ESF Peer Review Guide
Overview and debate on Part I

Member Organisation Forum on Peer Review

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Outstanding issues for discussing and finalizing Part I

☑ Main scope, spirit and general format

☐ Suggested Peer Review variants for MICT and Breakthrough research (4.9,4.10)

☐ Scoring schemes (4.5.3)

1- Main scope, spirit and general format

❑ Fit-for-purpose:

- ✓ A common reference document

- ✓ Descriptive versus prescriptive

- ✓ Completeness

- ✓ *Redundancies*

❑ General format:

- ✓ logic of the chapters and sections

- ✓ relationship to Part II

2- Peer Review of MICT and Breakthrough Research

❑ Motivation for inclusion:

- Scattered definitions and outlooks

- Need for *commonly understood and accepted* perspective and approach

❑ Suggested approach

- Include one set of definition covering the full spectrum of *pluridisciplinary* research (MICT)

- Propose a peer review general approache accordingly
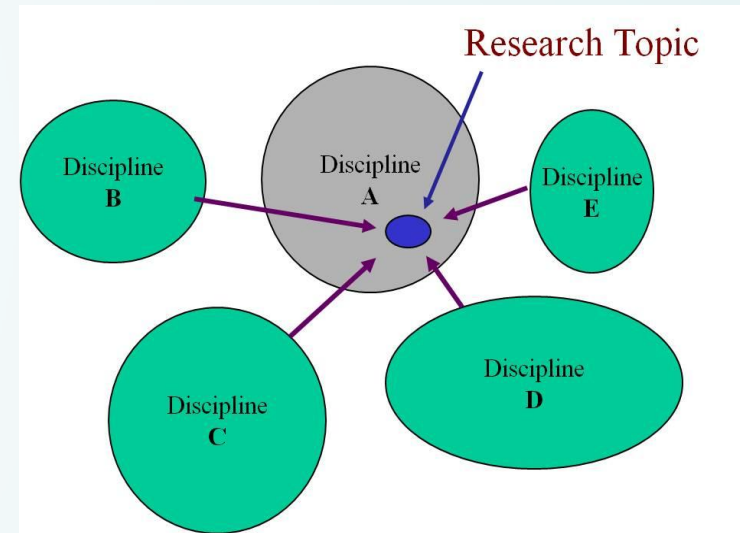
Multidisciplinarity *:

- research topic within one discipline,
- with support from other disciplines,
- always in the service of the driving discipline

Example:
Research Topic: *Drug Discovery*
Host discipline: Pharmacology
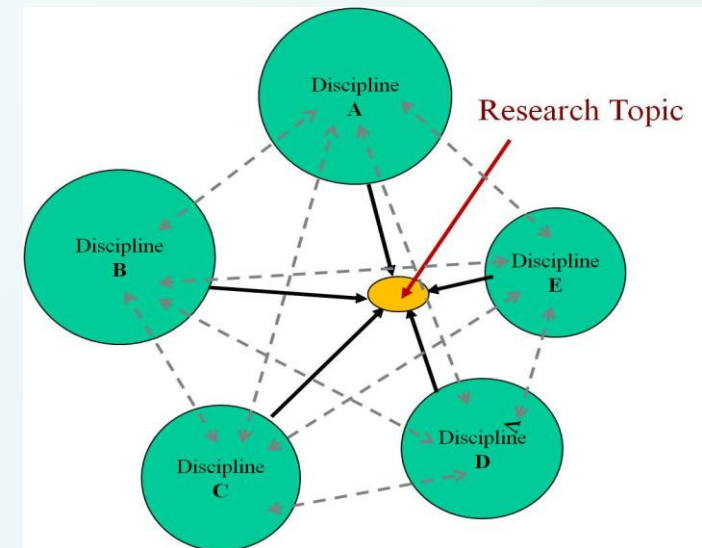Supporting disciplines: Biochemistry, Chemistry, Medicine

Interdisciplinarity:

research topic within multiple disciplines, with expected transfer of methods from one discipline to another
research topic integrates different disciplinary approaches and methods.
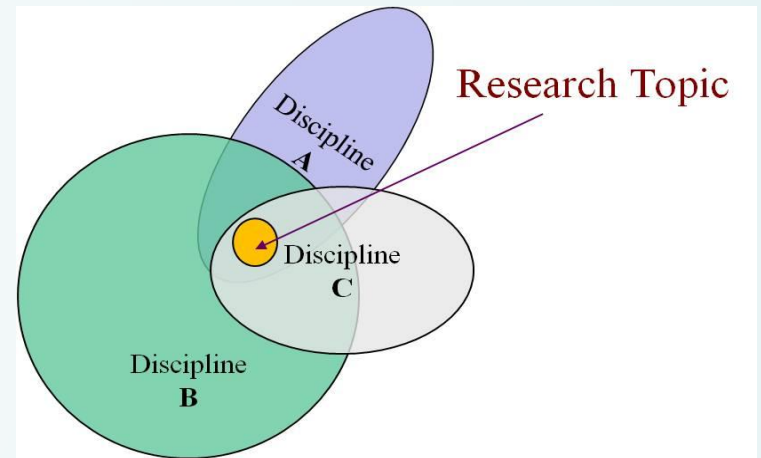**Example:**
Research Topic: Robotics

Cross-disciplinarity:

- Research topic at the intersection of multiple disciplines,
- with commonalities among the disciplines involved

Examples: Bioengineering

Or Biologically Inspired Engineering

Research Topic

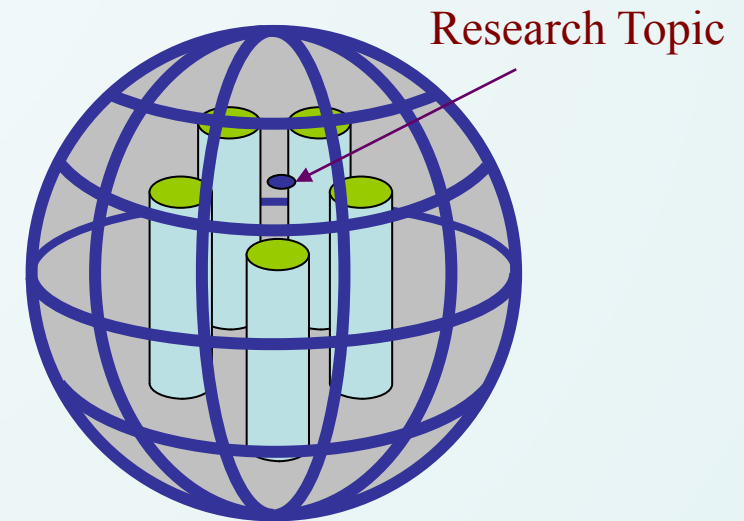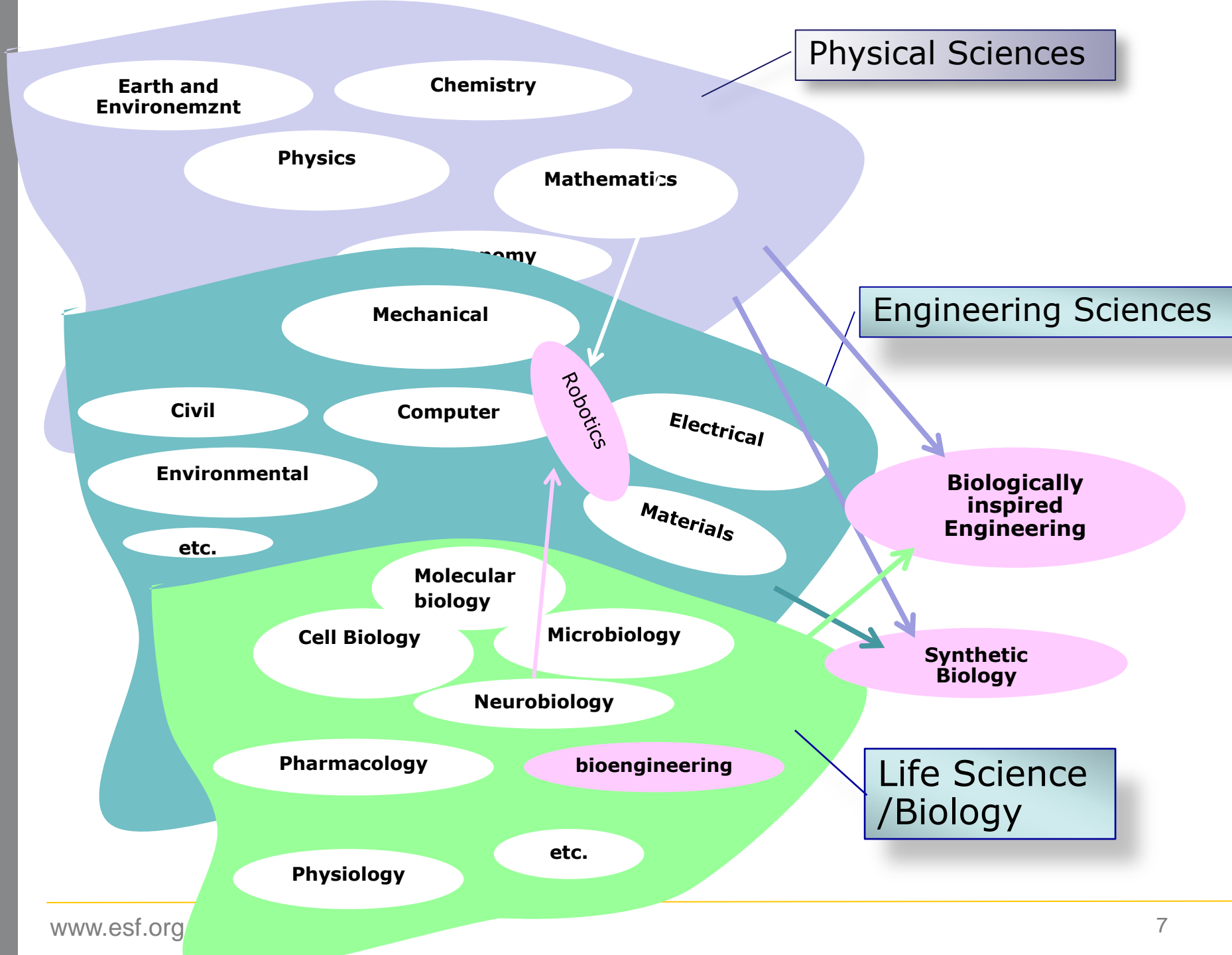Discipline A

Discipline C

Discipline B

Trans-disciplinarity:

- is concerned at once, with what is between, across, and beyond all the disciplines
- with the goal of understanding the present world under an imperative of unity of knowledge.

Example:
Research Topic: Synthetic Biology

Research Topic

Physical Sciences

- Earth and Environemznt
- Chemistry
- Physics
- Mathematics
- Astronomy

Engineering Sciences

- Mechanical
- Civil
- Computer
- Robotics
- Electrical
- Environmental
- Materials
- etc.

Life Science /Biology

- Molecular biology
- Cell Biology
- Microbiology
- Neurobiology
- Pharmacology
- bioengineering
- Physiology
- etc.

Biologically inspired Engineering

Synthetic Biology

For our purpose, how should we define a discipline?

A discipline is a domain of research activity as defined within the organisation's **Research Classification System**

Another strong motivation for harmonising classification systems

Suggested PR Scheme

❑ Key criteria to be addressed at the outset:

▪ Is a proposal genuinely of MICT character?

▪ How and to what degree disciplines interact?

▪ Is it possible to identify a minimum number of *host* or *driving* discipline, versus *complementary* disciplines?

❑ Main recommendations

▪ To do justice to *genuinely* MICT proposals, it is necessary to give the right attention at an early stage

▪ Two or three-stage peer review is necessary

▪ Rebuttals and different assessment criteria

Three Peer Review Scenarios (pp 47-49) (*modalities*)

- **Scenario A**
  - One *host* discipline is c*learly identifiable.*
  - Engagement of other disciplines are *complementary*
  - Resulting scientific discoveries, innovations, impacts are only expected to occur within the host discipline.

- **Scenario B**
  - One *host* discipline may be *identified* however,
  - Linkages to or triggers from other disciplines in motivating the scope of the proposal are strong
  - Cross-fertilization are to be expected not only in the host but also within other disciplines.

- **Scenario C**
  - One *host* discipline is **not** c*learly identifiable.*
  - It is necessary to engage all *main* disciplines implicated to the same levels and in the same manner within the peer review process
  - Strong need for integration is present and cross-fertilisation across disciplines are expected.

Suggested Peer Review approaches
(pp 48)

Peer Review Main Features (A):

- Two-stage
- Three assessments from host and one for each complementing discipline
- One Review Panel with **members** from the **host** discipline

Peer Review Main Features (B):

- Two-stage
- Three assessments from host discipline
- Three assessment from strongly complementing disciplines
- One assessment from any other discipline
- One Review Panel with **members predominantly** from the **host** discipline **plus** others from the strongly interacting disciplines
- **Note**: double-jeopardy

Peer Review Main Features (C):

- Three-stage
- Three assessments from each host discipline
- One assessment from each complementing disciplines
- Disciplinary consensus: One Review Panel from each host discipline
- Final Decision: One cross-discipline Panel or Committee will make consolidation and overall consensus
- Note: double-jeopardy

Main features

- Stronger presence of unpredictability and risk
- Transformative
- Potential for changing/creating /removing paradigms
- Different from pluridisciplinary research

Recommended Peer Review Approach:

- Dedicated instrument
- Strong and specialised staff and/or Committees to flag or select
- A two-phase grant system with two stage peer review

Phase 1- Smaller size grants as exploratory or seed funds to assess feasibility and real potential (responsive mode)

Phase 2- Followed by larger collaborative or individual grants, through direct solicitation

Question: 4-, 5-, or more-step scoring scheme (Pros and Cons ...)

Applicant	Relevance and Impact of the Proposed Research	Scientific Quality of the Proposal	Numeric Score	Alphabetic Score
Outstanding: [definition]	**Highly significant**: [definition]	**Excellent**: [definition]	5	A
Very good: [definition]	**Significant**: [definition]	**Very good**: [definition]	4	B
Good: [definition]	**Average**: [definition]	**Good**: [definition]	3	C
Sufficient: [definition]	**Low**: [definition]	**Moderate**: [definition]	2	D
Poor: [definition]	**Insignificant**: [definition]	**Poor:** [definition]	1	E

Question: 4-, 5-, or more-step scoring scheme

Applicant	Relevance and Impact of the Proposed Research	Scientific Quality of the Proposal:	Numeric Score	Alphabetic Score
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Very good: [definition]	**Significant**: [definition]	**Very good**: [definition]	3	B
Good: [definition]	**Marginally significant**: [definition]	**Good**: [definition]	2	C
Poor: [definition]	**Insignificant**: [definition]	**Poor:** [definition]	1	D

Options to consider

1. We include all three tables

2. We include only one recommended scheme:

   – What would that scheme be?

      • A comprehensive table from which different organizations can select from (9-step scheme)

      • Or one of 4 or 5-step table

Finalizing Part II

☐ Suggested Grouping of Chapters

- New Chapter 5:
    - o Individual Research (Ch 5), together with
    - o Career Development (Ch 7)

- New Chapter 6:
    - o Collaborative Research (Ch 6) , plus
    - o Scientific Networks (Ch 10)

- New Chapter 7:
    - o Centers of Excellence (9) plu
    - o Infrastructures (8)+

Suggested format

Chapter 5: Individual Research Programmes and
Career Development Opportunities

5.1 Purpose and Scope

5.2 Recommended Peer Review Approaches specific to Individual Research and Career Development Proposals

- Stages of proposal submission and PR selection
- Timelines
- Preparatory steps, Call phase and formats, Processing, selection and assignment of Remote Reviewers, Review Panels, and other decision making committees
- Eligibility criteria,
- Assessment criteria,
- Scoring scheme,
- Notes on variants, thematic, responsive, MICT or Breakthrough

Key Questions to the Forum

1. Should we group chapters?
2. Is the suggested grouping appropriate?
3. Is the suggested format as a general guideline appropriate (to maintain consistency between chapters of Part II)