



# IN (CITIZEN) SCIENCE WE TRUST?

ERCIM – Research Ethics in Citizen Science

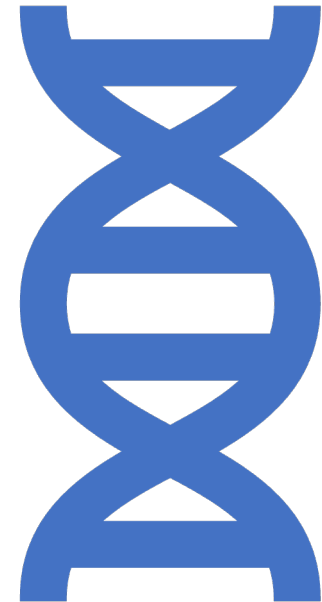
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## Questions:

1. Is the **public distrust** of science growing?
2. Can **citizen science** help increase **trust in science**?
3. How does **AI** influence the relationships between citizens and experts in citizen science?





Question 1:  
Is the **public**  
**distrust** of  
science growing?



# Credibility crisis

Several reports worldwide have pointed to “credibility problem” (Carrier, 2027).



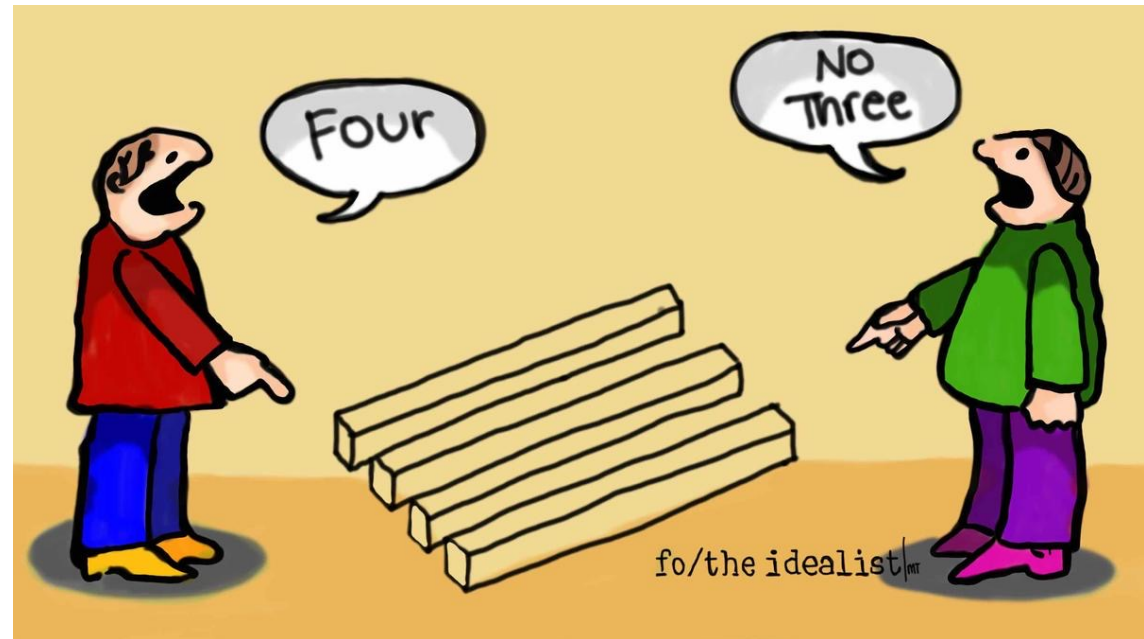
Difficult to define the kind of public trust we want to promote (and how)



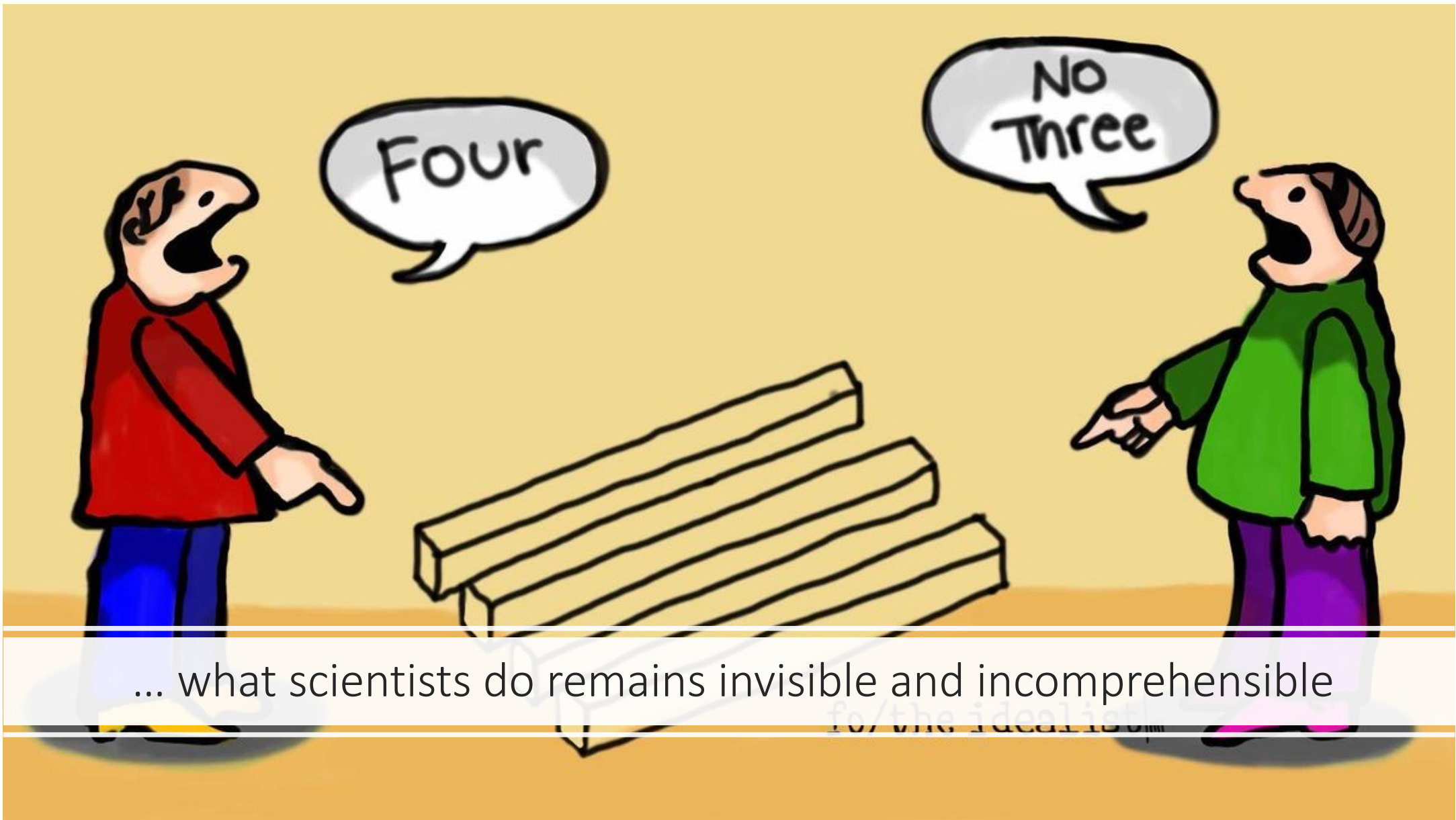
What kind of **public trust** we want  
to promote and how?

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The standard account of science relies on a strict division of labor between the public and scientists.



The “science court” to pursue “transparency” but...



... what scientists do remains invisible and incomprehensible

fo/the idealist

$$F = G \frac{m_1 m_2}{d^2}$$

ANOTHER WAY OF BUILDING  
TRUSTFUL RELATIONSHIPS??  
THE POTENTIAL OF CITIZEN SCIENCE

$$\frac{\partial^2 u}{\partial t^2} = c^2 \frac{\partial^2 u}{\partial x^2}$$

$$\frac{df}{dt} = \lim_{h \rightarrow 0} \frac{f(t+h) - f(t)}{h}$$





## Definition

- Citizen science (CS) can be defined as the nonprofessional involvement of volunteers in the scientific process, commonly in data collection, but also in other phases, including data analysis and interpretation, problem definition and the dissemination of results (European Commission, p.2)

# 6 ways to be a Citizen Scientist

## TRACK THE TIDES

Report local water levels and flood impacts to help NOAA better understand and communicate about future floods.



## MONITOR MARINE DEBRIS



Record the type and amount of debris on your beach to help scientists tackle the challenge of marine debris.

## WATCH FOR WHALES



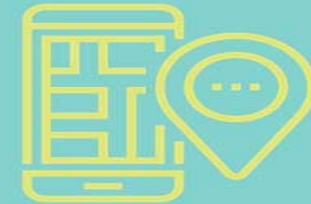
Share your whale sightings so scientists can track their population trends.

## FIGHT HARMFUL ALGAL BLOOMS



Collect water quality data that helps NOAA respond to harmful algal blooms.

## GEOCACHE FOR A GOOD CAUSE



Gather field notes, photos, and GPS data at bench marks for location and height data.

## BE A SANCTUARY STEWARD

Pitch in at a local marine sanctuary or estuarine research reserve.





Welcome to a new version of KSO with new movies, updated species keys and extensive field guides.  
We also have new teaching modules, and results from our first version.

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6.1
























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## TASK

## TUTORIAL

Like

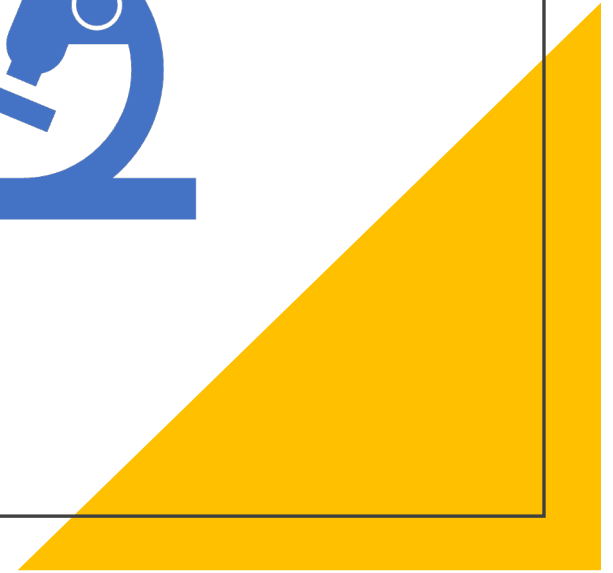
- |  |   |  |
|--|---|--|
|  Sponges    |  Crabs and squat lobsters  |  Bivalves             |
|  Hydrozoans |  Ascidians                 |  Snails               |
|  Anemones   |  Sea stars                 |  Squids and Octopuses |
|  Corals    |  Basket and brittle stars |  Annelids            |
|  Sea pens |  Feather stars           |  Fish (any species) |
|  Lobsters |  Sea urchins             |  Human objects      |
|  Shrimps  |  Sea cucumbers           |  Nothing here       |

Showing 21 of 21  Clear filters

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Question 2:  
Can **citizen science**  
help increase **trust in**  
**science?**



# Can CS help break this polarization?

## Science

- Expert knowledge
- Epistemic trust

## People

- People knowledge
- Emotional aspects of trust

# Engagement in citizen science



CHARACTERISED BY COGNITIVE,  
AFFECTIVE, SOCIAL, BEHAVIOURAL  
AND MOTIVATIONAL DIMENSIONS  
(PHILLIPS ET AL., 2019)

So, how  
reliable is data  
collected by  
citizens?

- Coastal water quality assessed **by local inhabitants based on prior experience only**  
= 60% correct in their estimates

- Coastal Water quality assessed with objective water quality data collected using scientific instruments

Source: Gunko et al., 2022



How does **AI** influence the relationships between citizens and experts in citizen science?



Citizens	Experts	Machine
<b>Citizen classify</b>	Validate classifications	Machine classify
<b>Annotate observations</b>	Train machine classifications	Learn the training dataset
<b>Review machine annotations of data</b>	Develop a gold-standard dataset	Detect objects automatically

Source: Ponti & Seredko, 2022

*there is a risk that CS becomes less inclusive by focusing primarily on expert volunteers, if work for citizens is limited in volume or requires additional knowledge and resources that pose barriers for crowd participants, ” (Franzoni et al., 2021, p. 17)*

Towards task polarization and even less inclusive CS?

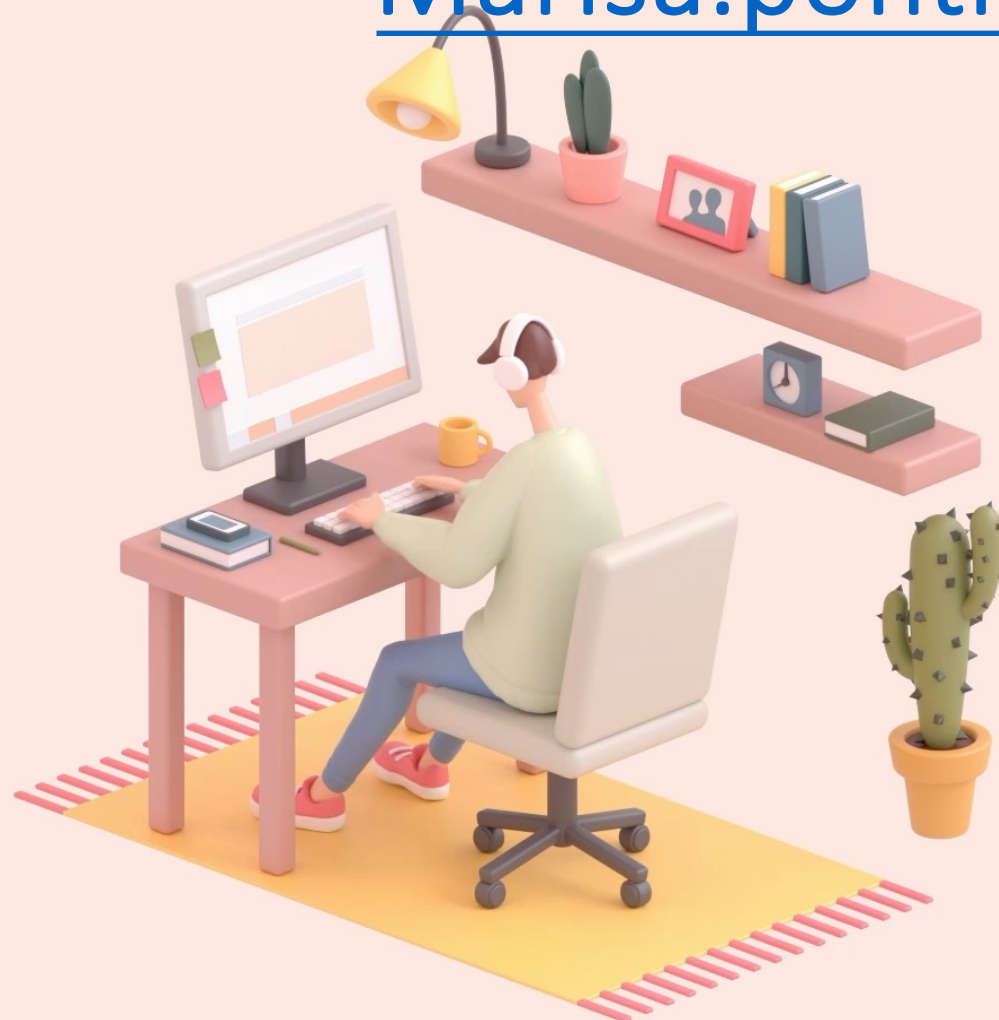
# Not only scientific competence affects trust in science

Being able to articulate and take into account different social interests and deliberate about the common good also matters.



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Thank you



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