



Wir schaffen Wissen – heute für morgen

Research Integrity , 2014

Revised Guidelines

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Tuesday June 5, 2014, 11.00 – 12.00

On being a **scientist**

Why you are scientist ?

What you are doing? (answer next slide)

How you do science?

Research Integrity (part of science ethics)

- *What shall we do?* (research topics)
- *Principles: how you should conduct* (normative)
- Theories, responsibility, codices, history (e.g. atomic bomb), meta-science, etc., merit-rating (bibliography, other criteria, scientific career)



Avoid damage (respect rules): to persons, animals & environment

Create benefits: for the society (health, services, food, energy)

Be fair: distribution of merits (authorship, reviewing, plagiarism)

Respect autonomy: human experiments, freedom of research, grants

Research definition

(goals and how)

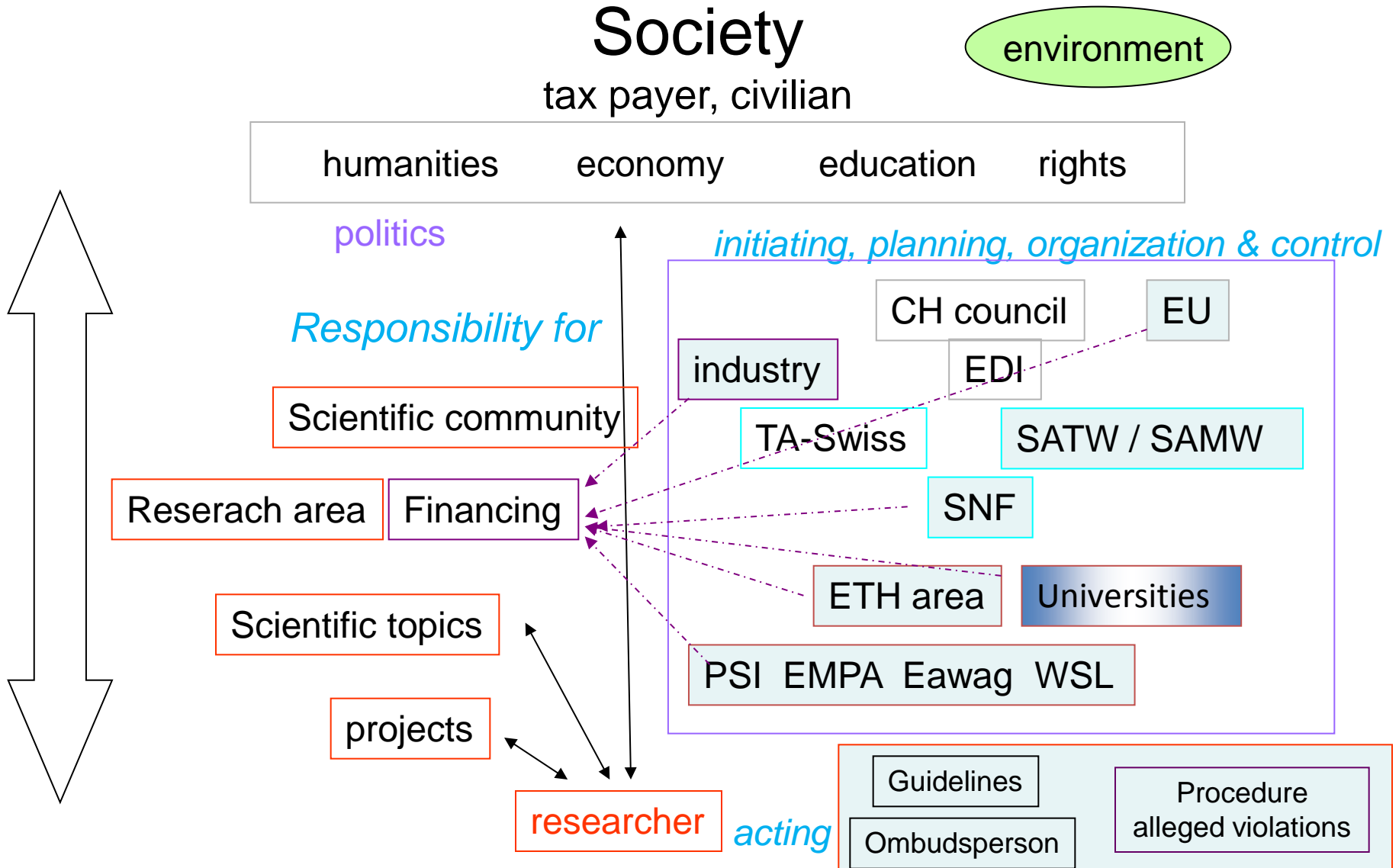
Research can be defined as **search for knowledge**, or as any **systematic investigation**, to establish **novel facts**, **solve** new or existing **problems**, prove **new ideas**, or develop **new theories**, usually using a **scientific method**. The primary purpose for **basic research** (as opposed to **applied research**) is **discovering**, **interpreting**, and the **development of methods** and **systems** for the advancement of **human knowledge** on a wide variety of **scientific* matters** of our world and the universe.

(Wikipedia)

You are creating options for the future !

* Criteria of science: *commonly* accepted and accessible, independent, revisable

Responsible research




Paul Scherrer Institut (PSI) :: Paul Scherrer Institute - Mozilla Firefox

www.psi.ch

Back To Autorenumge... W Wikipedia.CH Lesezeichen-Menu Lagerkatalog Paul Scherrer Institut (... BMR :: WebHome TinEye Reverse Image ...

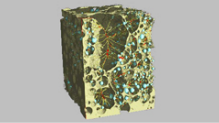
alternarwards: The readers of this project were scientists from the University of Bristol, England, who carried out their decisive experiments at the SLS at PSI.



X-rays provide insights into volcanic processes

16. October 2012

Experiments performed at the Paul Scherrer Institute (PSI) investigate processes inside volcanic materials that determine whether a volcano will erupt violently or mildly. In the experiments, scientists heated small pieces of volcanic material similarly to conditions present at the beginning of a volcanic eruption. They used X-rays from the SLS to observe, in real time, what happens to the rock as it goes from the solid to the molten state.



Silicon – Close to the Breaking Point

2. October 2012

Stretching a layer of silicon can lead to internal mechanical strain which can considerably improve the electronic properties of the material. Researchers at the Paul Scherrer Institute and the ETH Zurich have created a new process from a layer of silicon to fabricate extremely highly strained nanowires in a silicon substrate. The researchers report the highest-ever mechanical stress obtained in a material that can serve as the basis for electronic components. The long term goal aim is to produce high-performance and low-power transistors for microprocessors based on such wires.

[Older news can be found in the archive.](#)

Energie Spiegel

The newsletter regularly published by PSI on the subject of energy systems and their analysis.

Current news

Press Releases and highlights from the Paul Scherrer Institute

INFORMATION FOR

PUBLIC AND MEDIA


Discover and investigate. Explore the world of the Paul Scherrer Institute. Gain an insight into Switzerland's largest research institute.

SCIENTISTS AND USERS

Direct access for scientists, researchers and the users of our large-scale facilities. In English only.

INDUSTRY AND THE ECONOMY

With its expertise, PSI can support your business in solving technological problems. Within the SwissFEL project, we provide industrial partners with interesting opportunities for collaboration.



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Technology offers
R&D Services

Center for Proton Therapy
CCEM
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PSI Library

Start DE Research_Integ... Paul Scherrer In... Search Desktop 17:12

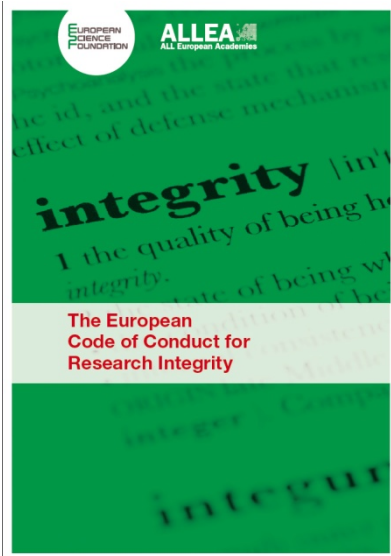
The screenshot shows the Paul Scherrer Institut (PSI) Research Integrity homepage. The browser window is Mozilla Firefox. The page layout includes a top navigation bar with links for PUBLIC & MEDIA, SCIENTISTS & USERS, INDUSTRY & THE ECONOMY, and INTRANET. A search bar is located in the top right. The main content area features a central banner with a Vitruvian Man image and the text 'Research Integrity' and 'Research Integrity at the research institutes PSI, EMPA, Eawag, WSL'. Below this, there is a 'News' section with a mandatory instruction for PhD students. On the right, there is a 'Contact' section for Louis Tiefenauer and an 'ETH Domain' section. A red box highlights the 'Ombudspersons' link in the left sidebar, which also includes links for Events, Documents, and Contacts.

Ombudspersons
Events
Documents
Contacts



The screenshot shows a web browser window with the URL www.psi.ch/integrity/documents. The page layout includes a top navigation bar with links for PUBLIC & MEDIA, SCIENTISTS & USERS, INDUSTRY & THE ECONOMY, and INTRANET. A left sidebar contains a 'Research Integrity' menu with sub-items: Ombudspersons, Events, Documents (highlighted), and Contacts. The main content area is titled 'Documents' and features a section 'Guidelines Research Integrity at PSI, EMPA, Eawag und WSL'. Below this, there are four download links for guidelines: PSI (2.4 Mb), EMPA (450 kb), eawag (2.4 Mb), and WSL (4.2 Mb). A right sidebar titled 'FURTHER INFORMATION' includes links to 'from the US, Department of Health and Human Services', 'Office of Research Integrity, ORI', 'Publications - ORI Introduction to RCR', and 'The PSI in brief'.

Ombudspersons
Events
Documents
Contacts



Honesty in all aspects of research
Accountability in the conduct of research
Professional courtesy and fairness in working with others
Good stewardship of research on behalf of others



Major guidelines topics

- Honesty:* data management
avoid misconduct
- Openness:* conflict of interest
open science
- Self-criticism:* quality management
research procedures
dealing uncertainty
- Reliability:* reporting to society
effective self-regulation
professional data management
- Fairness:* authorship
rewarding system
reviewing

Honesty, openness, self-criticism, **reliability** and **fairness** are the basis for credibility and **acceptance in (of) science**. Researches at PSI are committed to these values and to the guidelines which derive from them.

Revisions 2013

Fortpage: **reliability**

1. General

Research leader is support

2. Integrity in Research

2.1 Research **Planning nanoparticles, trans-boundary collaborations**

2.2. **Execution** of research

2.3 **Publication** of research results



Publication: self-criticism **uncertainty**

Autorship: **detailed procedure to find a author order**

References: avoid **plagiarism in proposals**

3. **Integrity of peer reviewing: reminding of principles and values**

4. Final regulations



Report suspected research misconducts

Scope

Workshop 05.06.2014

In the context of **international collaborations**, in particular in large, international research consortia, these guidelines may be adapted.

Definitions

Researchers are experts who are charged with the planning and generation of new knowledge, products, processes, methods and systems, as well as with the management of these projects, therefore also including bachelors, masters and doctoral students. The scientific community comprises all researchers.

Research Leader

The leader of a piece of research, or a research project (the Research Leader), is the responsible person (also called the Principle Investigator, or PI) who is in charge of defining and achieving the research goals. He or she ensures that all persons involved are aware of these guidelines and committed to their implementation and **is supported by the employer therefor**.

Selection of research objectives and methods

The freedom of education and research is ensured within the Constitution of the Swiss Confederation (BV Art. 20). Researchers are free to select their research objectives and methods, taking into consideration the prevailing strategy of PSI, the research programme, the available resources and justified restrictions.

Restrictions of freedom in research

b. Risks which are specific to PSI: protection against radiation and laser beams, **the safe handling of chemicals**, fissile material and **synthetic nanoparticles**

Third-party projects

The duties and rights to research results in projects (co-)funded by third-party investment and undertaken at PSI must be specified in a contract with the sponsor before the start of a project. The responsible persons must pay attention to retain the freedom of research and independence as far as possible. Recently released guidelines for **trans-boundary collaborations in research** * should be respected.

*** Montral statement on collaborative research**

Collection, documentation and archiving of primary data

Each person involved in a research project bears the responsibility for that part of it which lies under his or her direct control. In particular, the person who conducts the experiment is responsible for the correctness of the acquired data, and the PI for the data management (processing, storage and utilisation).

Access to primary data, in particular data used for publications, has to be ensured after its acquisition for a sufficient period of time in accordance with accepted internal and external regulations, and the destruction of primary data must be regulated.

Storage of laboratory logs and electronically stored data must be accordingly organized and its access controlled. The PI is responsible for the secure storage of material and primary data after completion of a research project.

Generation of research results

Misconduct such as the fabrication and theft of primary data, plagiarism, or improper manipulation of data should be strictly avoided.

Publication of research results

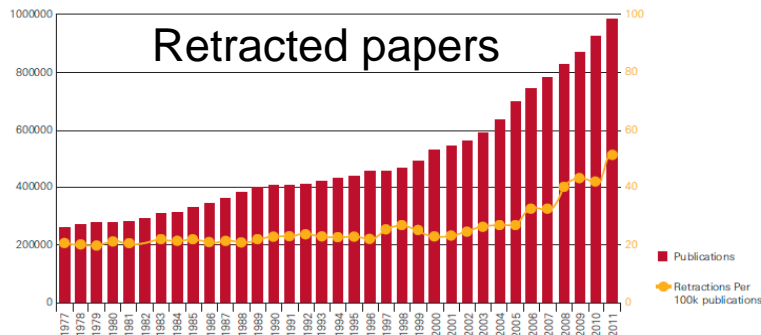
Research results are to be published in a coherent and concise form, while the subdivision into a number of small, incomplete publications (salami tactics) and the publication of the same content in various scientific journals or media (duplication) is prohibited. **Uncertainness, uncertainty and ignorance should be openly and adequately addressed in the discussion.**

Data management

- Data should be: accessible, intelligible, usable
- Data interpretation, reduction and storage

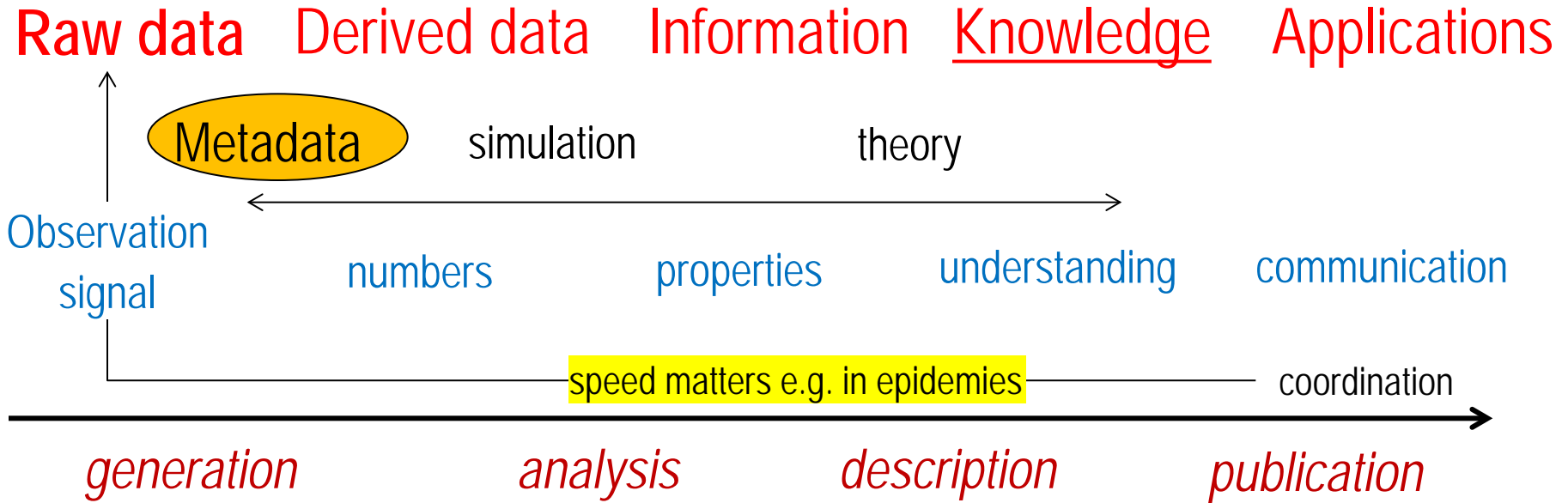
Science is revisable!

Figure 2.5 Number of publications (columns) and number of retractions (line) relating to clinical trials: 1977 - 2011¹¹²



Honest error vs. fraud

Excursus: Science data management



Data should be:

accessible
zugänglich



Data storage / property
backups etc.

intelligible
verständlich



Data reduction
readable

accessible
nachvollziehbar



Data interpretation
metadata

usable
brauchbar



Data format

Authorship

Reputation is the most valuable asset of every researcher. The assessment of the performance and the quality of a researcher is primarily based on his or her publications and their impact. A fair publication practice is therefore of central importance for all researchers.

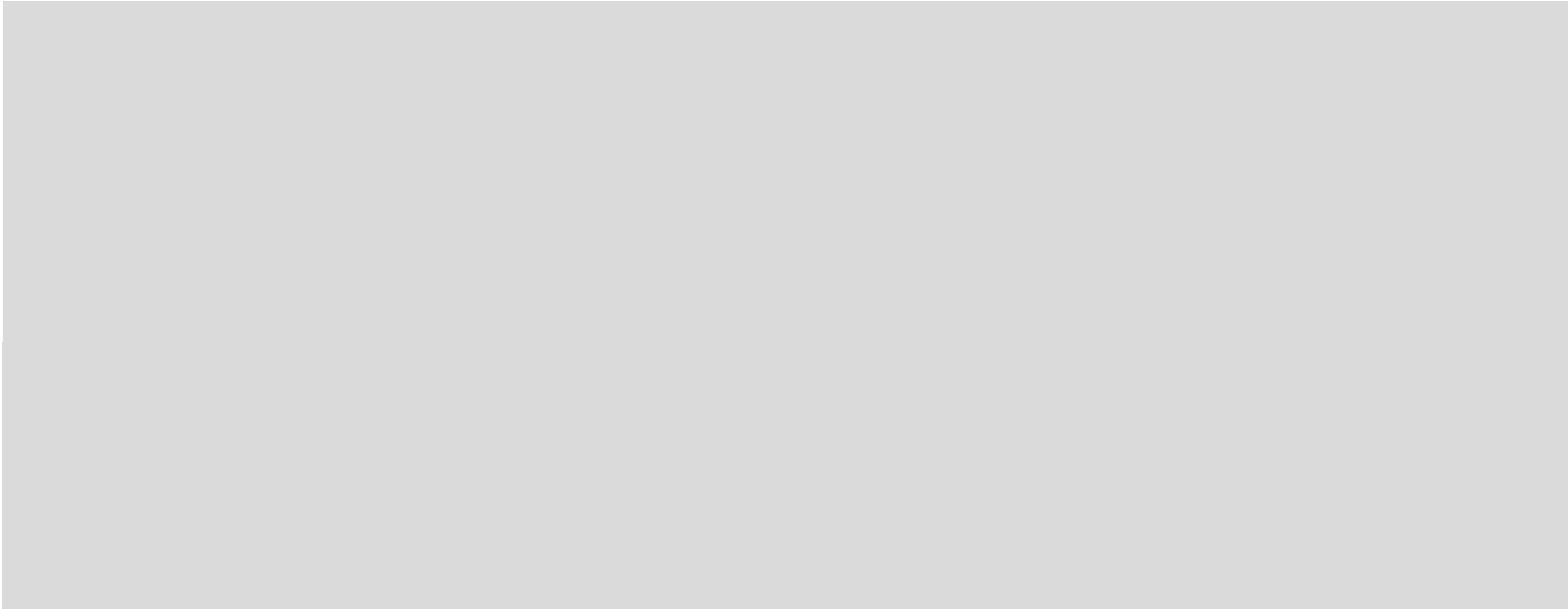
A person is considered as an author of a scientific publication who fulfils *all* of the three following criteria:

- a. Personally providing **either** a significant contribution to the planning, **to the execution, to the** supervision **or to the** interpretation of a piece of research,
- b. participating in the drafting of the manuscript, and
- c. approving the final version of the manuscript.



Authorship

Authorship and the order of authors must be discussed and agreed upon at an early stage with all those involved. **Before starting collaborations responsibilities and procedures for giving credits and for publishing should be agreed upon. The**



The corresponding author, generally the PI, has overall responsibility for the content of the publication and is charged with checking that the designated authors fulfil the criteria for authorship. All co-authors are accountable for the accuracy of content, correct presentation and conclusions that have been drawn from the data, to the extent that they can be verified.

2.3 Publication of research results

References

Authors must give their sources of material and methods they have used and cite any work of others that has been used.

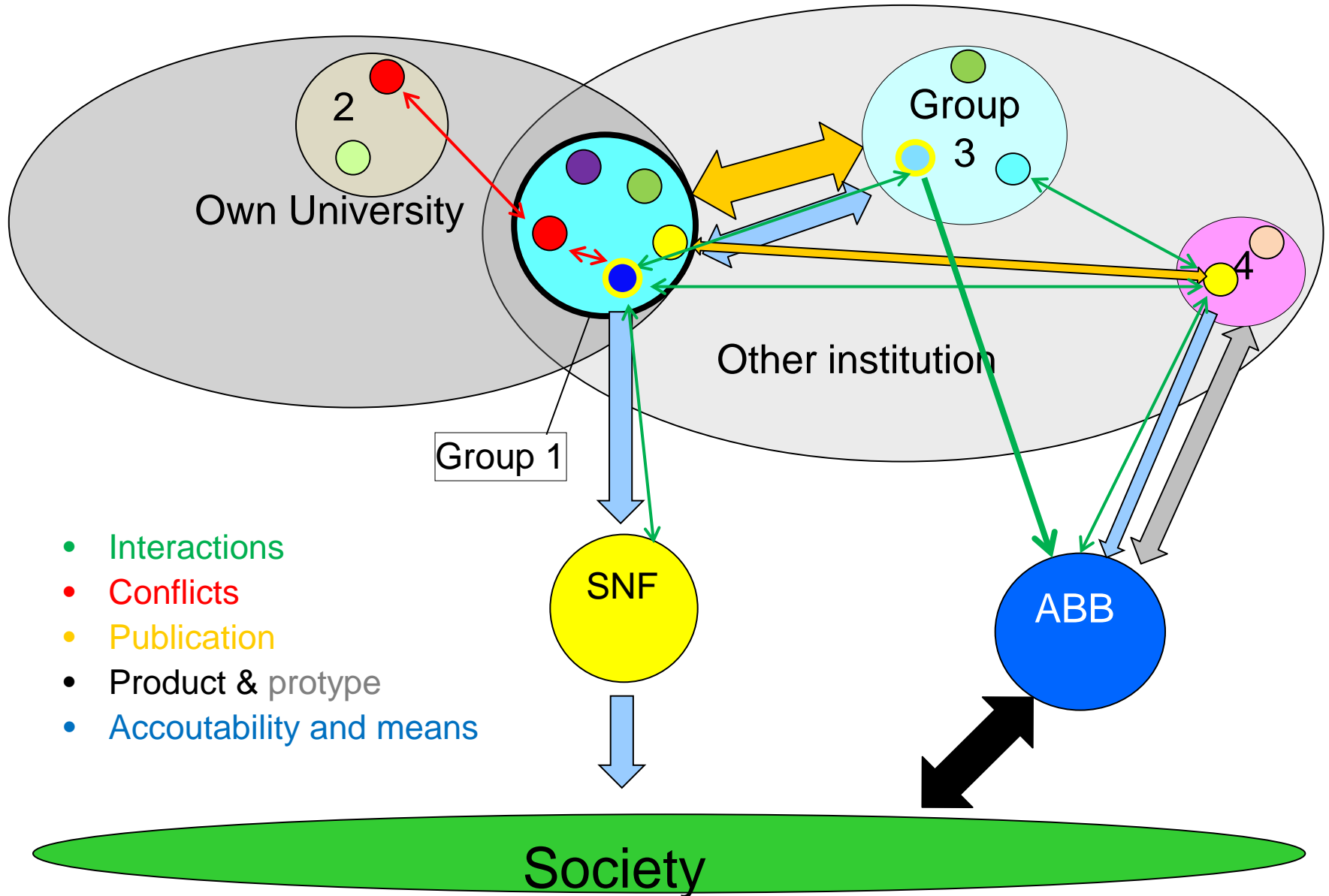
Full or partial use of the work of others, without correct citation, is plagiarism and impermissible. **Guidelines for avoiding plagiarism in publications as well in proposals are respected.**

The sources of financial support for the project from third parties should be fully acknowledged.

3. Integrity of peer reviewing

Reviews are carried out according to transparent and adequate criteria and should at the appropriate level be proofed, if the responsibility to the society such as autonomy and dignity of persons, dual use-issues, safety, etc. have been reflected.

Research interactions



4. Final regulations

Action following alleged violation of integrity

Researchers should report to the appropriate authorities any suspected research misconduct, to justify the trust of the society in self-regulation of sciences. Confidential and independent mediators can be addressed as consultants.



11. Reporting Irresponsible Research Practices: Researchers should report to the appropriate authorities any suspected research misconduct, including fabrication, falsification or plagiarism, and other irresponsible research practices that undermine the trustworthiness of research, such as carelessness, improperly listing authors, failing to report conflicting data, or the use of misleading analytical methods.

Your duties

- **Respect guidelines** (are legal part of working contract)
- **Avoid misconduct** (violations are persecuted; especially fabrication, falsification & theft of data, plagiarism, FFTP, etc.)
- **Contribute**
 - to benefits of science (**results!**)
 - to credibility of sciences (self-criticism)
 - to acceptance of sciences (open days, popular sciences)
 - to advancement of sciences (seminars, education, etc.)
- **Report** (Ombudsperson for all topics) misconduct and deviations early