CITIZEN SCIENCE

AN OPPORTUNITY FOR LIBRARIES AND SOCIETAL ACTORS

Biblioguías – Biblioteca de la CEPAL

Thomas Kaarsted. 22. June 2023

SDU

Who am I?

Thomas Kaarsted: thk@bib.sdu.dk

Deputy Library Director, SDU Library

Co-founder of SDU Citizen Science

LIBER Citizen Science Working Group co-chair

Daily manager of SDU Citizen Science in the university library

Have been project manager of +20 CS-projects with researchers

Study on Citizen Science in European Research Libraries (Kaarsted et. al 2023)

SDU

Today's programme

1) Global wicked problems

2) Setting the scene – policy, partnerships and libraries

3) What is Citizen Science – and where does it come from?

4) Bridging the Gap: Citizen Science at SDU including examples

SDU

Part 1
Global wicked problems

Where did we go wrong?

Wicked problem

In planning and policy, a **wicked problem** is a problem that is difficult or impossible to solve because of incomplete, contradictory, and changing requirements that are often difficult to recognize. It refers to an idea or problem that cannot be fixed, where there is no single solution to the problem; and "wicked" denotes resistance to resolution, rather than evil.

(Australian Public Service Commission 2007)

PRESS RELEASE

FAKE NEWS

REC.

NEW THIS MORNING

'FLAT-EARTHER' LAUNCHES DIY ROCKET IN CA

MIKE HUGHES SAYS HE'S SORE, RELIEVED

13 ACTION NEWS

LIVING SPACES   U.S. NEWS   LOCAL   TWO PEOPLE FO   6:38   57°

Part 2

Setting the scene – policy, partnerships and libraries

What's going on out there?

UNESCO Recommendations for Open Science

Preamble:

The collaborative and inclusive characteristics of open science allow new social actors to engage in scientific processes, including **through citizen and participatory science, thus contributing to** *democratization of knowledge, fighting misinformation and disinformation, addressing existing systemic inequalities and enclosures of wealth, knowledge and power and guiding scientific work towards solving problems of social importance*

SDU

UNESCO Recommendations for Open Science

1. *Promoting innovative approaches for open science:* developing new participatory methods and validation techniques to incorporate and value inputs from social actors beyond the traditional scientific community, including through citizen science, crowdsource-based scientific projects, citizen involvement in community-owned archival institutions, and other forms of participatory science.

2. *Open engagement of societal actors:* … furthermore, citizen science and citizens' participation have developed as models of scientific research conducted by non-professional scientists, following scientifically valid methodologies and frequently carried out in association with formal, scientific programmes or with professional scientists with web-based platforms and social media, as well as open source hardware and software (especially low-cost sensors and mobile apps) as important agents of interaction. For the effective reuse of the outputs of citizen and participatory science by other actors, including scientists, these products should be subject to the curation, standardization and preservation methods necessary to ensure the maximum benefit to all.

3. *Investing in open science infrastructures and services:* …Platforms for exchanges and co-creation of knowledge between scientists and society, including through predictable and sustainable funding for volunteer organizations conducting citizen science and participatory research at the local level.

The scene
(Citizen science initiatives. Policy and practice)

The scene (new partnerships)

CITIZEN SCIENCE WORKING GROUP

Citizen Science

We All Do Better When We Work
Together: LIBER, ..

Posted 28-03-2022

CITIZEN SCIENCE WORKING GROUP

Citizen Science

Press Release — LIBER Signs MoU with the
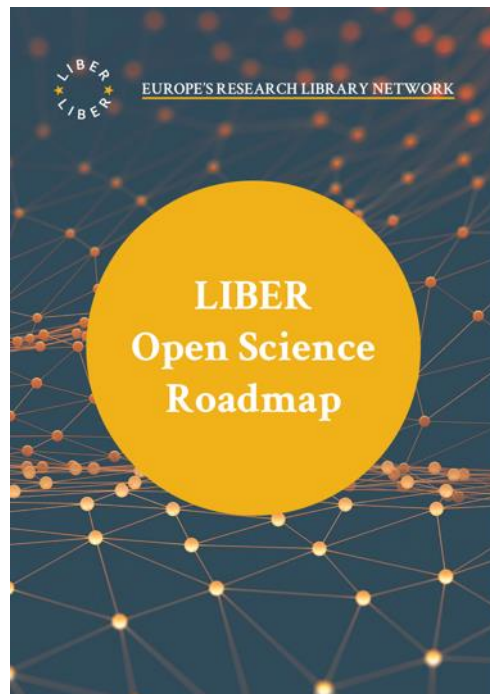European Citizen ..

Posted 24-02-2022

CITIZEN SCIENCE WORKING GROUP

Citizen Science

Press Release – LIBER and SciStarter Sign
Memorandum of Understanding (..

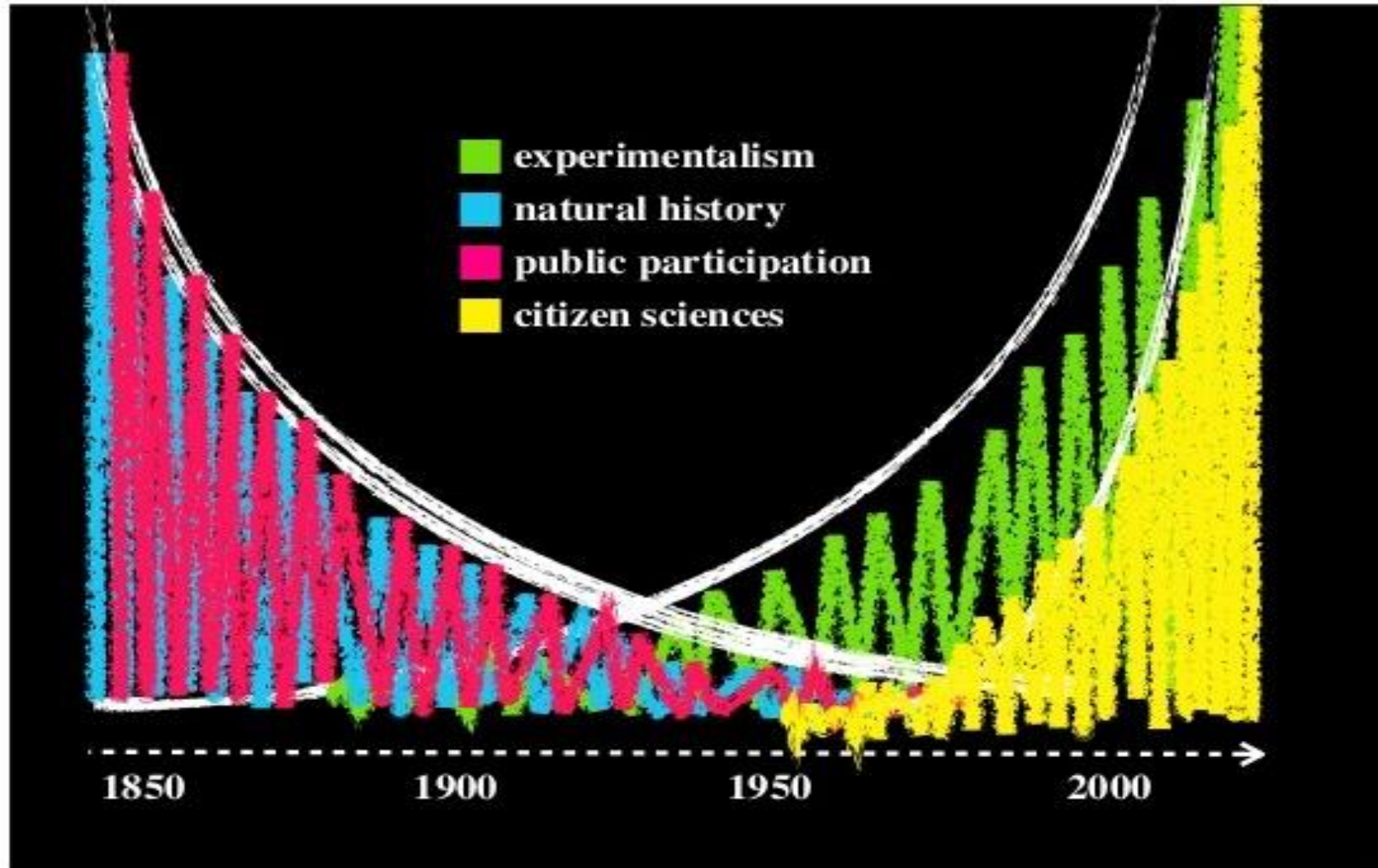Posted 03-02-2022

SDU

The scene (LIBER's effort)

Part 3

What is Citizen Science – and where does it come from?
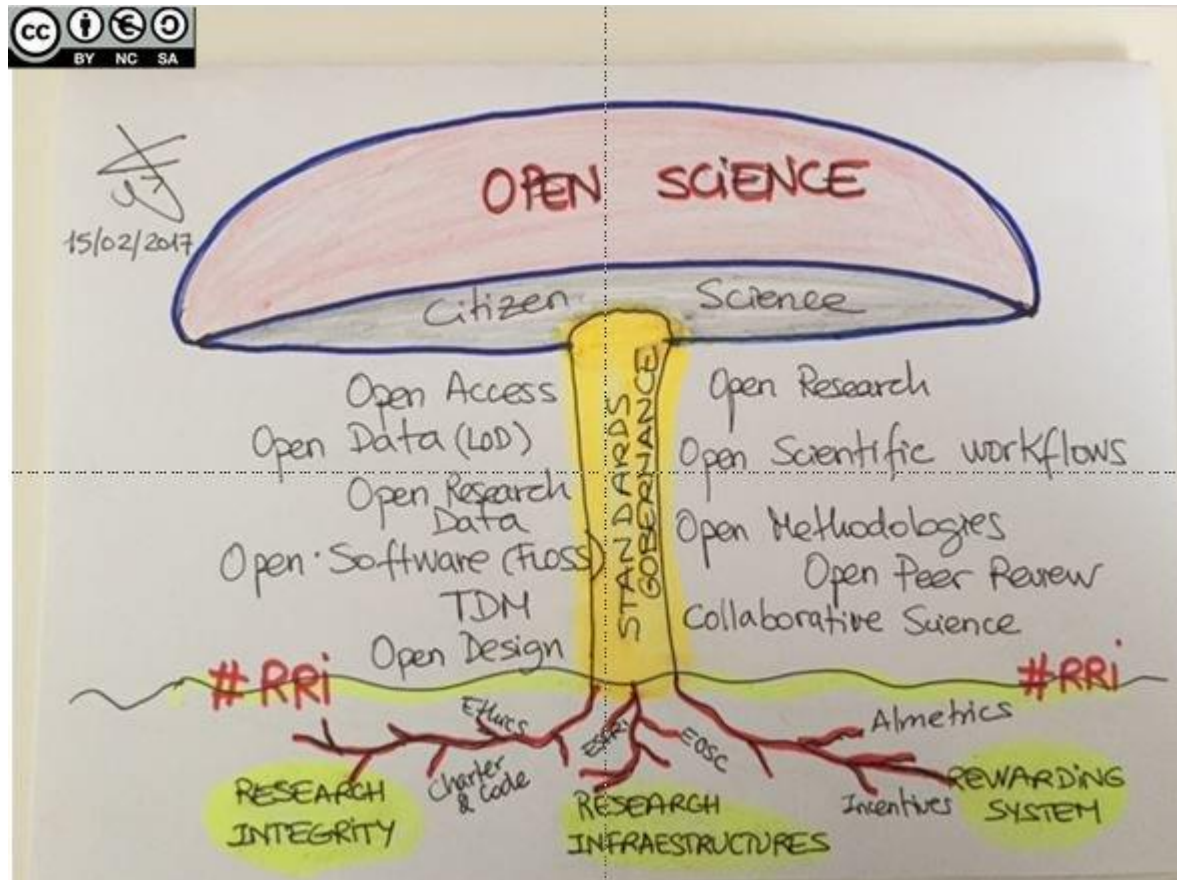
Surveying the landscape

What's going on?

Citizen Science is integrated in Open Science

Source: Eva Mendez lecture, 2019

Citizen Science typologies

Typology	Research design	Volunteers' role
Contributory (consultative)	Projects designed by expert scientists *(Bonney et al., 2009)* or by authoritative bodies *(Ferster & Croops, 2013)*	Volunteers' contribution limited to data collection *(Bonney et al., 2009)* or to general consultation *(Ferster & Croops, 2013)*
Collaborated (collaborative)	Projects generally designed by scientists *(Bonney et al., 2009)* or by stakeholders *(Ferster & Croops, 2013)*	Volunteers' engagement extended to refine research design and the whole research activities from data collection to outcomes dissemination *(Bonney et al., 2009)*
Co-created (transformative)	Scientists and volunteers work together in all steps of research *(Bonney et al., 2009)* or local communities take the lead into projects *(Ferster & Croops, 2013)*	
Contractual	Local communities employ professional researchers for scientific investigation *(Green et al., 2020)*.Citizen Science connected to community-based approaches *(Commodore et al., 2017; Adler et al., 2020)*	
Collegial	Indipendent research by volunteers submitted to experts for a scientific review *(Green et al., 2020)*. Marginal extremist positions into scientific community *(Bonney et al., 2016)*.	

Participation in citizen science

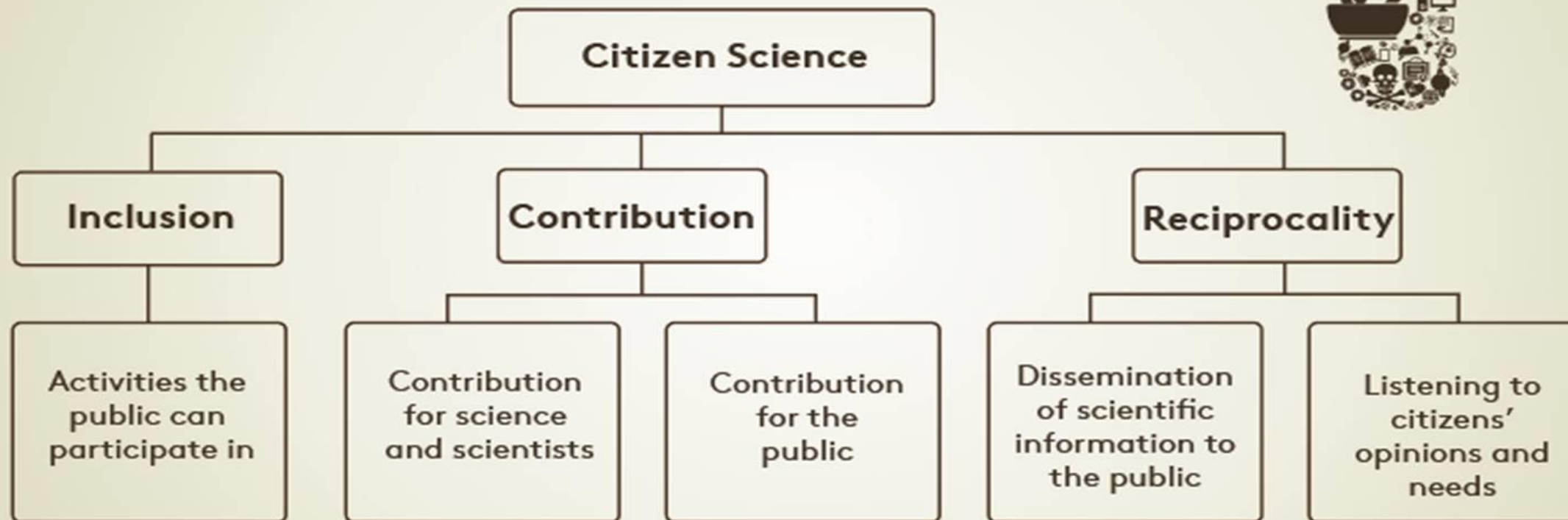|	
Level 4 'Extreme'	• Collaborative science – problem definition, data collection and analysis
Level 3 'Participatory science'	• Participation in problem definition and data collection
Level 2 'Distributed intelligence'	• Citizens as basic interpreters
Level 1 'Crowdsourcing'	• Citizens as sensors

Haklay. 2013. Citizen Science and volunteered geographic information: Overview and typology of participation, *Crowdsourcing Geographic Knowledge*

nature
International journal of science

EDITORIAL · 03 OCTOBER 2018

The best research is produced when researchers and communities work together

Knowledge generated in partnership with the public and policymakers is more likely to be useful to society and should be encouraged.

RELATED ARTICLES

Nature special: Co-production of research

nature sustainability

Perspective | Published: 09 October 2019

Citizen science and the United Nations Sustainable Development Goals

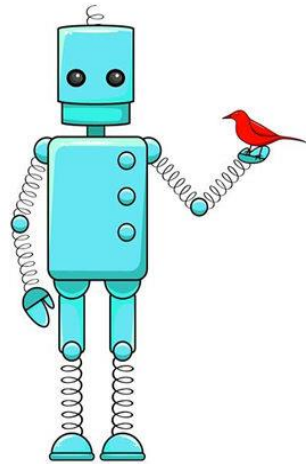Steffen Fritz ✉, Linda See, […] Sarah West

5525 Accesses | **1** Citations | **290** Altmetric | Metrics

ℹ An Author Correction to this article was published on 18 October 2019

Online Citizen Science (in English)

People-powered research

691.852.958 **CLASSIFICATIONS SO FAR BY**

2.503.140

REGISTERED VOLUNTEERS

106 active projects at the moment

Quality of Data

Quality of Data is always important in Science! Also in CS!

Protocols need to be clear, citizens must be well informed.

Data manegement/OPEN DATA/Fair data

Data is communication!

"While scientists are often skeptical of the ability of unpaid volunteers to produce accurate datasets, a growing body of publications clearly shows that diverse types of citizen-science projects can produce data with accuracy equal to or surpassing that of professionals."
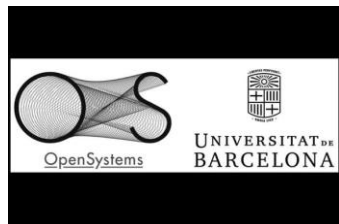
Source: Gacutan et al. 2016

Policy and strategy (examples og hubs)

Bottom-up: SDU, Open Systems, Åbo Academy

Inside-out: UCL, Leiden Citizen Science Lab, Edinburg

Top-down: VUB Citizen Science, Citizen Science Center Zürich

Part 4. Bridging the gap
SDU Citizen Science as facilitator between science as society

How to get started?
Who to work with?

2016: The first CS-workshop

30 participants:

- Professors from all faculties and the University Hospital
- Media
- Museums
- Citizens

Aim: Can we describe a Citizen Science project?

Idea: Make citizens prioritize which research project that should be funded with 1 mio. DKK. (115.000 GBP)

A HEALTHIER SOUTHERN DENMARK

	2017 ESF	2018 ESF	2019 ESS	2020 ESS	2022 ESS
Total Reach	272.725	192.889	487.452	338.328	1.031.359
Facebook (videos viewed)	134.279	130.552	151.930	Ikke oplyst	499.586
Web (articles wiewed)	44.003	51.518	74.682	91.591	86.000
Votes	11.895	6.985	14.895	8.000	10.899

1. Recruitment of user communities:
Citizens in general
Method: Collaboration with media

A NETWORK OF PARTNERS

Media

NGO's

Policy

Library   Faculty

Researchers

Public Engagement

Facilitation

Output
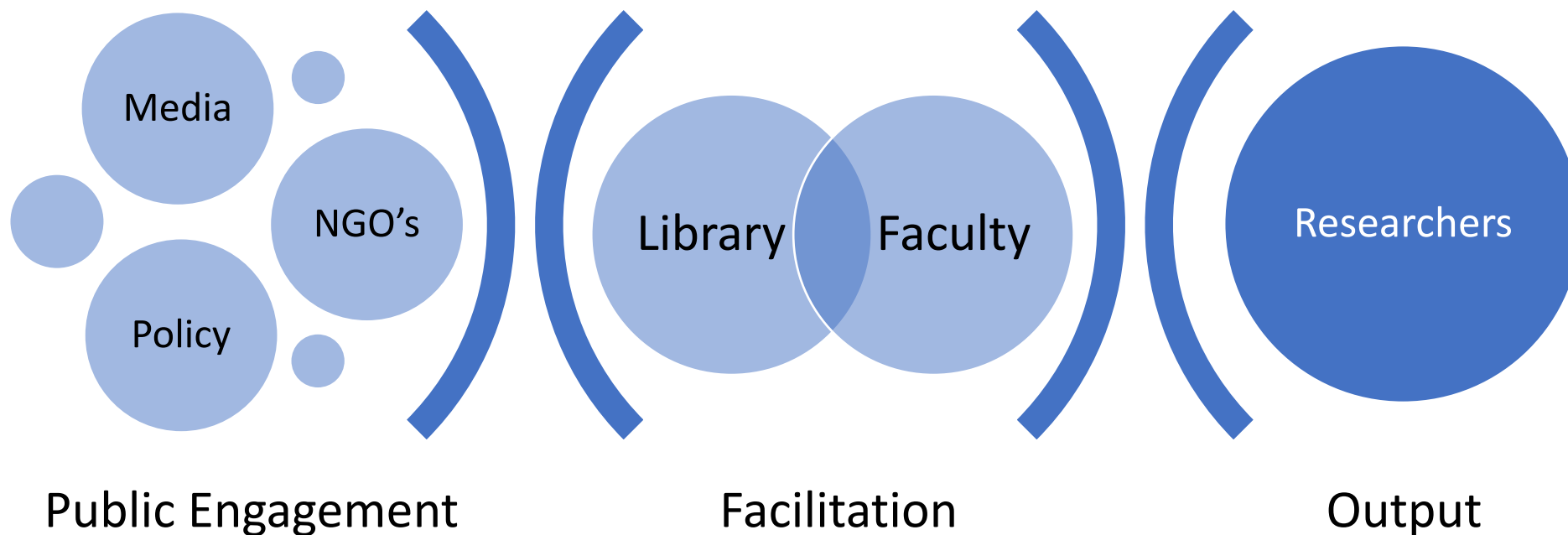
The Power of Many: The Citizen Science Network started as a partnership between the faculties at SDU, Odense University Hospital and University Library of Southern Denmark.

CITIZEN SCIENCE AT SDU

Citizen Science is often used for data collection and mapping of nature areas, but at SDU we see Citizen Science as more than that.

Citizen Science is about generating interaction and dialogue between citizens and researchers, thereby reducing the distance between them in order to encourage a debate based on knowledge and facts.
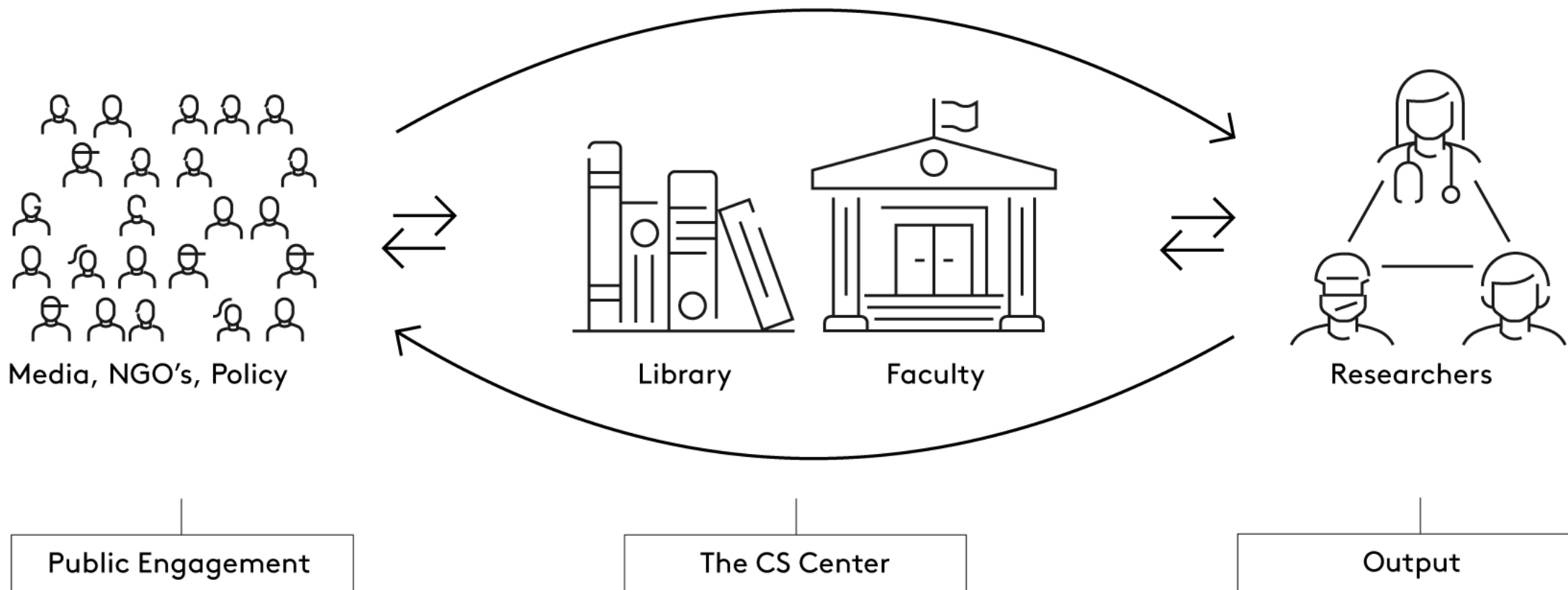
THE SDU CITIZEN SCIENCE KNOWLEDGE CENTRE

OPENED: 1. JANUARY 2021

SDU Citizen Science - a partnership

Mission:
To bring citizens closer to science
– and scientists closer to society

Media, NGO's, Policy

Library

Faculty

Researchers

Public Engagement

The CS Center

Output

Who do you work with: An example

https://www.tv2fyn.dk/frit-lejde-elskrot/se-mini-dokumentar-om-elskrot-sadan-satte-sdu-professor-alt-pa-et-braet

REACH: TV & SOME: + 200.000

A Citizen Science partnership within EOL and the recycling of electronic waste

A university, a media outlet, 4 municipalities, 11 private sector partners, repair cafés

Unique research data: incl. 17 containers full

Dissminisation of scientific information to the public

A reach of +150.000 across platforms

The Power of Many: Know your partners!

Sources: Nøjgaard et al (2020), Zhilyaev et al. 2021

SDU Moves:
an ongoing project

- Community/ambassadors

- Dialogues and interaction

- Walking Meetings – guide & campaign in co-creation

Recruitment of user communities: Employees and students as community.
Method: Collaboration within the organization

Spokesperson for new 'walking meeting' campaign:
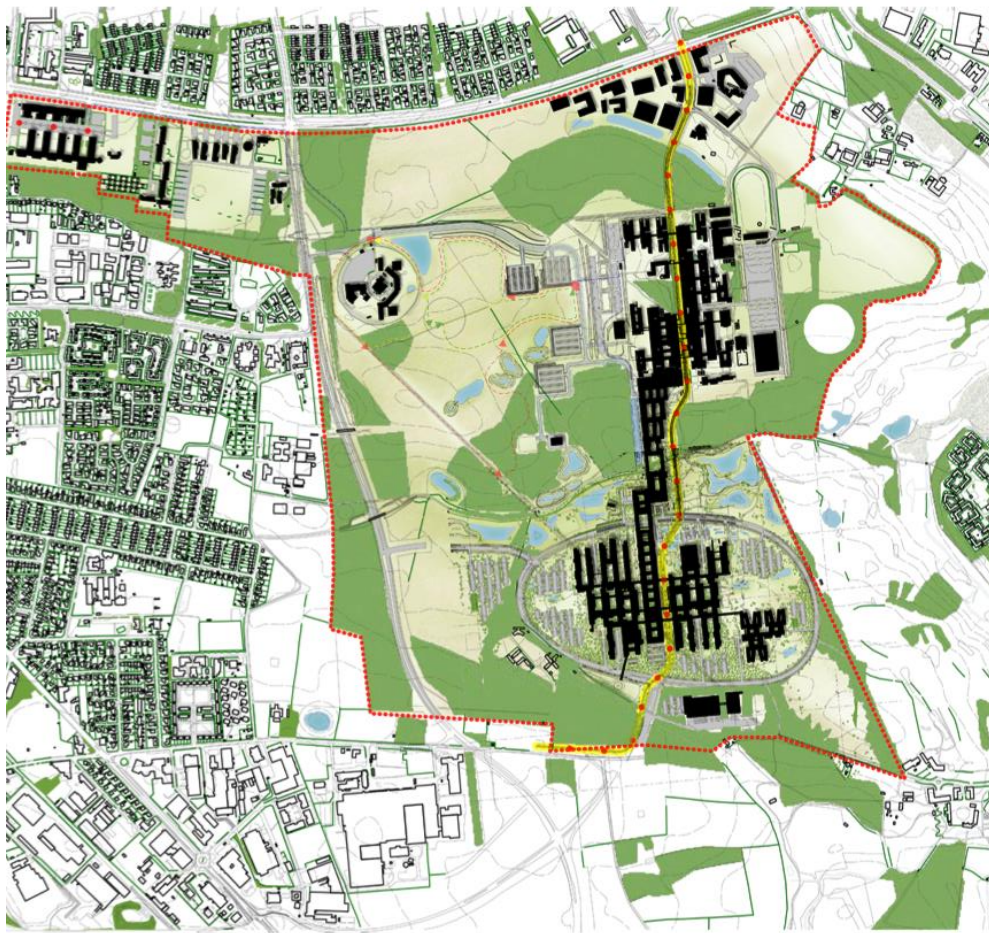SDU rector Jens Ringsmose

'Find a lake' – a biology project

Recruitment of user communities:
Schools and high schools
Method: Collaboration with schools and high schools

Active Living Area & Festival
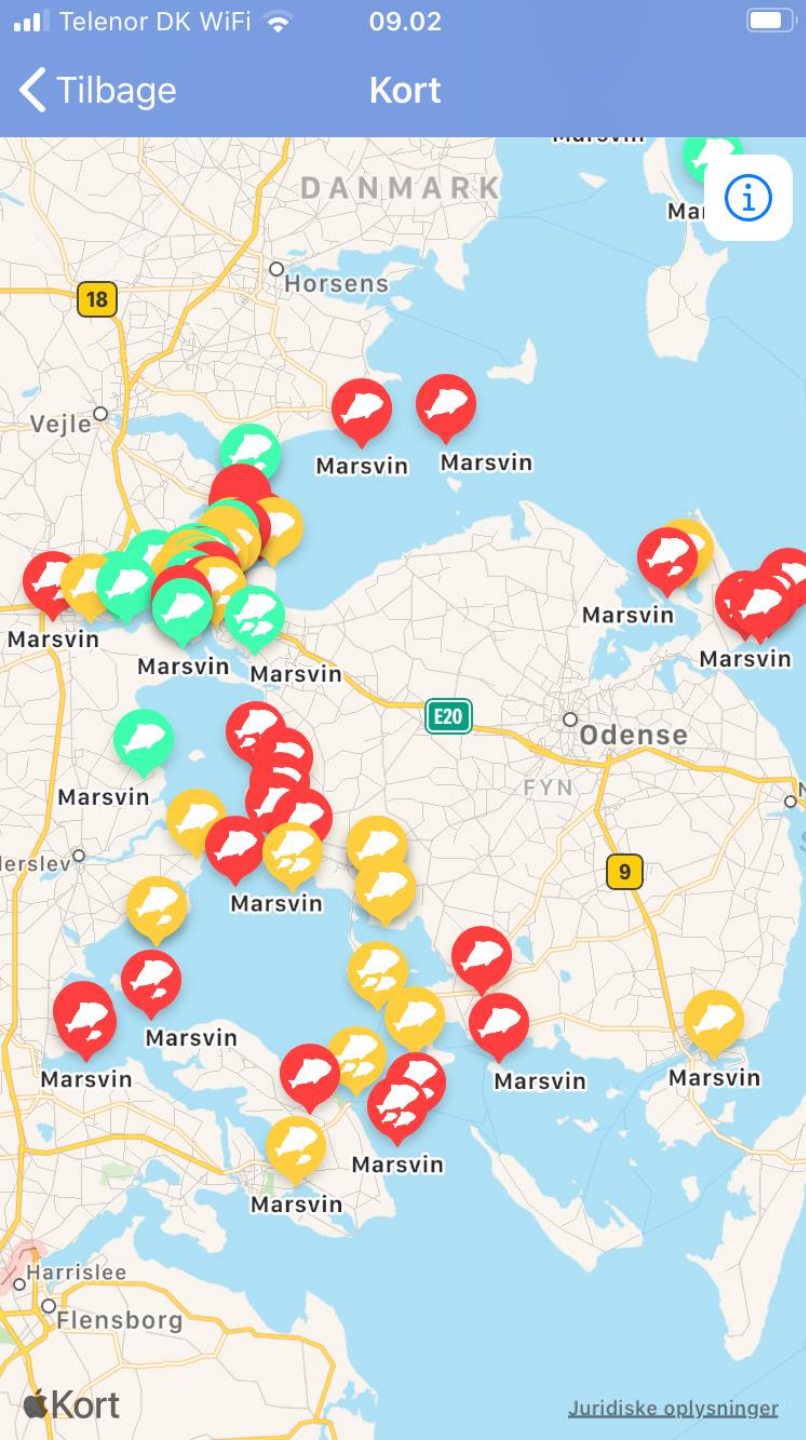
Campus Odense Active Living

Aim: To include the city of Odense in an outdoor living lab on 80 HA land around the university.

Mediapartner: Fyens Stiftstidende

Collaborative proces.

More than 1.000 input from citizens, employees, students and civil society.

MARINE TRACKER

Since 2019

+8.000 sightings

+4.500 participants

Data on motivation:

Environment

Interest in marine life

Local community
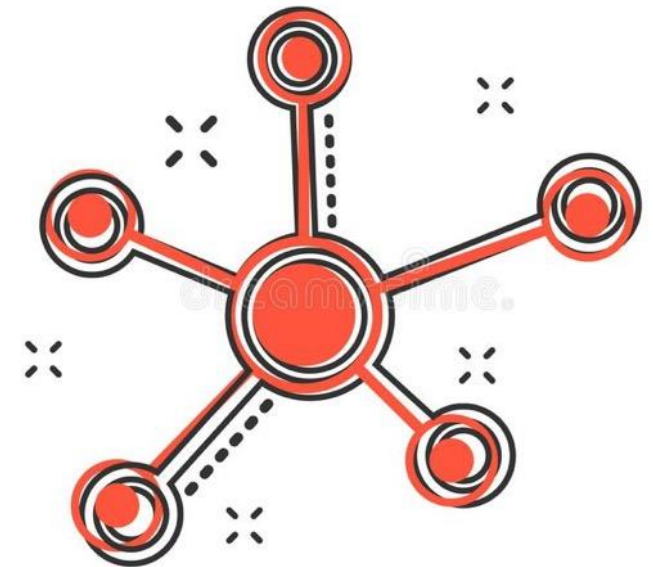
Libraries and Citizen Science

- Broad Engagement in Science, Point of Contact (BESPOC)
- No one size fits all
- Prioritize
- Build networks: internally and externally
- Advocacy
- Utilize existing skills and competences
- FAIR DATA
- Teach Citizen Science

Kaarsted et al. (2023): How Can European Research Libraries Support Citizen-Enhanced Open Science

https://www.degruyter.com/document/doi/10.1515/opis-2022-0146/html

Ignat & Ayris: Built to last (2020)

https://insights.uksg.org/articles/10.1629/uksg.501/

How to get started? The bottom up approach

- The Big Why: In your library or unit

- Mapping: Do you have any CS examples at your university?

- Transferrable skills: Could you use any of the skills in your library/unit to facilitate CS?

- Existing services: Something already on tab?

- Make yourself heard: Advocacy

- Explore: Workshop

- Back to HQ: Discuss, align, commit

The Big Why

"If Libraries can loan out books. Why not a Citizen Science-project?"

Professor Josep Perello,

University of Barcelona
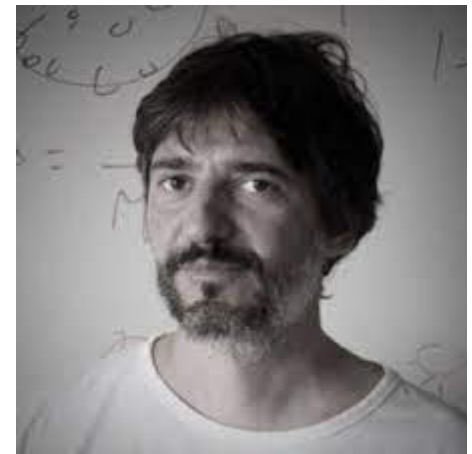
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Ignat, Tiberius, and Paul Ayris, 2020. "Built to Last! Embedding Open Science Principles and Practice into European Universities". *Insights* 33 (1): 9. DOI: http://doi.org/10.1629/uksg.501

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Zhilyaev, D., Cimpan, C., Cao, Z., Liu, G., Askegaard, S., & Wenzel, H., 2021,. The living, the dead, and the obsolete: A characterization of lifetime and stock of ICT products in Denmark. *Resources, Conservation and Recycling*, *164*, [105117]. https://doi.org/10.1016/j.resconrec.2020.105117 https://www.sciencedirect.com/science/article/abs/pii/S0921344920304341?via%3Dihub

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