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.opendoar.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
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.
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