



German-Dutch dialogue on the future of libraries

# **Libraries and Citizen Science - What is the benefit?**

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# Citizen Science

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1. What is Citizen Science?
2. Why support and encourage Citizen Science?
3. Citizen Science at TU Delft, University of Technology



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**Citizen science is scientific research in collaboration with citizens.**

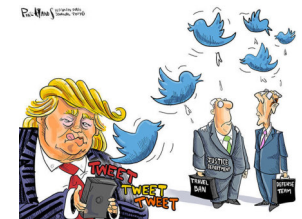
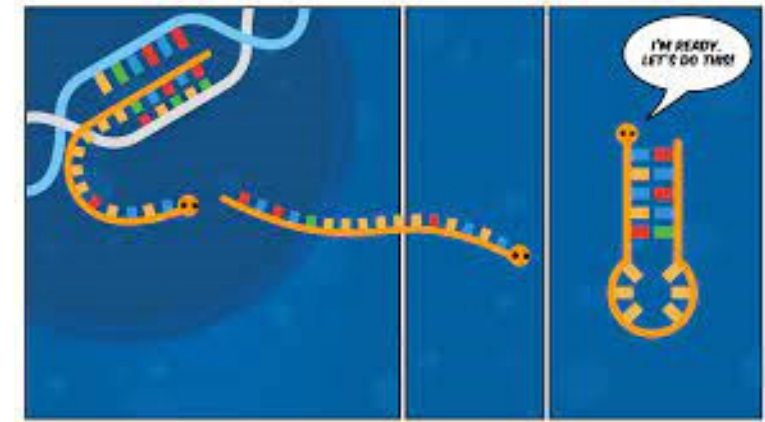




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## Why Citizen Science?

- To collect (large amounts of) data that can't be collected without the citizens ([SmartPhones4water](#));
- To analyze (large amounts of) data, e.g. unravel complex structures by means of games, thus contributing to molecular design ([Eterna](#));
- To empower citizens, by bringing science to people while increasing trust in science (“post-truth era, alternative facts”)





## REQUIREMENTS

- The problem definition can come from both citizens and researchers.
- CS projects generate new knowledge or understanding as any other research project by using the scientific method
- In every research phase there must be a clear attribution of roles between the participants.
- All participants in CS projects benefit from participation, and are acknowledged for it.
- All participants benefit from the results of a CS project (open science).
- Communication and tools interfaces have to be made tailor-made.
- CS projects are evaluated for
  - their scientific output and data quality as any other research project,
  - the participant experience and
  - wider societal or policy impact.

\* derived from the 10 principles of Citizen Science published by ECSA



**Level 4 'Extreme Citizen Science'**

- Collaborative science – problem definition, data collection and analysis

**Level 3 'Participatory science'**

- Participation in problem definition and data collection

**Level 2 'Distributed Intelligence'**

- Citizens as basic interpreters
- Volunteered thinking

**Level 1 'Crowdsourcing'**

- Citizens as sensors
- Volunteered computing

**Fig. 4.1** Levels of participation in citizen science (Haklay 2013)



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### Role for the library?

- **Accessibility to information and knowledge**
- **Place in society: easily accessible and approachable (both public libraries & university libraries)**
- **Examples: geo-referencing in central hall, collection of old smart phones, corona field lab**



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### Quality assurance

- **Responsibility of researcher**
- **Facilitating CS becomes part of research design**
- **Levels of CS: to be able to perform a specific task, or have specific expertise?**
- **Library can help facilitate the process (legal aspects, integrity, data collection, hosting public event with researchers and participants etc.)**



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### **Why incorporate citizen science into the TU Delft Open Science Programme?**

- **Both the EU and UNESCO are working on implementing Citizen Science as part of Open Science**
- **Citizen Science enables Open Science and requires Open Science**
- **Citizen Science calls upon all projects and cross-cutting themes from the Open Science programme**
- **Citizen Science provides added value to the Open Science programme, namely the interaction with society (“Impact for a better society”)**



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## Structure of the Open Science Programme





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## References

- TU Delft Open Science Programme: <https://www.tudelft.nl/library/tu-delft-open-science/about-the-programme>
- TU Delft Strategic Framework 2018-2024, Impact for a better society: <https://www.tudelft.nl/en/about-tu-delft/strategy/tu-delft-strategic-framework-2018-2024>
- ECSA: <https://ecsa.citizen-science.net>
- Eterna project: <https://eternagame.org/>
- Smart phones for water: <https://www.tudelft.nl/library/over-de-library/tu-delft-library-presenteert/smartphones-for-water>



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**Thank you!**

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