What color is your open science parachute ?

A hands-on primer for e-infrastructure providers, early career scientists – and the rest of us

Peter Löwe

A new Paradigm for Science

1. Empirical Science
2. Theoretical Science
3. Computational Science
4. **Data-driven Science**
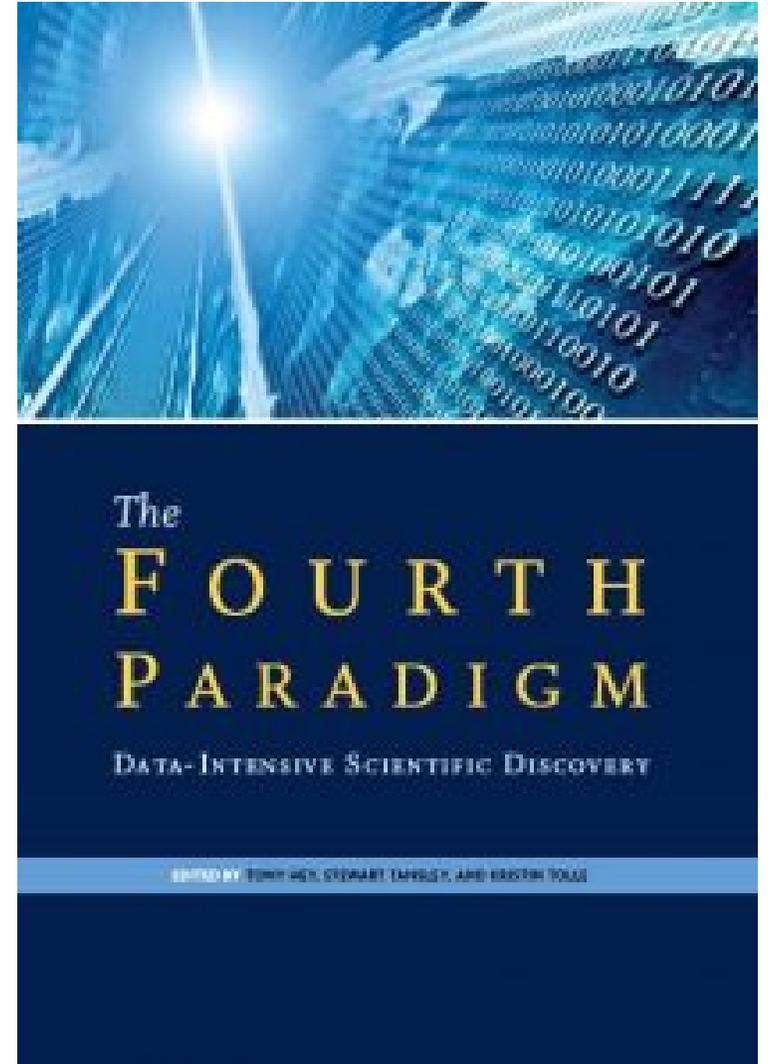
Jim Gray

- The **speed** at which any given scientific discipline **advances**

- **will depend on how well its researchers collaborate with each other**,

- and with technologists,

- in **areas of eScience**

- such as databases, workflow management, vizualisation, and cloud computing.
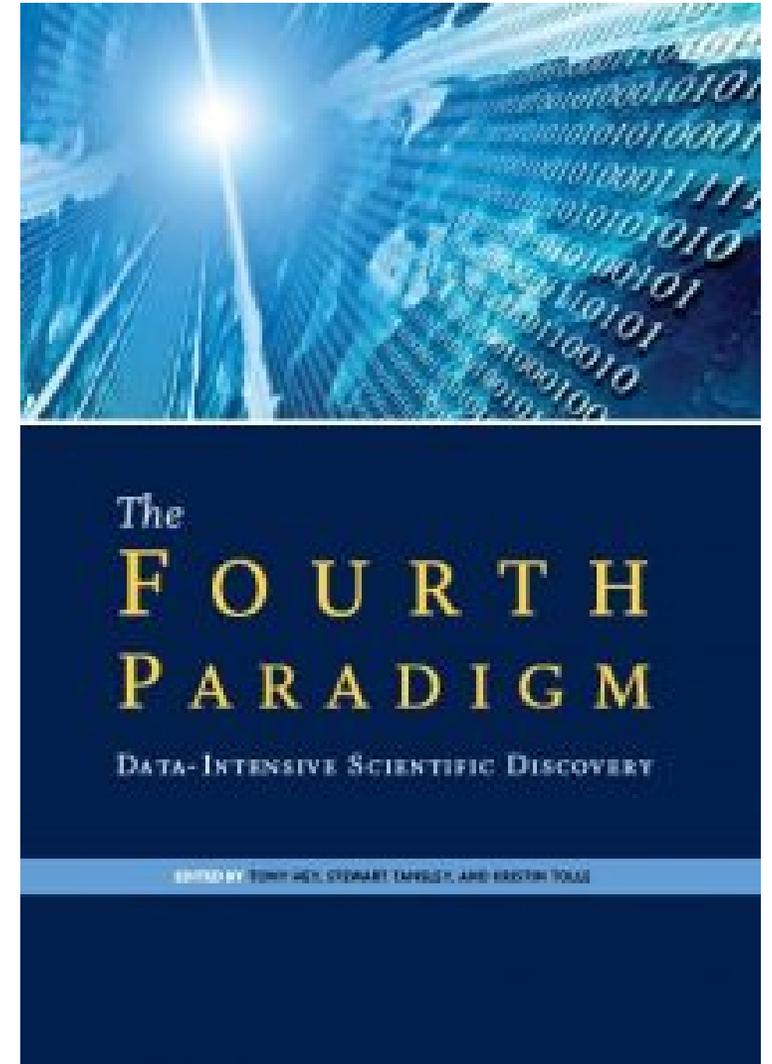

„Everything about science is changing because of the impact of information technology"

Open Science ?

Introduced in the 1660s: Scepticism

Modern pillars of Open Science:

- **Open Access**
- **Open Data**
- **Open Source Software**

What do we mean when we talk about Open Science?
Image courtesy of Robin Champieux
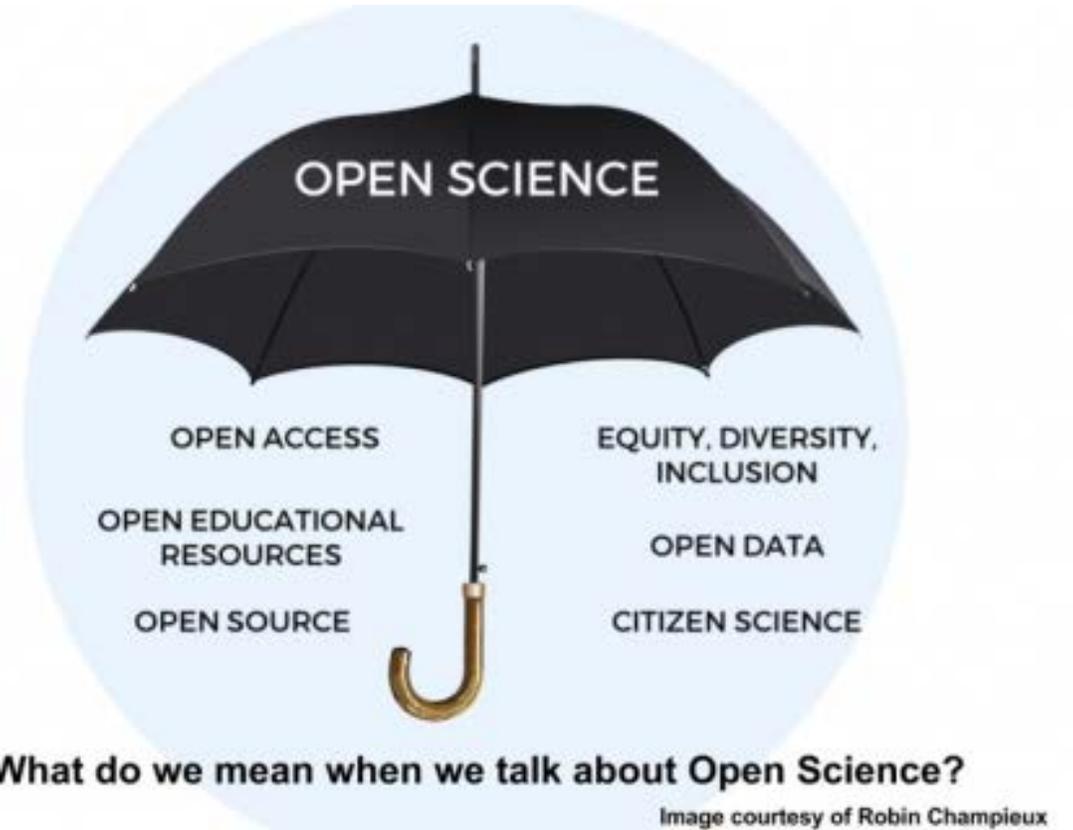
Depending of ones' particular field of science, **definitions of openness vary**.

If it can't be Open, make it FAIR !

- The concept of FAIR provides options for research environments where openness cannot be reached for various reasons.
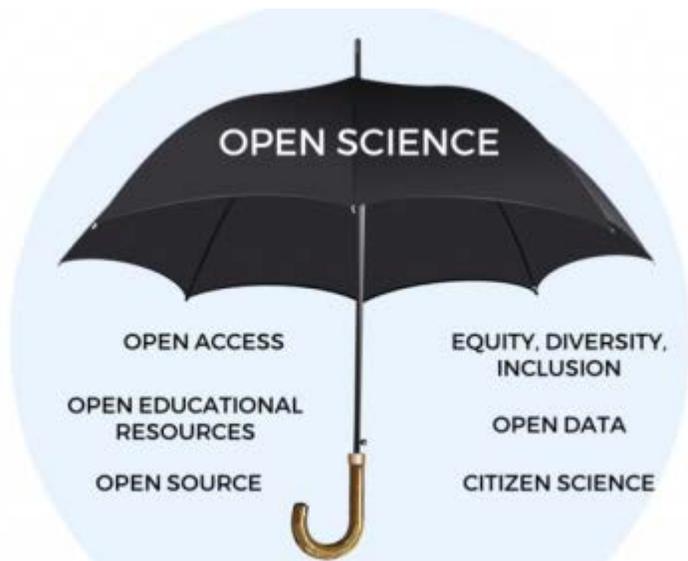
What do we mean when we talk about Open Science?
Image courtesy of Robin Champieux

Are we ~~there~~ *FAIR* yet ?

"I'm here about the details."

https://socialjusticesisters.files.wordpress.com/2013/01/devil-details-cartoon.jpg
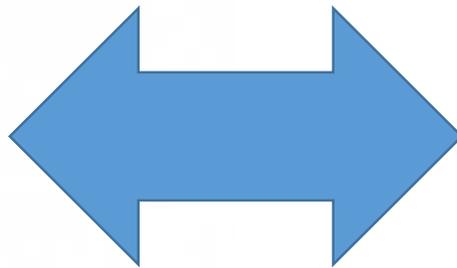
Findable	Persistent Identifiers (PIDs)	Rich metadata	Indexed data repositories	PIDs in metadata
Accessible	Standard communications protocol	Open, free protocol	Authentication, where necessary	Metadata is always available
Interoperable	Vocabularies	Vocabularies are FAIR	Linked metadata	
Reusable	Metadata have multiple attributes	Usage license	Provenance	Community standards

https://www.ands.org.au/__data/assets/image/0011/1416098/FAIR-Data-image-map-graphic-v2-721px.png

- *What does already work ?*
- *What will come next ?*
- *What's planned ?*
- *What's being discussed ?*

Where are we standing ?
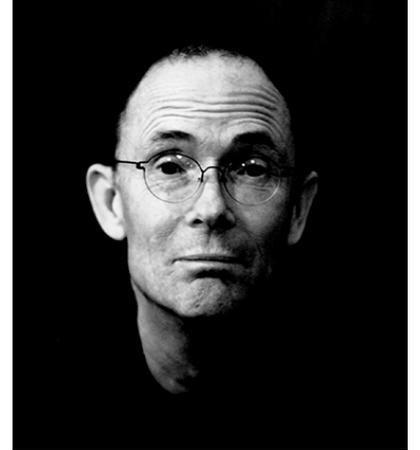
William Gibson, Author
https://no.wikipedia.org/wiki/William_Gibson#/media/Fil:William_Gibson_by_FredArmitage_crop.jpg

*"The future is already here — it's just not very evenly distributed"*

The **speed of embracing and implementing data-driven science** _varies_

- among the various fields of science, and
- the evolving of enabling technologies and standards.

What about that colored Parachute ?

What about that colored Parachute ?

THE BEST-SELLING JOB-HUNTING BOOK IN THE WORLD
RICHARD N. BOLLES

WHAT COLOR IS YOUR PARACHUTE?
2020
A PRACTICAL MANUAL FOR JOB-HUNTERS AND [...] CHANGERS

„If you can answer the question, you've unlocked some fundamental secret about your work and your life".
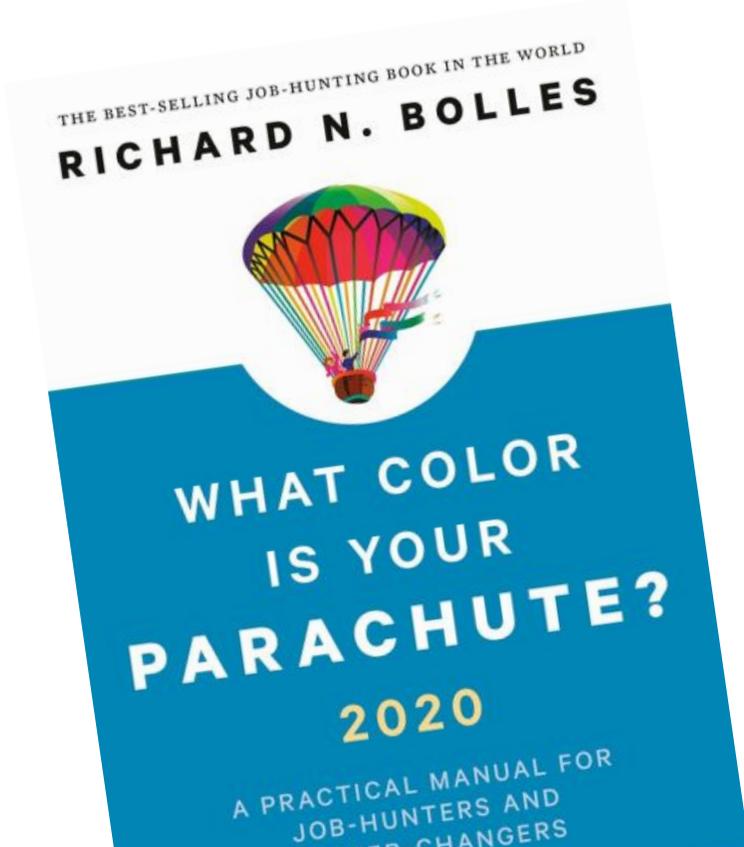
Jobs in 2019:

[...], jobs today are really seminars. **Change is happening so rapidly that you've got to pay close attention and learn.**

Emerging standards and infrastructures: Where to start ?

Repository Providers:
Make science discoverable and reusable

The research data repository provides additional information on its service.

The research data repository was reviewed by the re3data.org Team.

The research data repository is either certified or supports a repository standard.

The research data repository provides a policy.

The research data repository provides open/restricted/closed access to its data.

The research data repository uses a persistent identifier system to make its provided data persistent, unique and citable.

The terms of use and licenses of the data are provided by the research data repository.

GENERAL INFORMATION

POLICY

QUALITY STANDARDS

RESEARCH DATA REPOSITORY

TECHNICAL STANDARDS

LEGAL ASPECTS

Researchers:
Make (your) science discoverable and reusable
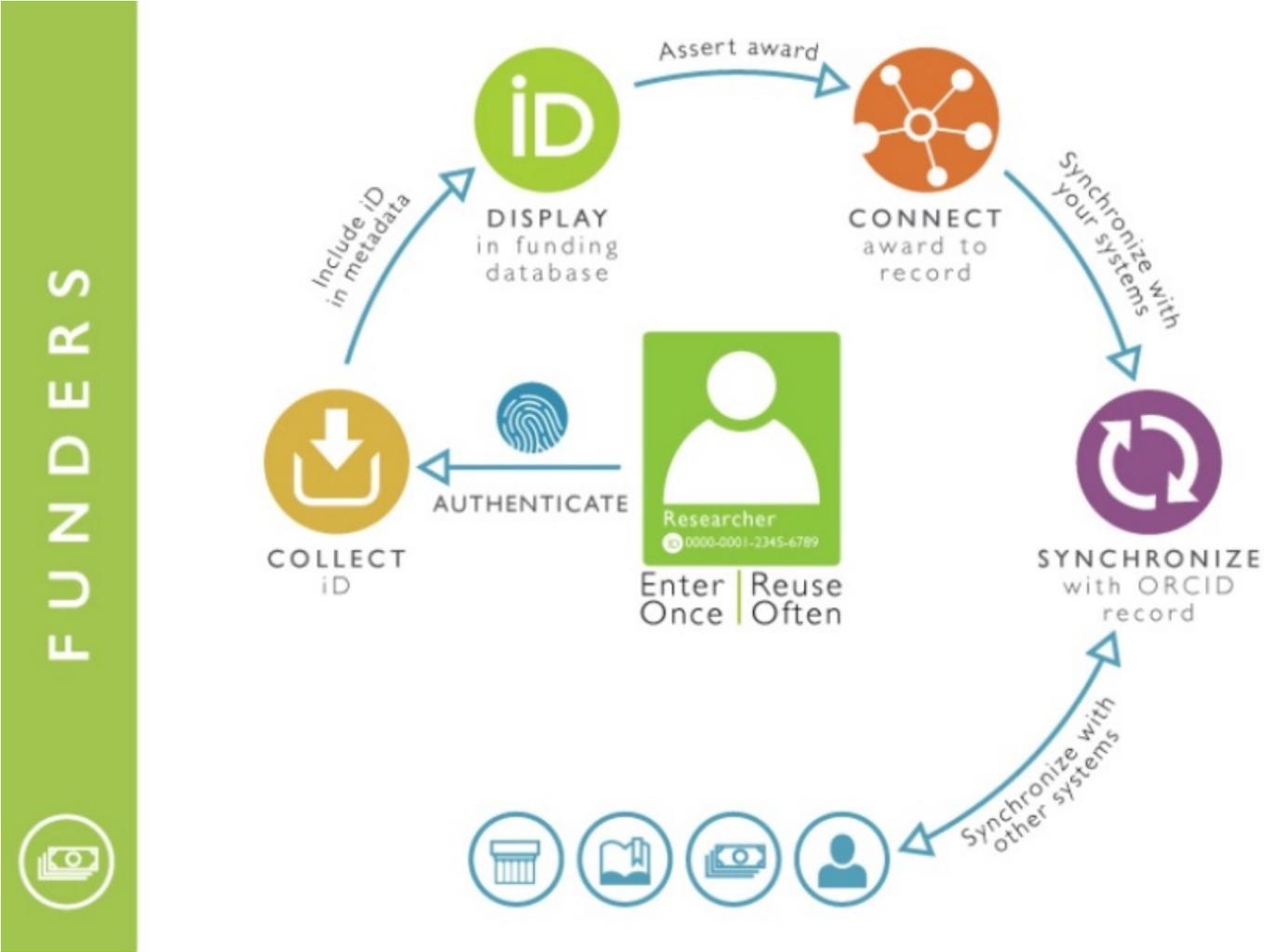
Don't forget altmetrics (Web 2.0)
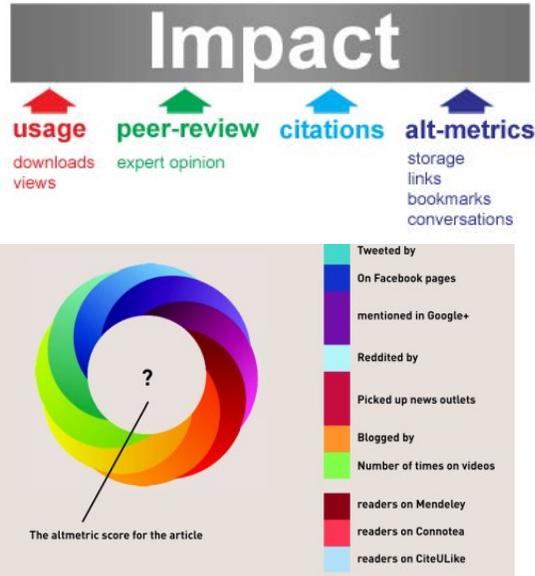
Everybody:
Learn, become involved, and advance this together

Conclusion:
The times are changing: Reap the day!
(and do add color to your parachute !)