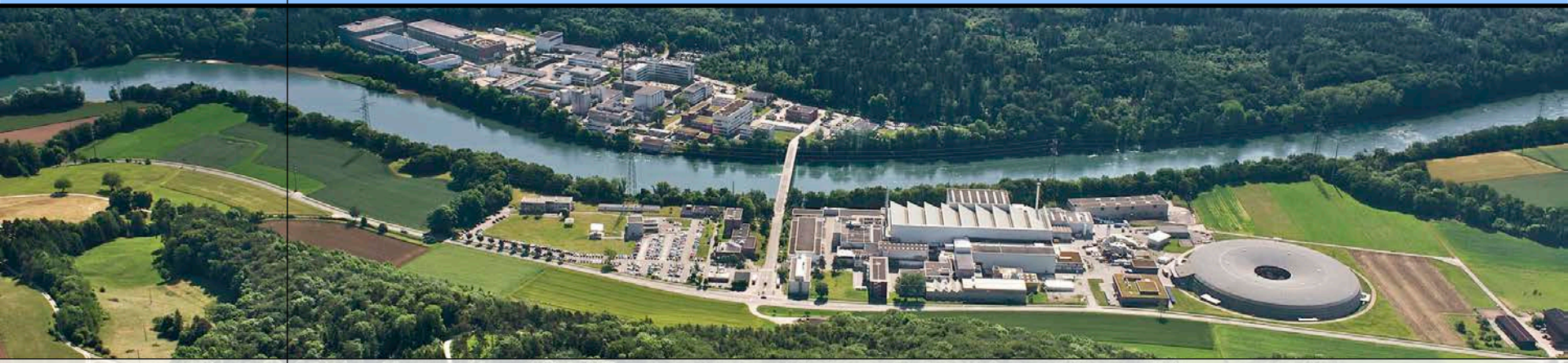
PAUL SCHERRER INSTITUT

PSI



Wir schaffen Wissen – heute für morgen

Workshop Research Integrity 2015

Scientific mentoring – Mentors in science

Monday June 30, 14.00 – 17.00

@ PSI OHSA/E13

Louis Tiefenauer, PhD, MASAE

Workshop program

14.00	Start:	Welcome / Ethics in science	
14.00 – 14.15		Introduction of participants	all
14.15 – 14.50		“Mentors in science”	TL
14.50 – 15.00		Problems identified by HR	
15.00 – 15.20		Coffee break	
15.20 – 16.00		Workshop in 2 groups E13 /B19	TL / HR
16.00 – 16.30		Reporting group discussions	all
16.30 – 16.45		Plenary discussion	
16.50		Message to the PSI directory board	TL
17.00		Closing the meeting	

Quality of research

Responsible Research

Relevant topic, valid data, reproducible results, in efficient way

Mentoring & Data management related

Sloppy research practices

Ignorance, honest error or dubious integrity

Questionable research practice (QRP), weighted

1. Not publish a valid negative study
2. Bias from beliefs & conviction to conclusion
3. Not report replication problems
4. Conceal results that contradict earlier findings
5. Keep inadequate notes of research process

Research misconduct

FFP: Fabrication, falsification, plagiarism

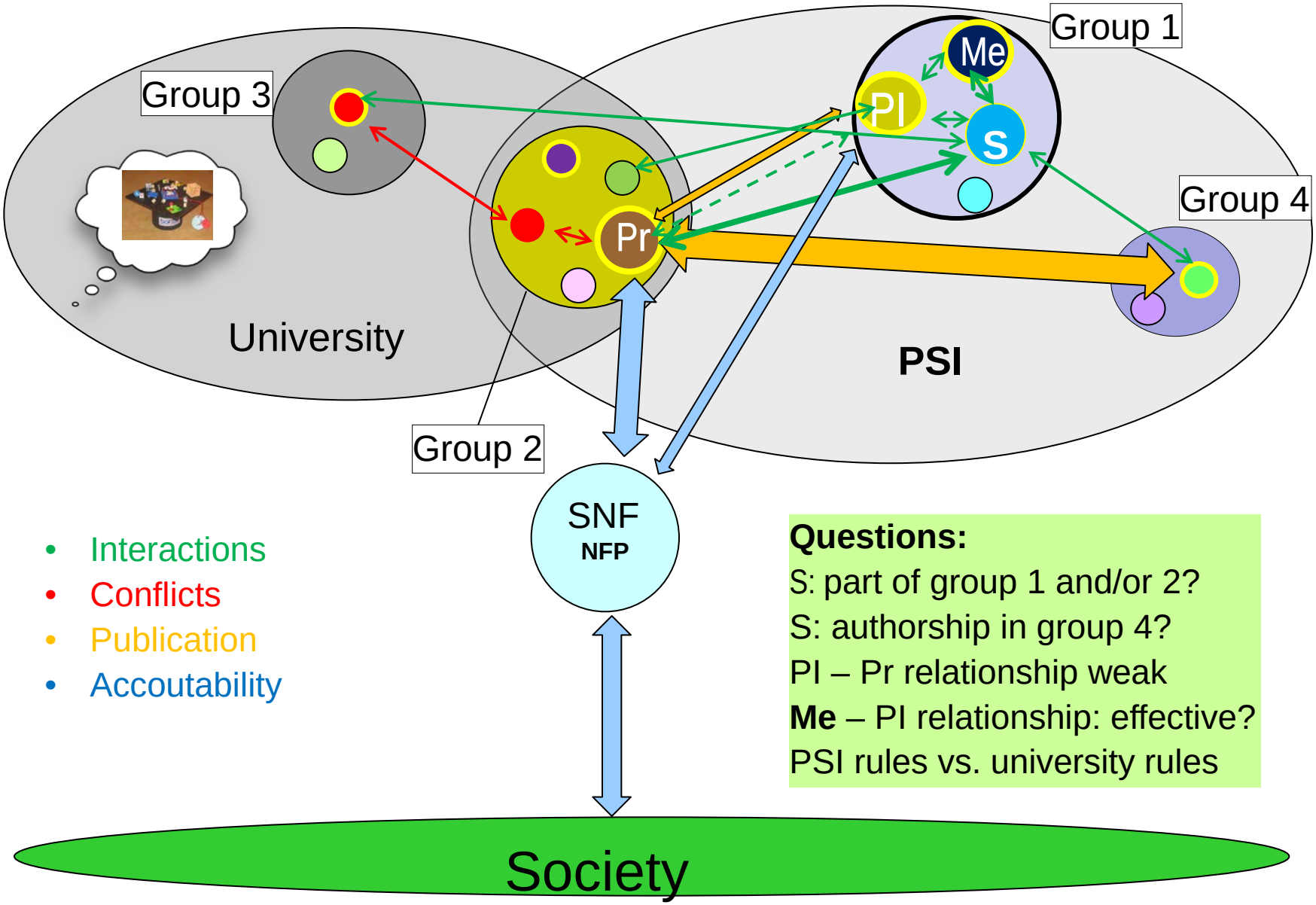
Reported as often (3th most frequent QRP, 10th most weighted (occurrence x severity)) misconduct in a poll:

Insufficient supervise and mentor (junior) coworkers

Comp.: Data fabrication: ranks at weighted position 24

Courtesy according Lex Bouter, Univ. Amsterdam

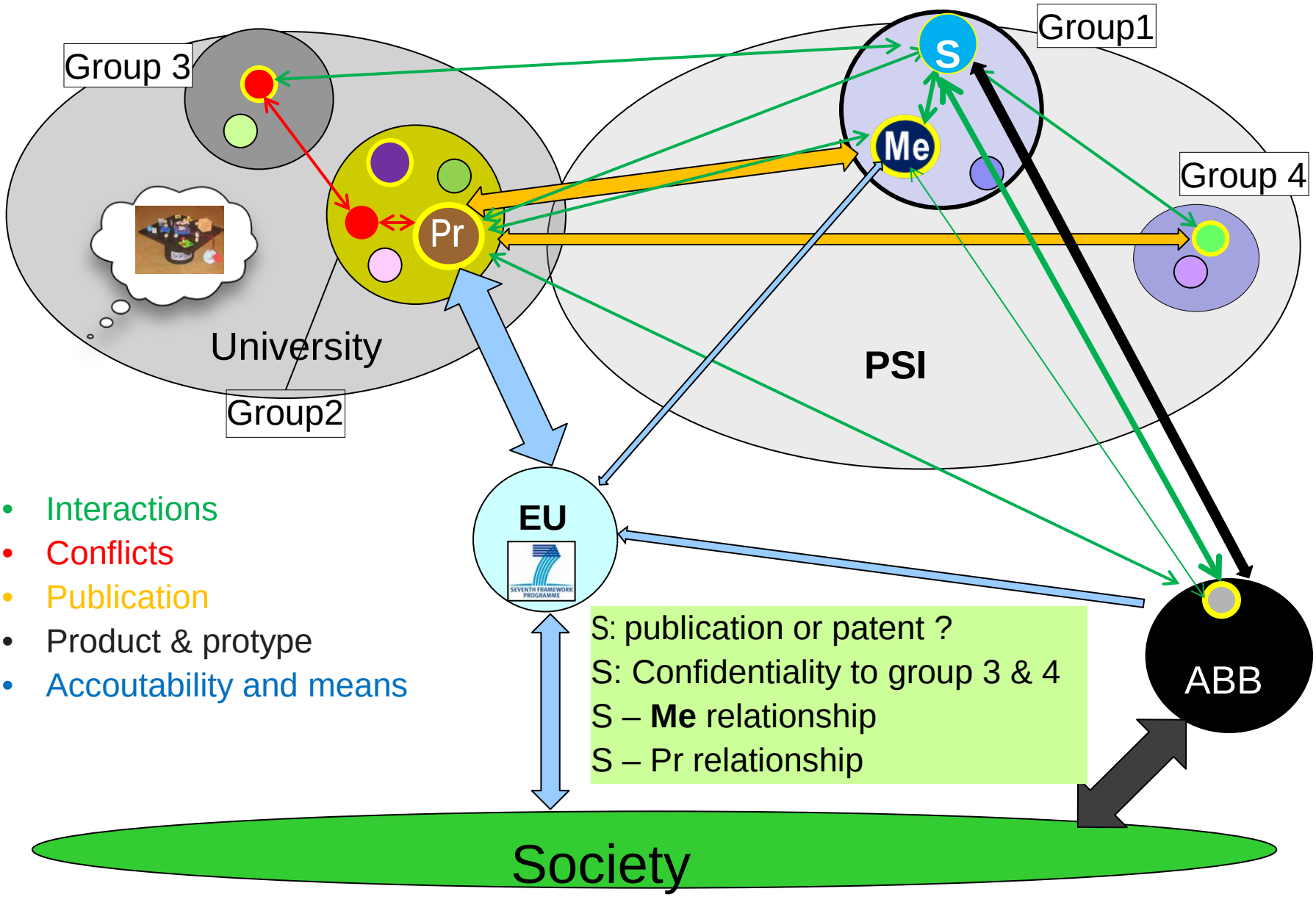
Case 1: Mentor PI & Professor at PSI



- Interactions
- Conflicts
- Publication
- Accoutability

Questions:
S: part of group 1 and/or 2?
S: authorship in group 4?
PI – Pr relationship weak
Me – PI relationship: effective?
PSI rules vs. university rules

Case 2: Mentor at PSI & professor aboard



- Interactions
- Conflicts
- Publication
- Product & protype
- Accoutability and means

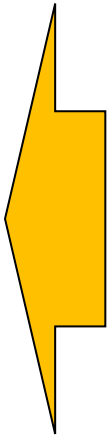
S: publication or patent ?
S: Confidentiality to group 3 & 4
S – **Me** relationship
S – Pr relationship

Mentors and mentoree's

mentorees

S

Apprentice
Bachelor
master
PhD student
Postdoc



mentors

Staff supporter
Staff technician
PI Senior scientist Me
Group leader
Pr Section head
Laboratory head
Departement head
Directorate

PSI

Research Tasks

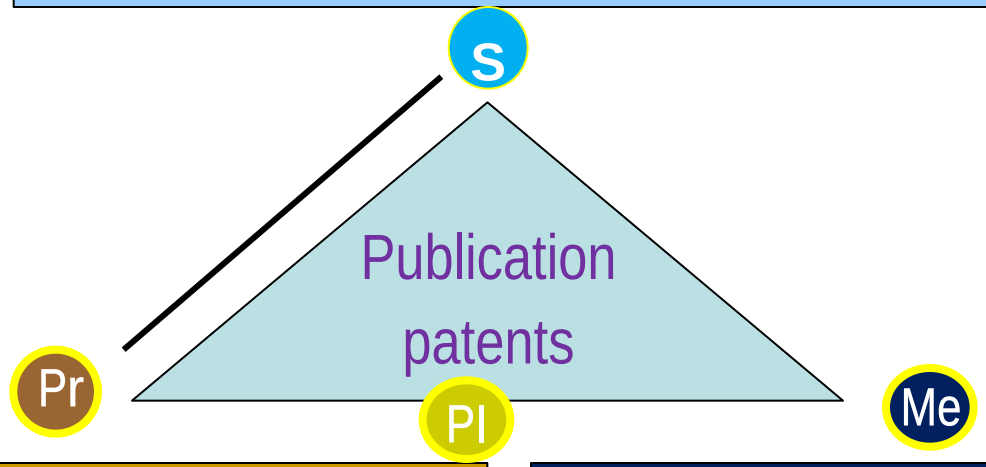
Infrastructure
Instruments
Methods
Safety
Administration
Proposal submission
Scientific experiment
Data processing
Scientific writing
Project management
Reportings
Referee in science
Conferences
Scientific strategy
Technology transfer

Relevant for authorship

Leadership in science

Execute research work

- experiments
- data interpretation & reduction
- contribution to knowledge generation



Lead research project

- Initiate, grant allocation
- Manage project
- Reports & assure output
- Education & promotion

Coach students

- Provide detailed knowledge
- Bring in experiences
- Motivate & correct

Functions and activities of mentors in science

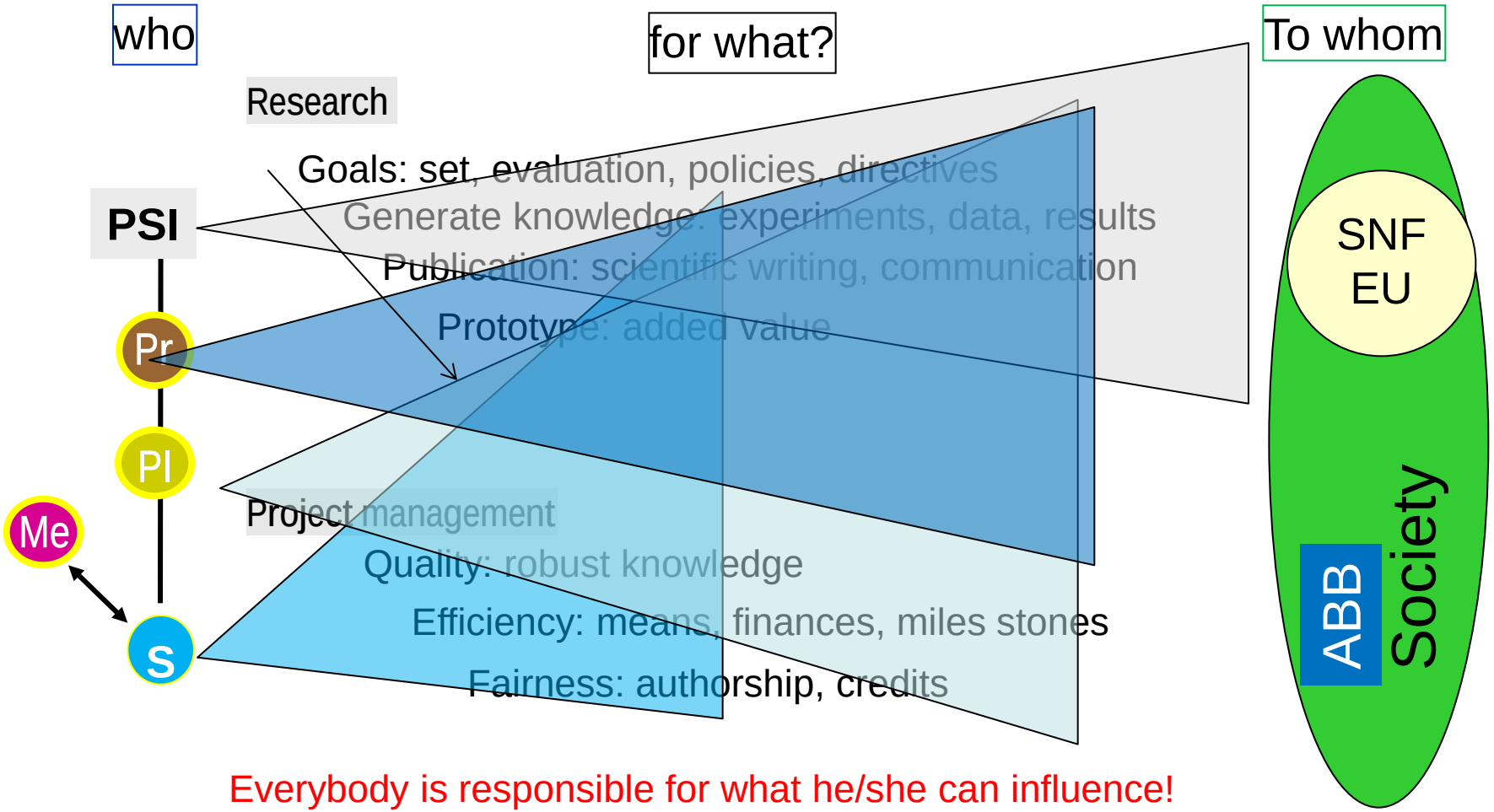
Mentors are trusted **friends** providing advises and help

Advisor
Developer
Interpretor
Protector
Door opener
Coaching
Rule setter
Role model

Organization of work: show, suggest, adjust the working plan
Group meetings: participate, support, correct
Critical interpretation of data: handling out-drops & grey zones
Clear presentation of results: hints, rules, provide support
Behavior: correct, give feedbacks, mediate, hints
Conflicts: do not blame, defense, encourage
Safety: observe, brief, control
Writing: standards of community, judge journal impacts
Teach: rules, guidelines, specific scientific issues
Recommend: literature, courses, conferences
Control: quality of work, achievements, misconduct
Early warning: emerging problems
Supporting: in administrative work, IT-problems, job search
Participate: social events, informal talks, lunch
Provide: dedicated help, material, methods

Responsibilities in research

Different perspectives !

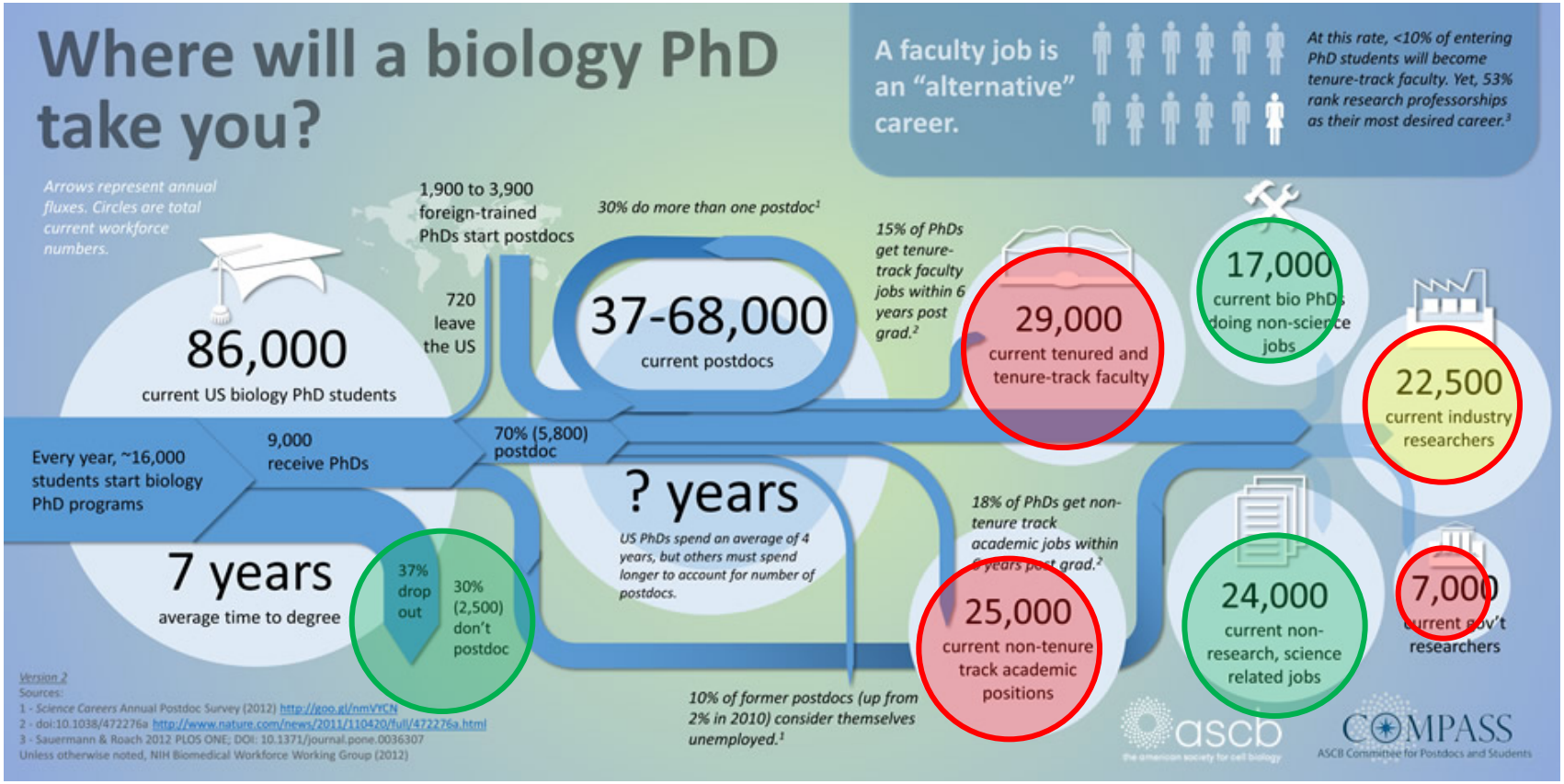


Everybody is responsible for what he/she can influence!

Duties: initiate, plan, support, care, execute, document, control, check, report, assess, redirect, finish, exam, publish, communicate, review, recommend, share

Mentors and job opportunities

e.g. biology



Accountabilities (not shared respons., after actions)

PSI

DIR: research goals, evaluation (Foko, Audits), communication to outside, tech transfer, organization safety & infrastructures, equipment, guidelines, information tools, etc.
HR: personnel contracts, conflicts, salaries, education programs, etc.
LOG: facilities, IT, safety, room infrastructures, cleaning, materials, etc.

Pr

Research topic: relevance, part of scientific community, facilitate interactions, etc.
Research quality: check data interpretation, publication practice, authorship check, **promotion**.

PI

Project management: hiring and leading personnel, instrumentation, room allocation, finances, method development and validation, raw data storage means, data reduction processes, scientific writing & authorship, group meetings, avoiding conflicts, reporting, safety trainings, etc.

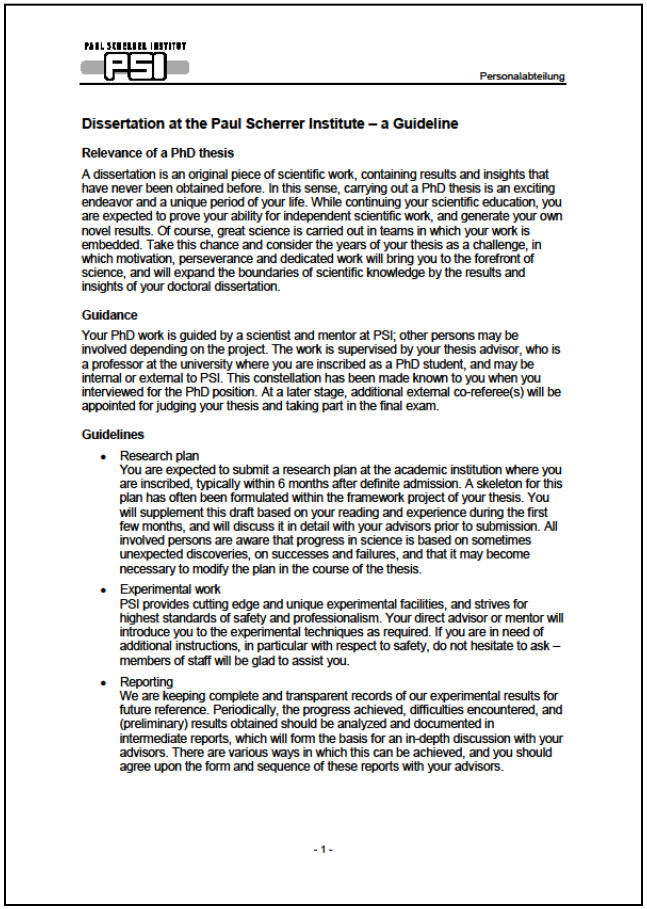
Me

Mentor: develop and support student, protect & coach him/her, set rules, is a role model

S

Research work: execute experiments, include experimental controls, observe critically, participate in meetings, education, instruction briefing & training courses; exchange with scientific community (report, conferences), assure correct raw data storage, data processing & presentation, participate in scientific writing and Tech transfer, etc.

Mentors in the guidelines at PSI



PAUL SCHERRER INSTITUT

Personalabteilung

Dissertation at the Paul Scherrer Institute – a Guideline

Relevance of a PhD thesis

A dissertation is an original piece of scientific work, containing results and insights that have never been obtained before. In this sense, carrying out a PhD thesis is an exciting endeavor and a unique period of your life. While continuing your scientific education, you are expected to prove your ability for independent scientific work, and generate your own novel results. Of course, great science is carried out in teams in which your work is embedded. Take this chance and consider the years of your thesis as a challenge, in which motivation, perseverance and dedicated work will bring you to the forefront of science, and will expand the boundaries of scientific knowledge by the results and insights of your doctoral dissertation.

Guidance

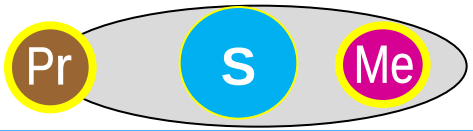
Your PhD work is guided by a scientist and mentor at PSI; other persons may be involved depending on the project. The work is supervised by your thesis advisor, who is a professor at the university where you are inscribed as a PhD student, and may be internal or external to PSI. This constellation has been made known to you when you interviewed for the PhD position. At a later stage, additional external co-referee(s) will be appointed for judging your thesis and taking part in the final exam.

Guidelines

- Research plan
  You are expected to submit a research plan at the academic institution where you are inscribed, typically within 6 months after definite admission. A skeleton for this plan has often been formulated within the framework project of your thesis. You will supplement this draft based on your reading and experience during the first few months, and will discuss it in detail with your advisors prior to submission. All involved persons are aware that progress in science is based on sometimes unexpected discoveries, on successes and failures, and that it may become necessary to modify the plan in the course of the thesis.
- Experimental work
  PSI provides cutting edge and unique experimental facilities, and strives for highest standards of safety and professionalism. Your direct advisor or mentor will introduce you to the experimental techniques as required. If you are in need of additional instructions, in particular with respect to safety, do not hesitate to ask – members of staff will be glad to assist you.
- Reporting
  We are keeping complete and transparent records of our experimental results for future reference. Periodically, the progress achieved, difficulties encountered, and (preliminary) results obtained should be analyzed and documented in intermediate reports, which will form the basis for an in-depth discussion with your advisors. There are various ways in which this can be achieved, and you should agree upon the form and sequence of these reports with your advisors.

- 1 -

Dissertation at PSI



A Guideline

- Relevance: unique period in *your* life, motivation to do the best
- PSI mentor and professor at university; additional co-referents later
- Research plan is required: fix after few months, modify upon experiences
- Experimental work: introductions, safety, ask for additional instruments
- Reporting: secure raw data, intermediate reports, discuss findings
- Ethical guidelines: integrity very important, consult guidelines *yourself*
- Publication: introduction by advisors, submitted before thesis
- Duration: 3-4 y, ambitious, scheduled by supervisor
- Writing the thesis: drafts to advisor, respect relevant standards
- Exams: PSI-seminar, show *your* findings and wider field of research
- After the thesis: records of raw data, additional papers, ownership PSI

PSI guidelines Research Integrity

PSI

The leader of a piece of research, or a research project (the Research Leader) is the responsible person (also called the principle Investigator, PI) who is in charge of defining and achieving 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 therefore.

1. Definitions: scientific community, research leader
2. **Research planning**

2.1 Research planning: objective, restriction, reflection, duties of research leaders, supervision, *conflict of interest*, collaboration

2.2 Executing: data collecting, archiving, generating results

2.3 Publication: ownership, scientific writing, *authorship*, references

3. **Peer reviewing**: conflict of interest
4. **Procedure** in case of alleged violation of misconduct (separate document)

The PI submits a research plan for internal and/or external assessment, if requested. In each case the responsibilities, accountabilities and financing have to be defined prior to the start of research. The PI takes all reasonable efforts to ensure that sufficient resources are provided to be able to successfully carry out an approved research project.

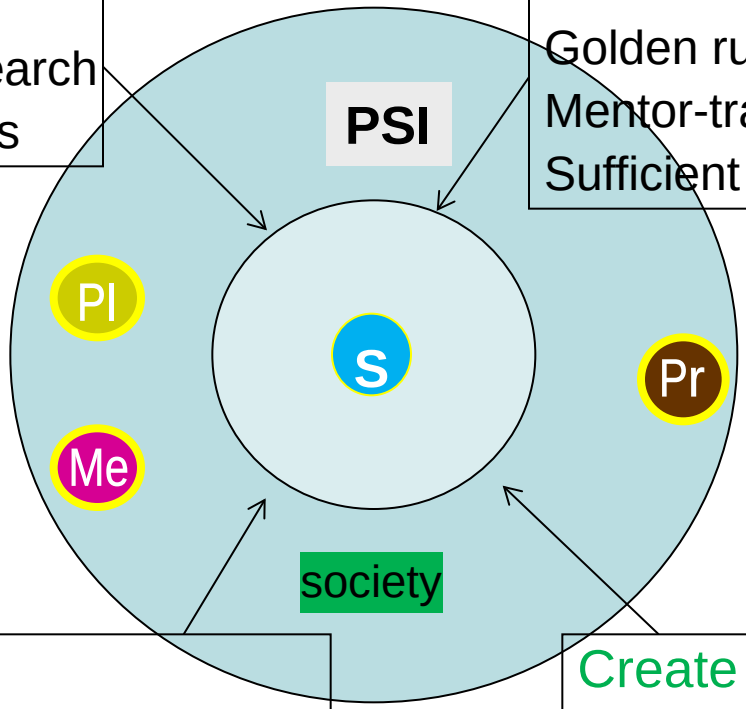
The PSI Directorate takes all reasonable measure that young scientists at all levels are appropriately supported. The doctoral supervisor and adviser are responsible that a written research plan for a PhD thesis is available in due time, according to the specific regulations of the corresponding academic institution, ant that the progress of the project is regularly assessed.

Interactions of players

Ethical principles

Autonomy
Freedom of research
Respect opinions

Fairness
Golden rule: fair distribution pos./neg.
Mentor-trainee relationship
Sufficient resources, time, supports



Avoid damage
to colleagues: promote their work
to scientific community: avoid fraud
to employer and employees: safety

Create benefits
to society: innovation, etc.
to others players: create win-win
to yourself: realize your career

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

Source:PSI Guidelines Research Integrity, inner frontpage

Interactions influenced by differences in:
character, openness, authenticity, loyalty
temperament, mood, empathy, reliabilities
values, (dis)abilities, skills, perception
experience, personal & societal background

Mentor's issues: from HR perspectives

- Hiring process: advertisement, submission, internal communication
- Contracts (with institutions aboard): admission rules, legal issues, salary
- Start (Enter PSI): first days, frictions, problems
- Regulations & compliance: information flow, control perception, training
- Communication: routes, recipients, e-mail – oral – written, frequency
- Responsibilities: mentors in the departments, at universities, training & safety
- Accountabilities: financial issues, materials, data ownership,
- Contracts: duration, prolongation, salary,
- Not publishable results: blaming, complaining, redirection, re-organisation
- Abortion of thesis work: what follows?
- Personal conflicts: with mentor, professor, other team members, different opinions
- Conflict of interest: authorship issues, industrial collaboration, independency
- Leaving PSI: forgotten duties, recommendation letters, later publication (mention PSI)
- Occupation at PSI (evaluation procedure)
- Scientific fraud: procedure of alleged violation
- Statistics: numbers & experiences
- Influences of postdocs, senior scientist, assistant professor, associate & full professor

Orally:

practical

experiencies

Group discussion

50 min, oral feedback by a speaker

1. Select the issue(s) to be discussed.
   Specify according presentation.

2. What is wrong? Analyze it.

3. How can situation be improved? Suggestions