

An international accord
(2015):

ICSU - International Council
for Science

IAP - The InterAcademy
Partnership

ISSC - International Social
Science Council

TWAS - The World
Academy of Sciences

scientific opportunities of a data-rich world

- capacity to acquire, store, manipulate and instantaneously transmit vast and complex data volumes
- numerous datasets can be semantically linked to create deeper meaning
- grasping these opportunities poses serious challenges to the way science is done and organized

Open data are the common, enabling threads

Effective open data can only be realised if there is systemic action at personal, disciplinary, national and international levels

definition of open data

Data must be “**intelligently open**”:

- **Discoverable** – a web search can readily reveal their existence
- **Accessible** – the data can be electronically imported into or accessed by a computer
- **Intelligible** – background information to make clear the relevance of the data to the specific issue under investigation
- **Assessable** – users must be able to assess issues such as the competence/interests of the data producers
- **Usable** – adequate metadata + the relevant code when computation has been used to create derived data

application of principles of open research data is responsibility of

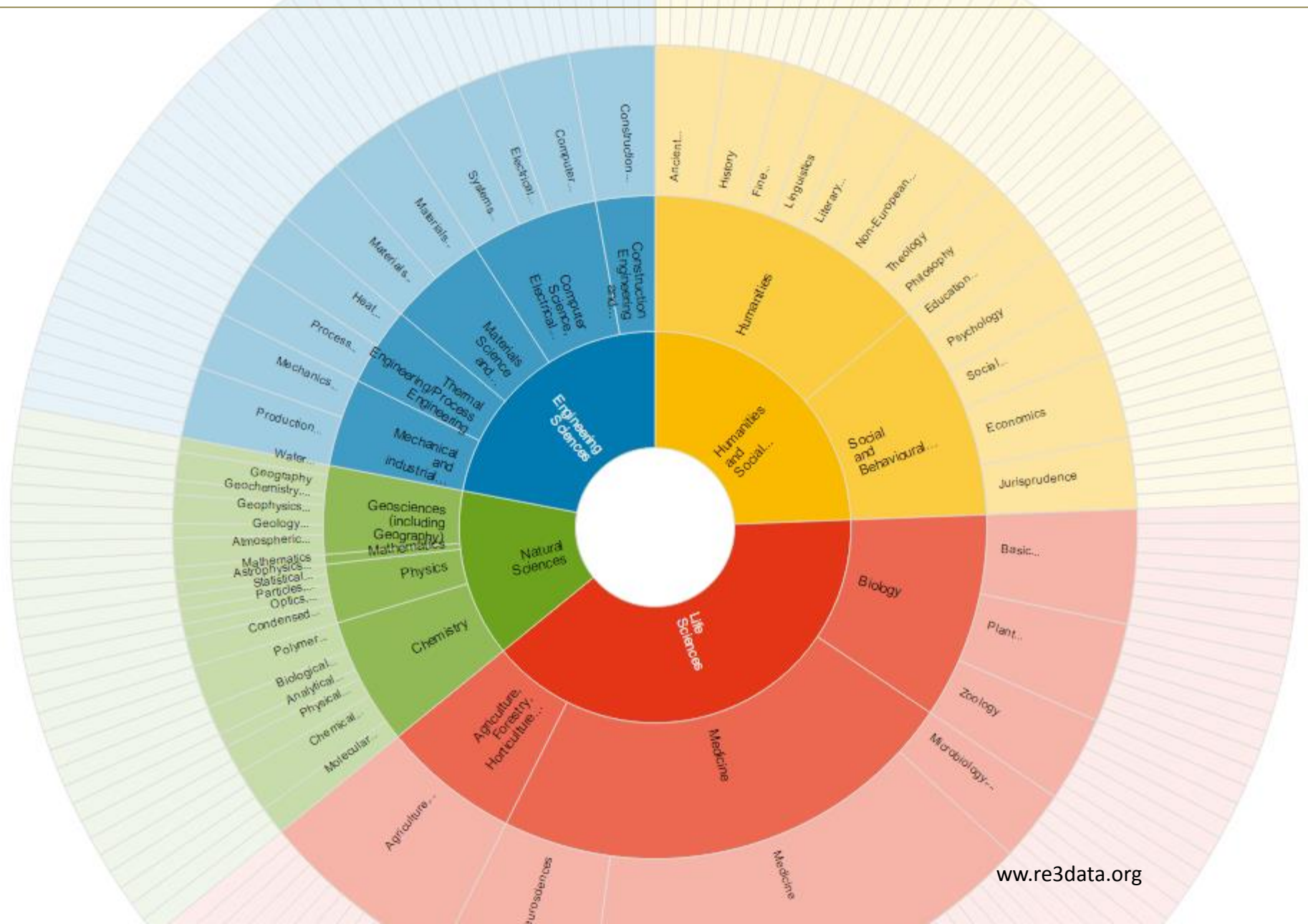
- scientists
- research institutions and universities
- publishers
- funding agencies
- professional associations, scholarly societies and academies
- libraries, archives and repositories
 - national responsibilities
 - international responsibilities

The principles of Open Data
Responsibilities of publicly funded **scientists**

- make **research data openly** available in ways that permit **reuse**
- permit the logic of the link between data and claim to be rigorously scrutinised and the validity of the data to be tested by **replication of experiments or observations**
- data deposited in **trusted repositories**

reusable data

Deposit data in your institutional repository + search for data repositories in www.re3data.org (1.400) and www.openoar.org (153)



The principles of Open Data

Responsibilities of **research institutions and universities**

- create a **supportive environment for open data**. This includes the provision of training in data management, preservation of data, technical support, including library and data management services
- Institutions that employ scientists and bodies that fund them should **develop incentives and criteria for career advancement** for those involved in open data processes

mobilise data-intensive capacities

The principles of Open Data

Responsibilities of **publishers**

- make data available to reviewers during the review process
- require intelligently open access to the data concurrently with the publication which uses them
- require the full referencing and citation of these data
- make the scientific record available for subsequent analysis through the open provision of metadata and open access for text and data mining

The principles of Open Data

Responsibilities of **funding agencies**

- regard the costs of open data processes in a research project to be an intrinsic part of the cost of doing the research
- provide adequate resources and policies for long-term sustainability of infrastructure and repositories

national open data policy

- Institutions that employ scientists and bodies that fund them should **develop incentives and criteria for career advancement** for those involved in open data processes
- Assessment of research impact, particularly any involving citation metrics, should take due account of the contribution of data creators

The principles of Open Data

Responsibilities of **professional associations, scholarly societies and academies**

should **develop guidelines and policies** for
open data

and

promote the opportunities they offer in ways that
reflect the epistemic norms and practices of their
members.

The principles of Open Data

Responsibilities of **libraries, archives and repositories**

development and provision of services and technical standards for data to ensure that

- data are available to those who wish to use them

and that

- data are accessible over the long term

The boundaries of openness

Openness should be the default position for scientific data .

Exceptions should be applied on a case-by-case basis:

- Privacy and confidentiality
- Safety and security
- Commercial interests

Exceptions applied on a case-by-case basis

Enabling practices

- **Citation and provenance**

When, in scholarly publications, researchers use data created by others, those data should be cited with reference to their originator, to their provenance and to a permanent digital identifier. .

- **Interoperability**

Both research data, and the metadata which allows them to be assessed and reused, should be interoperable to the greatest degree possible

- **Non-restrictive reuse**

Research data labelled as reusable by means of a rights waiver or non-restrictive licence

- **Linkability**

Open data linked with other data based on their content and context in order to maximise their semantic value



Technology

The Technical Challenge

The Consent Challenge

Processes & Organisation

The Ecosystem Challenge

The Funding Challenge

The Support Challenge

People

The Skills Challenge

The Incentives Challenge

The Mindset Challenge

ICSU-IAP-ISSC-TWAS Accord

www.icsu.org/science-international/accord

This document was prepared by an ICSU-IAP-ISSC-TWAS working group of:

- **Geoffrey Boulton**, University of Edinburgh and President of CODATA, Working Group Chair
- **Simon Hodson**, Executive Director CODATA (ICSU representative)
- **Dominique Babini**, University of Buenos Aires and CLACSO (ISSC representative)
- **Jianhui Li**, Chinese Academy of Sciences, CNIC (IAP representative)
- **Tshilidzi Marwala**, University of Johannesburg (TWAS representative)
- **Maria G. N. Musoke**, Makerere University, Uganda (IAP representative)
- **Paul F. Uhler**, Scholar, US National Academy of Sciences (IAP representative); Independent Consultant, Data Policy and Management
- **Sally Wyatt**, Maastricht University, & eHumanities, KNAW (ISSC representative)

