAPPING ERC
FRONTIER RESEARCH



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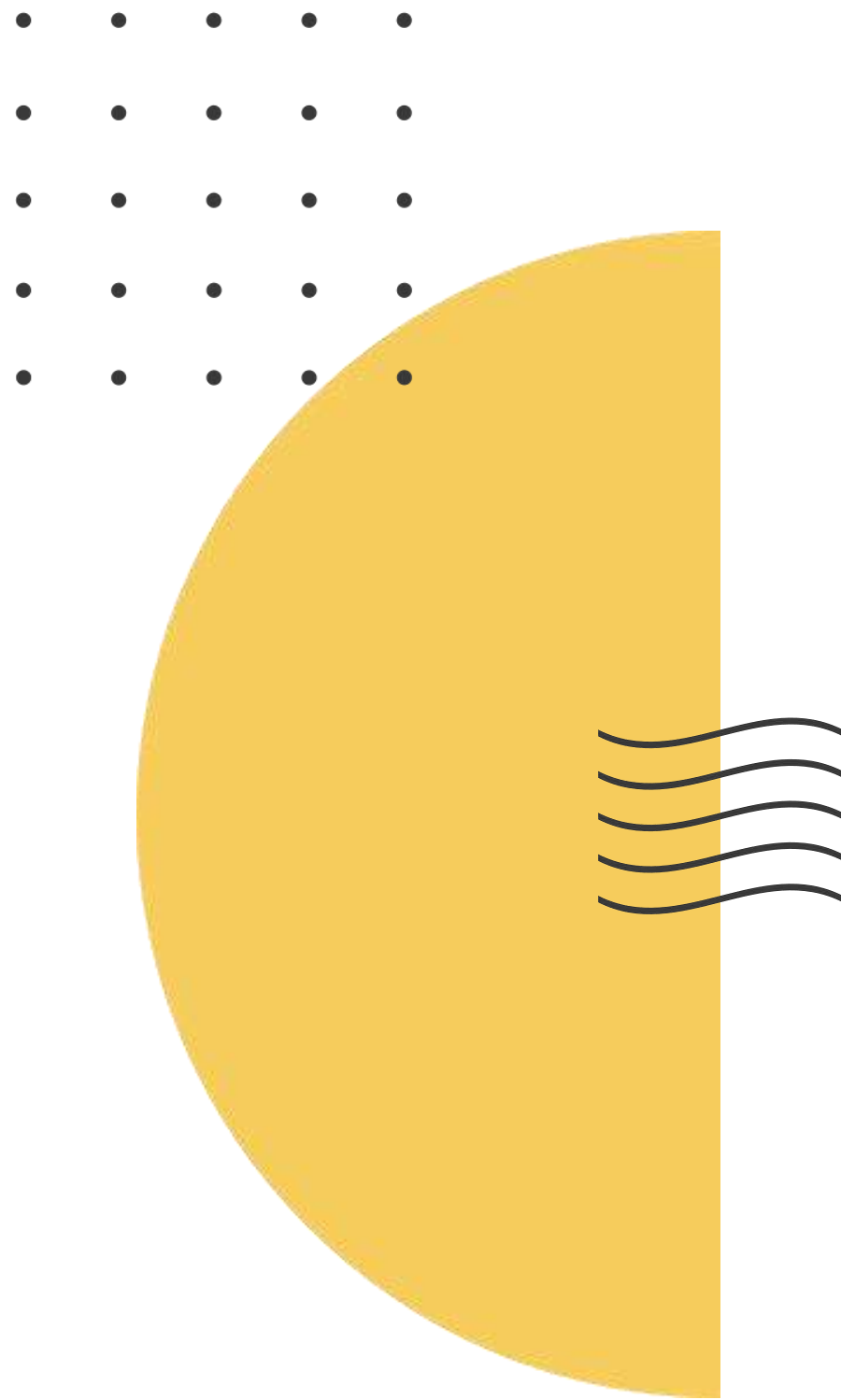


IMPETUS: setting a citizen science innovation programme for exploring innovative funding schemes and boosting recognition

[About the project](#)

DEVELOPMENTS RELATED TO CITIZEN SCIENCE IN LITHUANIA

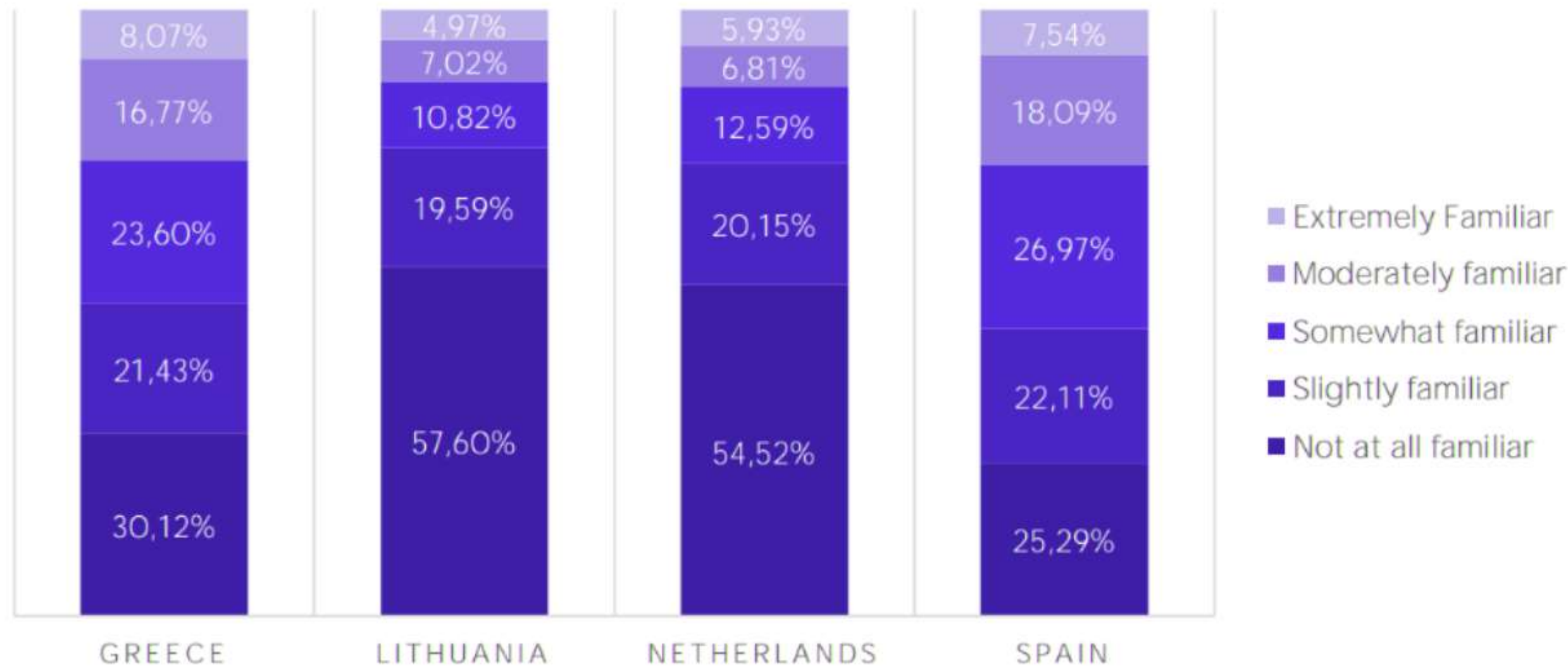
- Public policy debate and legislation related to Citizen Science in Lithuania are still limited (focus mostly Open Access aspects);
- BUT > a number of initiatives by scientists, librarians, university administrations and citizens themselves.



Results of large-scale survey conducted in the context of INCENTIVE project in 2021 in Greece, Lithuania, Netherlands and Spain.

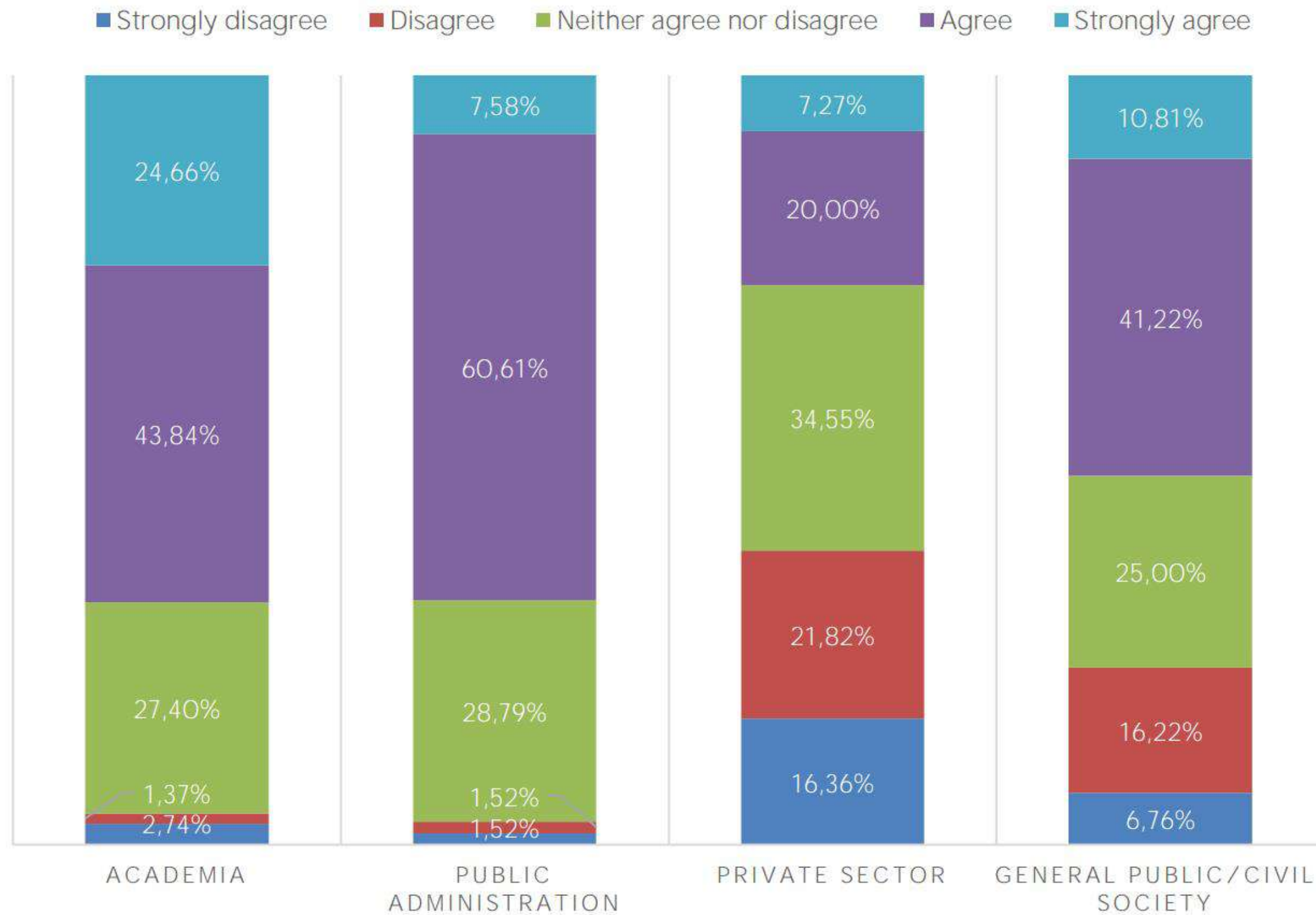
Total sample: 1936; Lithuanian sample: 342

Respondents: quadruple-helix groups (industry, public administration, academia and civil society)



Level of familiarity with the term "Citizen Science"

Source: INCENTIVE project report "[Requirements and motivations of quadruple helix stakeholders for active engagement in the Citizen Science](#)"



Willingness to join Citizen Science activities in Lithuania (per stakeholder group)

Source: INCENTIVE project report "[Requirements and motivations of quadruple helix stakeholders for active engagement in the Citizen Science](#)"

CITIZEN SCIENCE ASSOCIATION ESTABLISHED IN 2020



pilieciumokslas.lt

PILIEČIŲ MOKSLAS

BENDRUOMENĖ

TARPTAUTINĖ PATIRTIS

NAUJIENOS



CITIZEN SCIENCE HUB IN VILNIUS TECH ESTABLISHED IN 2022

Objectives of the Hub

- to raise awareness about benefits of Open Science, CS, and principles of RRI;
- to prepare training resources in local language;
- to promote the implementation of RRI, CS and Open Science principles into different stages of the research process;
- to create networking opportunities for community members willing to participate in co-creative research;
- to facilitate the development of new competencies and skills in Vilnius Tech.

VILNIUS TECH

Faculty of Creative Industries Studies Research and innovation International Departments Contacts

Creative Industries > Research and innovation > Citizen Science Hub

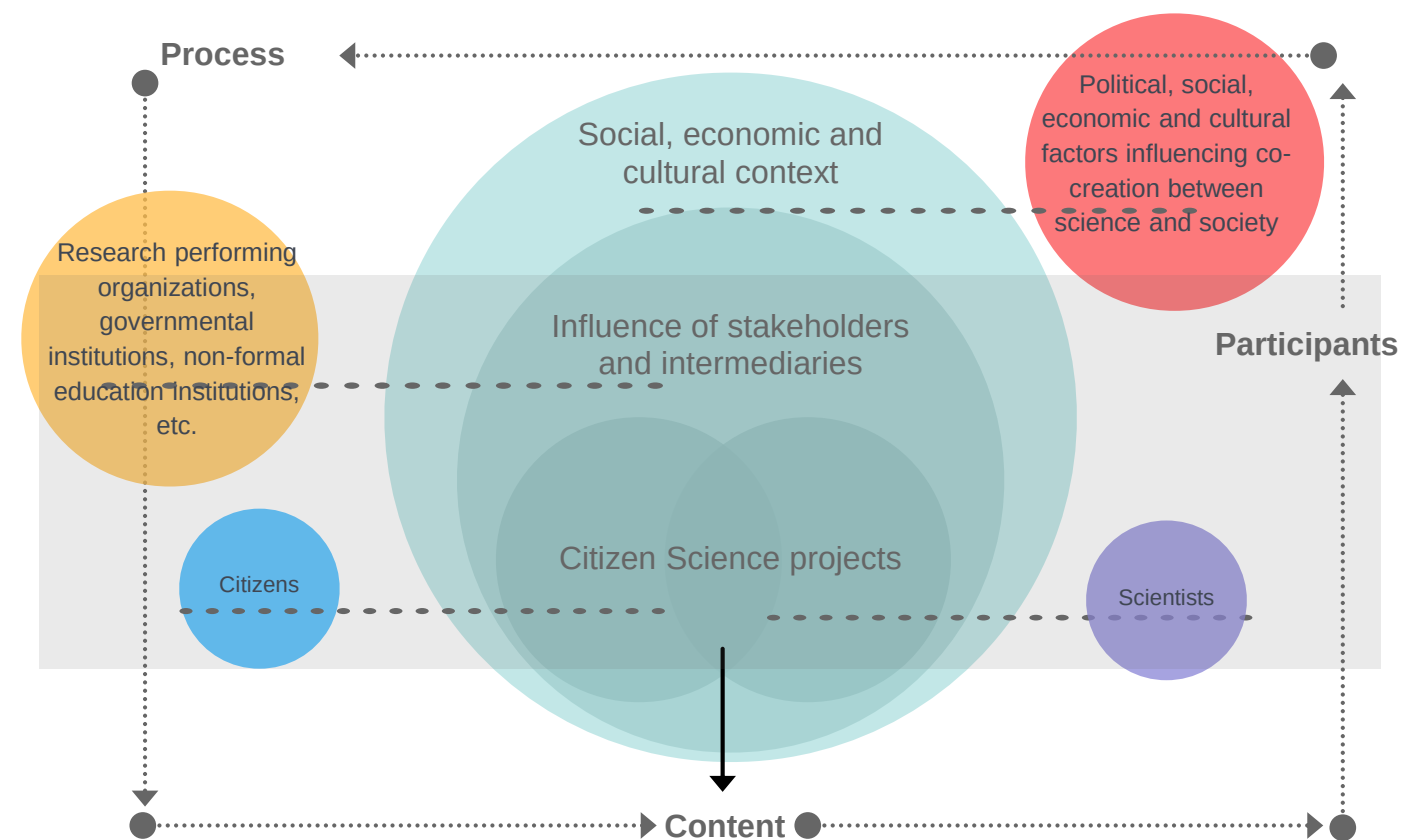
VILNIUS TECH - CITIZEN SCIENCE HUB

Vision: To create a platform supporting community and partners of Vilnius Tech in conducting Research & Innovation based on active engagement of civil society and principles of RRI

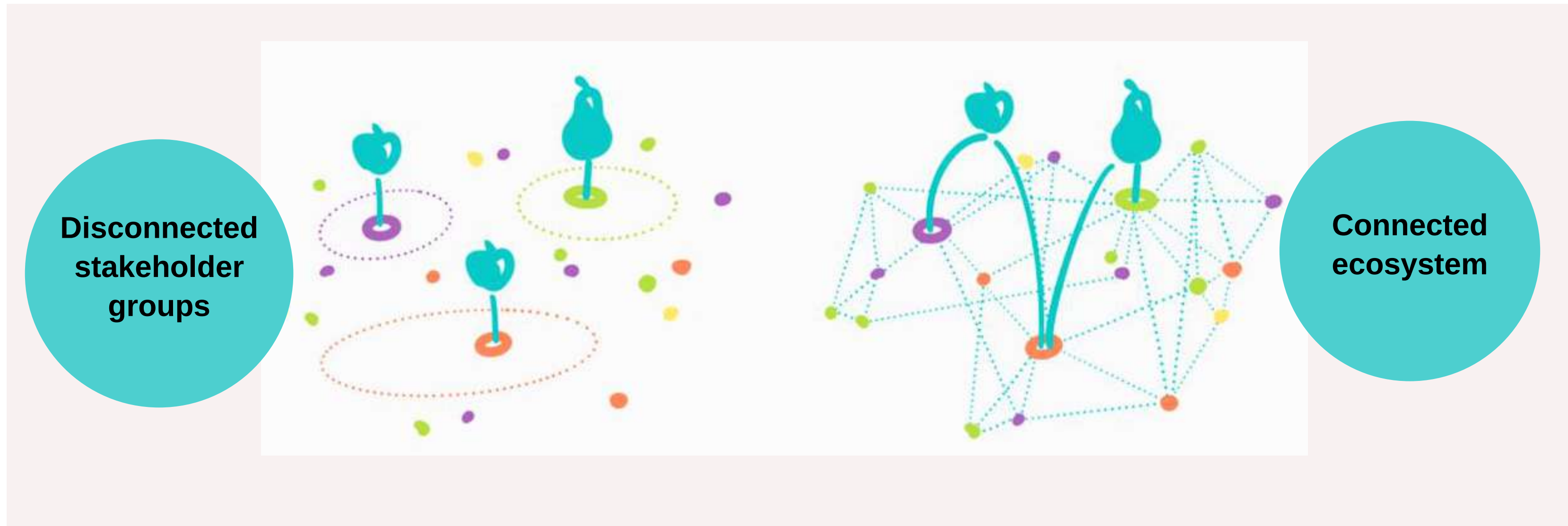
BARRIERS AND DRIVERS OF CITIZEN SCIENCE IMPLEMENTATION IN LITHUANIA

Findings from CS4Welfare project

Methodology used: 30 interviews with stakeholders (scientists, policy-makers, teachers, librarians, etc.)



- Fragmented understanding of the concept of citizen science;
- Limited institutional support;
- Evaluation focused on articles in high-impact journals and not the Open Science related activities > Lack of motivation by scientists;
- Limited understanding among stakeholders on the principles of the design, implementation and management of citizen science projects;
- Limited skills in communication and science outreach;
- Lack of cooperation between different stakeholder groups.



SOME WAYS TO MOVE FORWARD

Further develop the funding and governance of Open Science; Foster the culture of openness across all levels of R&I ecosystem; Maintain and strengthen the capacities of individual and institutional intermediaries

Where and how to start?



ZOONIVERSE

NOTE: As any other methodology, Citizen Science requires extensive preparatory work, dedicated resources and know-how. A lot of it is already available through a number of platforms and educational resources.

eu-citizen.science

Welcome to the platform for sharing citizen science projects, resources, tools, training and much more

HELLO

HOLA

ПРИВЕТ

ALOHA

BUNA

Search...

 Projects

 Resources

 Training

 Organisations

 Platforms

 Users

 Our Gold Star Selection

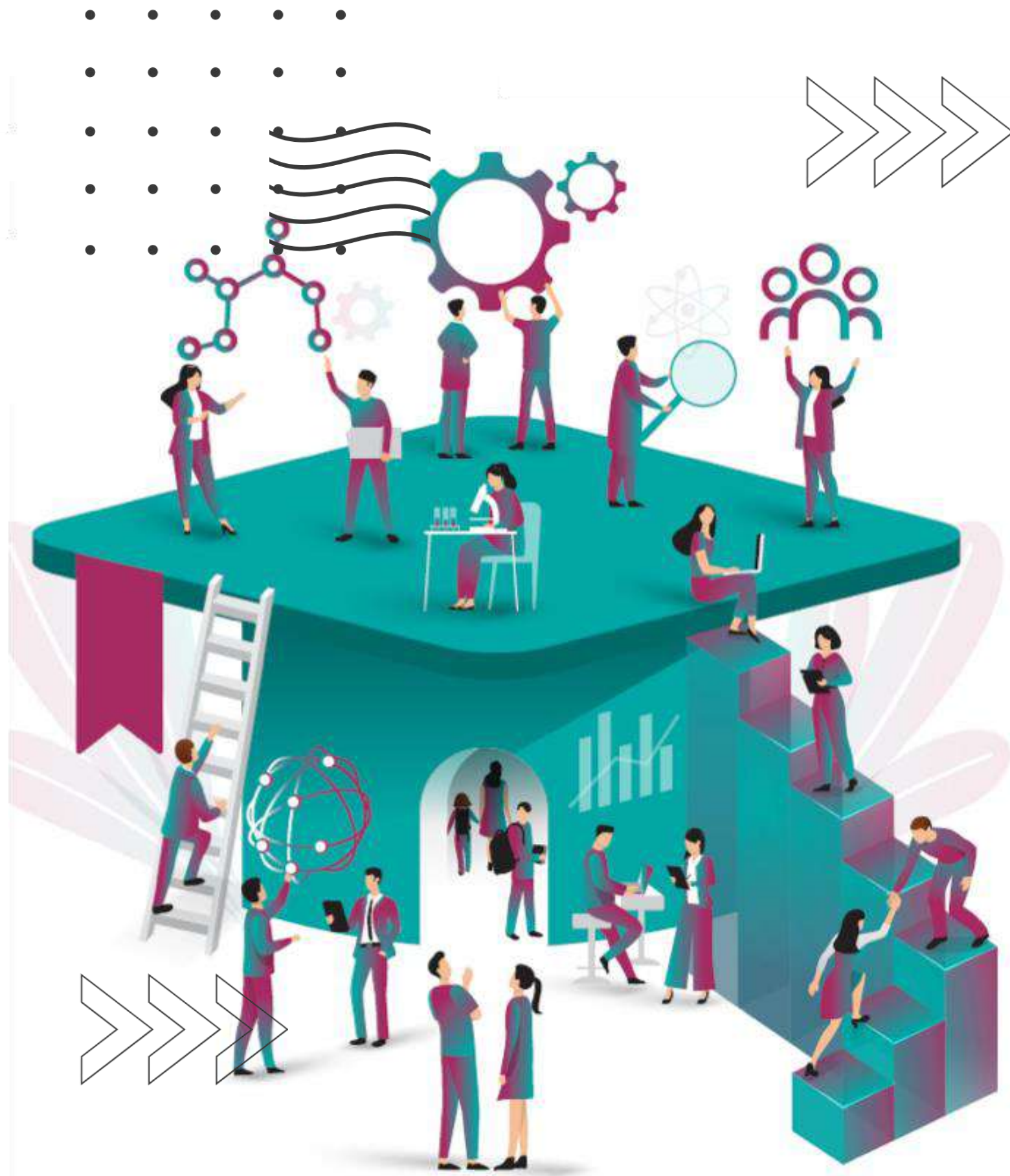
join the community
and participate



Instead of conclusion:

The Theory of Collective Intelligence

“No one knows everything, everyone knows something, all knowledge resides in humanity”



THANK YOU!

CONTACT INFO:

MONIKA.MACIULIENE@VILNIUSTECH.LT