Responsibility, Openness and Science

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Why Start With A Discussion on Responsibility??

Plan for the morning:

1. Responsible conduct of research
2. Open science
3. Being a responsible, open science citizen

Not just about learning data science … learning responsible data practices

http://dozebuzz.com

# What Do You Think "Responsible Science" Is?

How do you think about responsibility in your own work? What do you do to make sure that you are a responsible researcher?

Discuss responsible science in your group. Identify some key similarities (and differences) between your responsibilities and the way that you act upon them.

Balancing Multiple Roles as a Scientist

- Data producer

- Data user and/or collaborator

- Author

- Employee

- Teacher/mentor

- Recipient of public funds

- Recipient of public trust

- Citizen/legally-obligated individual
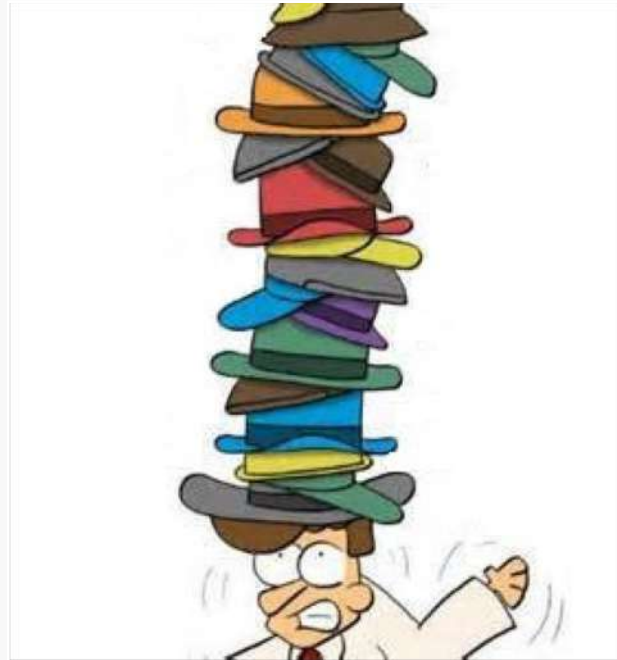
Not just about being
- "good at your work"
- producing data

RCR as a Collaborative Endeavour

Changing The Practices, Environments and Practitioners

- Individual responsibility

  - Compliance

  - Active engagement
- Institutions

  - Create supportive infrastructures

  - Monitor and mediate
- National/international systems
- International science community

  - Monitoring

  - Fostering culture

Key Traits of "Responsibility" Discussions

- Practice of scientific investigation with <u>integrity</u>

integrity
/ɪnˈtɛɡrɪti/ 🔊

noun

1. the quality of being honest and having strong moral principles.
   "a gentleman of complete integrity"
   synonyms: honesty, uprightness, probity, rectitude, honour, honourableness, upstandingness, good character, principle(s), ethics, morals, righteousness, morality, nobility, high-mindedness, right-mindedness, noble-mindedness, virtue, decency, fairness, scrupulousness, sincerity, truthfulness, trustworthiness
   "I never doubted his integrity"

2. the state of being whole and undivided.
   "upholding territorial integrity and national sovereignty"
   synonyms: unity, unification, wholeness, coherence, cohesion, undividedness, togetherness, solidarity, coalition
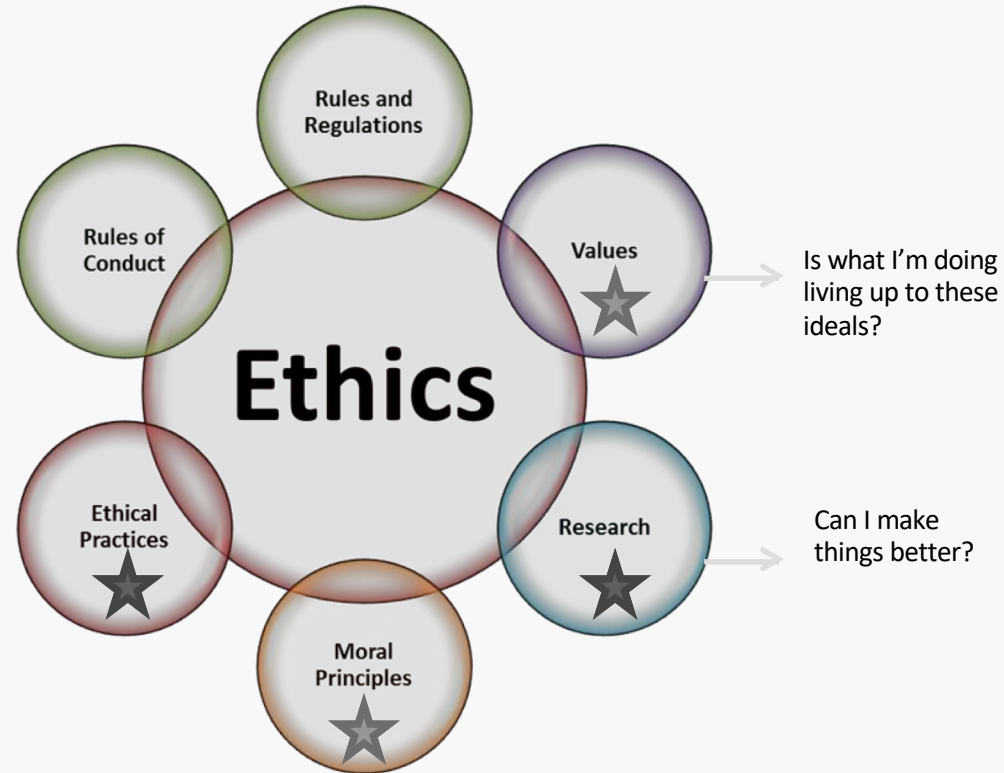   "internal racial unrest threatened the integrity of the federation"

Key Ethical Norms

- Awareness and application of professional norms and ethical principles in all areas relating to scientific research

- Beneficence

- Non-maleficence (FFP, harm)

- Accountability

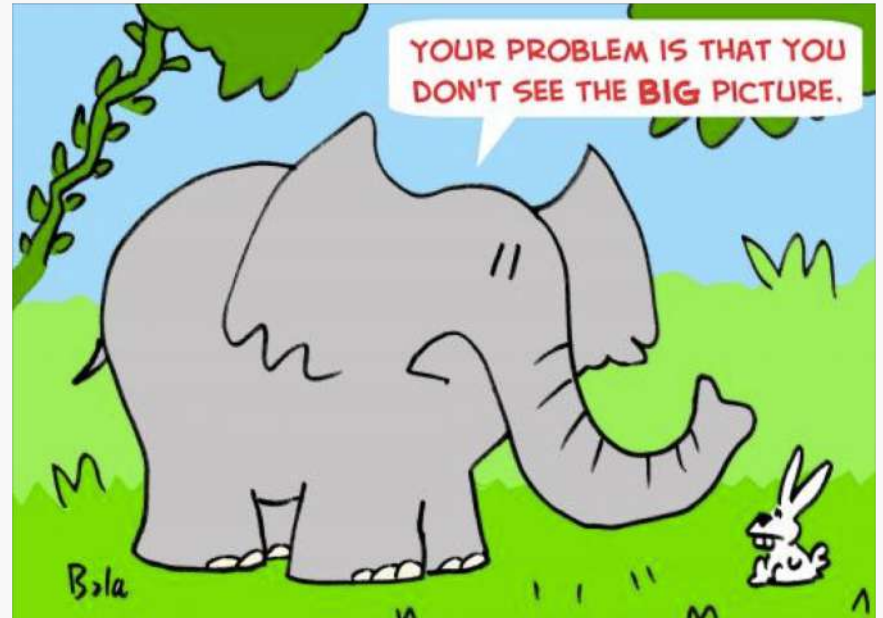- Transparency

- Care

- Collegiality

More Holistic Views on Ethics

Responsible Conduct of Research

- Promotes the idea of a "science citizenship" to the global science community

- Citizenship is a give and take

    - Benefits to enjoy

    - Responsibilities to assume

- Support and grow culture instead of just living in it

http://www.evilenglish.net/the-big-picture/

Cultures of Responsibility

- Produce verifiable and re-usable data

- Protect scientists and societies from harm

- Enable collaboration

- Ensure investments (financial, trust, time etc) are recompensed

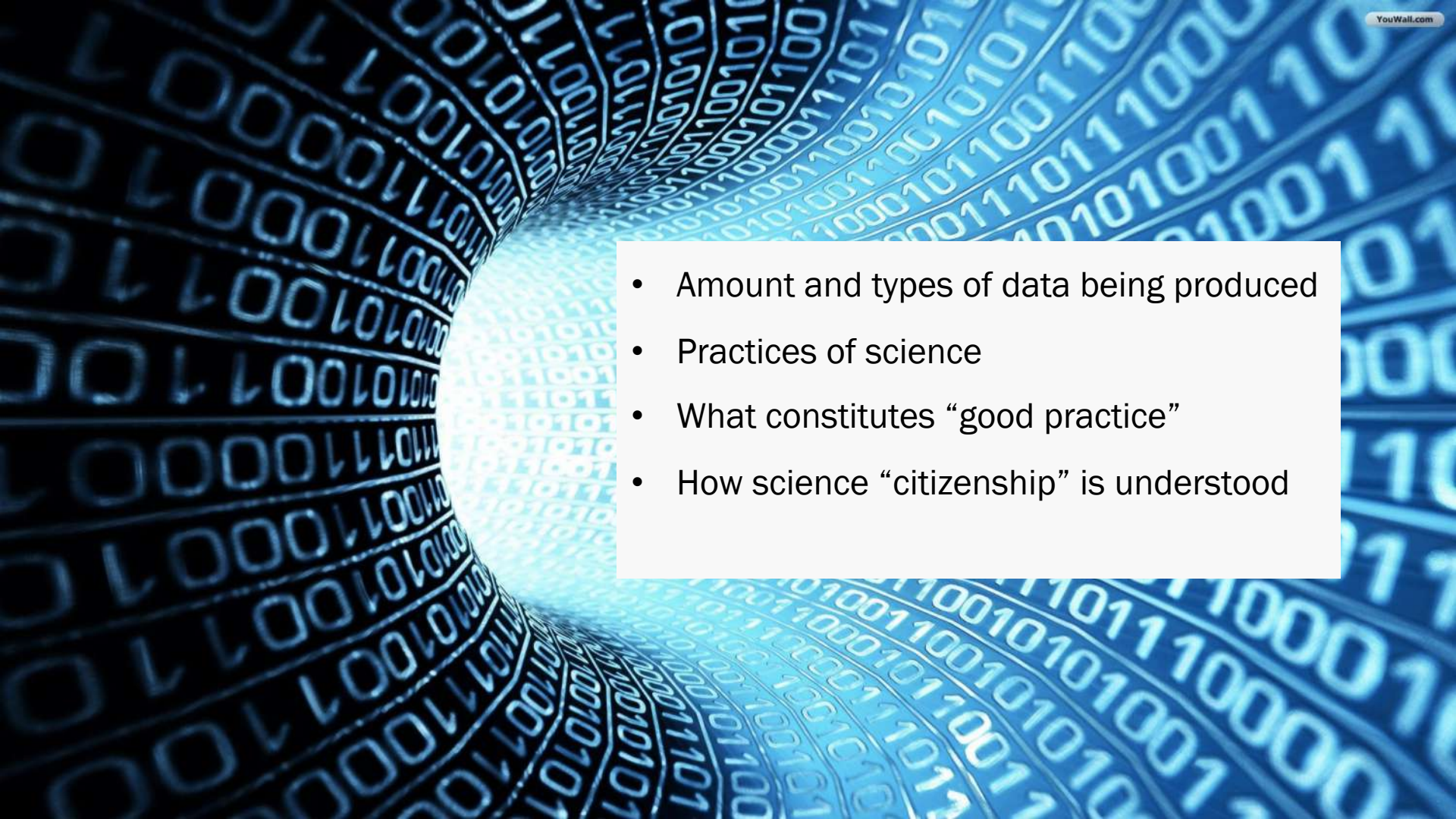- Embeds science within cultural/social priorities

The Limitless Possibilities of Data-Centric Science

- Amount and types of data being produced

- Practices of science

- What constitutes "good practice"

- How science "citizenship" is understood

Translating Science Citizenship into a Digital Age

- Understandings of RCR in a digital age continue to evolve

- Extension of existing discussion, but also new areas for concern

  - Opportunity to share vs loss of control

  - Increase benefits of research for public vs possible harms

  - (Un)Intended marginalizations

  - Data recombination, re-use

A New Challenge for Responsible Scientific Research

- How can the evolving power of digital technologies be harnessed to uphold the principles of scientific citizenship?

- How can practices and structures of scientific research be adapted to ensure that research benefits the most number of people?

- How can the culture of science be adapted to support this evolution?

- What is the role of the individual scientist in this revolution?

Responsible Conduct of Research in a Digital Age

- In your groups discuss how RCR practices can be enhanced for data-centric science.

  What issues in particular present new challenges?

The Open Science Movement

Open Science

Open Data

Open Source

Open Methodology

Open Peer Review

Open Access

Open Educational Resources

Justice
Responsibility

Open Science

- The products of scientific research should be freely available to everyone to use and republish as they wish, without restrictions from copyright, patents or other mechanisms of control

- Open Science includes activities that:

  - *facilitate resource sharing*

  - *improve awareness of sharing*

  - *create linkages between resources*

  - *advocate for removal of financial barriers*
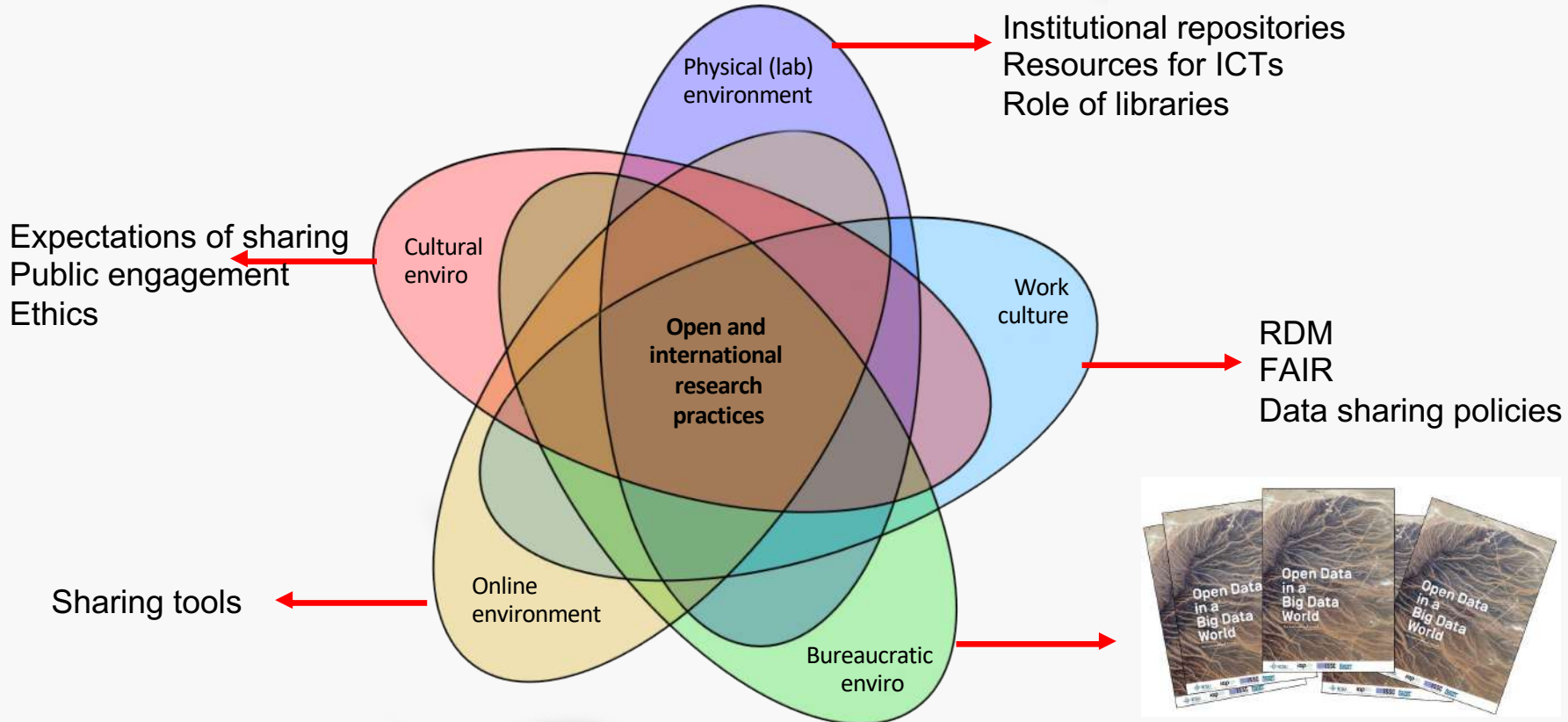
Ethics of Openness

Openness as ...

- The just distribution of resources (public funds and research products)

- A way of maximizing the benefits of research

- A safeguard against possible harms arising from research

- As a means of improving accountability and transparency

- An enactment of collegiality

- The obvious extension of the norms of science (CUDOS)

A Range of Different Activities

- Legal/economic

- Educational

- Advocacy

- Standardization and standard setting

Creating Open Environments

Physical (lab) environment

Institutional repositories
Resources for ICTs
Role of libraries

Expectations of sharing
Public engagement
Ethics

Cultural enviro

Open and international research practices

Work culture

RDM
FAIR
Data sharing policies

Online environment

Sharing tools

Bureaucratic enviro

Open Data in a Big Data World

A New Way of Doing Research

- Benefits and challenges

- Long-term commitment shaping research design

- Influence all aspects of research – not just a once off

- www.openuphub.eu/component/k2/item/610-101-innovations-in-scholarly-communications
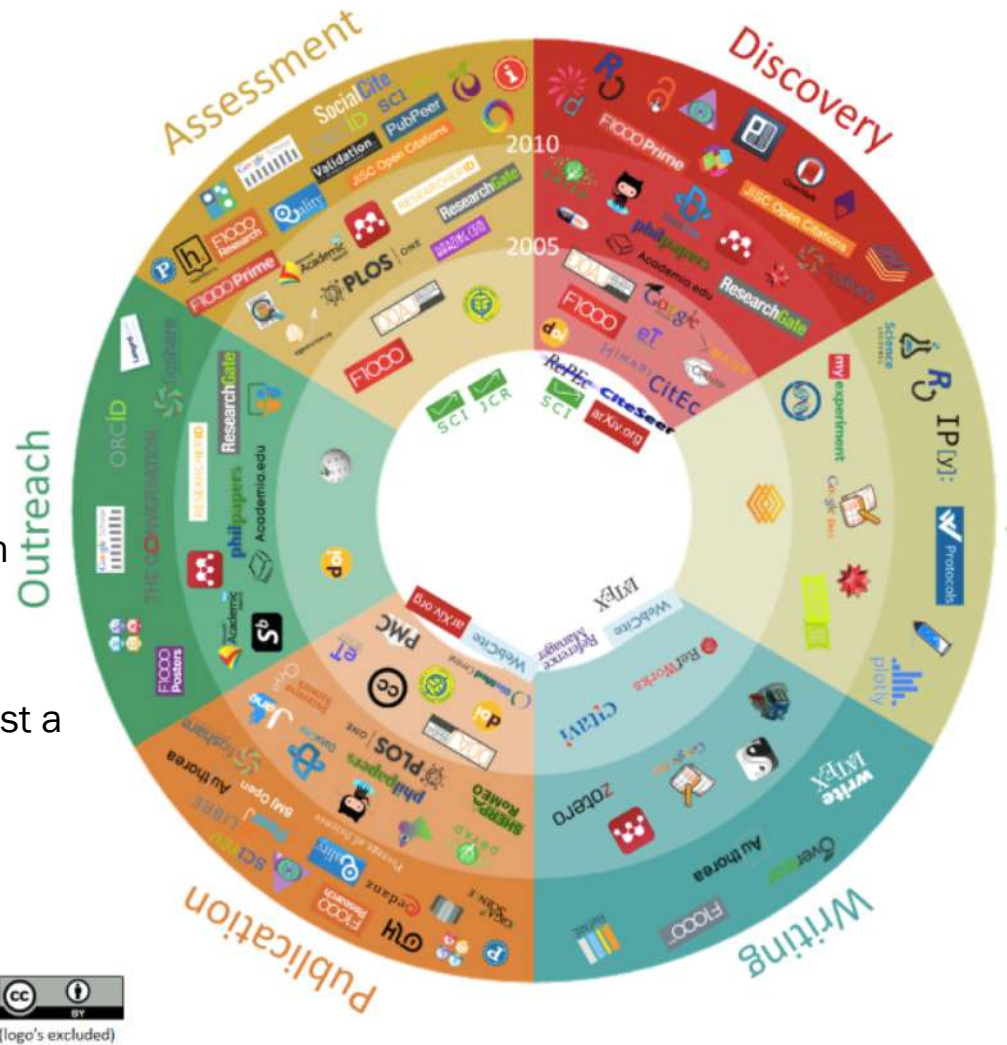
Multiple Roles and Openness

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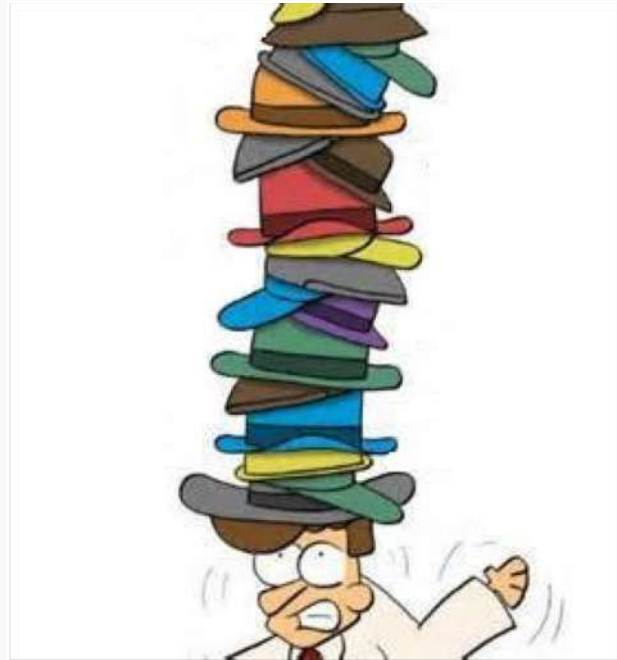
Open Science and Data Science

Group discussion

1. Why is Open Science an important part of modern research?

2. What are the challenges you would experience to being more open in your research?

Steps to Openness

1. Ethical: why is openness important?

    1. *Yes, I understand … sign me up!*

2. Understand the legal environment

    1. *I know when I shouldn't be sharing data*

    2. *I know what true openness looks like (predatory journals)*

    3. *I know that openness is not the same as restriction-less*

3. Scrutinize daily research practices

    1. *What could you be making more open – data, publications, methods etc?*

    2. *Are there key challenges that you need to consider?*

Steps to Openness

4. What tools are available online that can help your quest for openness?

      1. Practical tools, support systems, communities of practice

5. Understanding the big picture as well as the little picture

      1. How openness is changing science

      2. How the infrastructures of this changing landscape need to be scrutinized

      3. How my actions contribute to this big picture

6. Becoming an advocate for openness within your own environment

      1. Being a champion amongst peers and students

      2. Advocating for national change

Tools for Responsible, Open Science Citizenship

Data science
- Practical skills
- Norms and values
  - infraethics

Data use
- Finding and using data
- Data re-use and attribution

Data management
- Norms and values (FAIR)
- Practical tools - RDM

Authorship
- ORCID
- Journals and licensing

Ethics and responsibility
- Areas for activity
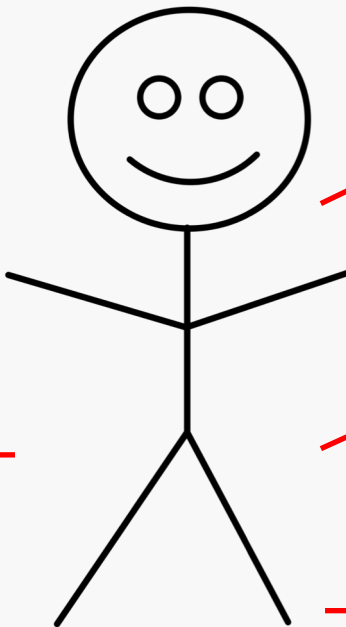
Openness, sharing, justice, beneficence

Crowd-Sourcing Expertise ...

Over the course of the day, think about these questions, put answers on the post-its and stick them up outside.

1. Are you currently involved in any activities that promote openness in research?
   Think about your diverse roles as diverse roles as data creator, user, infrastructure builder, teacher and communicator

2. What areas of openness would you like to improve in?

   What areas do you neeed help with?