Horizon Europe Doctoral Training Personal Reflections

Professors Council

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Horizon Europe and Doctoral Training

- evolution not revolution
- focus on increasing openness and impact

Horizon Europe and Doctoral Training

- uptake of innovative solutions low

- need to increase end-user involvement and

- create favourable conditions for innovation, including social innovation

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Objectives

- support creation and diffusion of new knowledge, skills, technologies

- strengthen impact of research and innovation and uptake of innovative solutions in industry and society

- foster competiveness and innovation via the European Innovation Council and the European Institute of Innovation and Technology

- deliver EU strategic priorities - such as Paris Agreement on climate change

- tackle global challenges that affect the quality of daily lives

- optimise Programme delivery for increased **impact** within a strengthened European Research Area.

Three pillars

Pillar 1

Open Science

focus on excellent science and high-quality knowledge through

- European Research Council,
- Marie Skłodowska Curie Actions
- Research (E-)Infrastructures

Pillar 2

Global Challenges and Industrial Competitiveness

Six clusters supporting Sustainable Development Goals,

- Health
- Culture, Creativity and Inclusive Society
- Civil security for Society
- Digital, Industry and Space
- Climate, Energy and Mobility
- Food, Bioeconomy, Natural Resources, Agriculture and Environment

Pillar 3

Open Innovation

- focus on scaling up breakthrough and market-creating innovation through one-stop shop for innovators - European Innovation Council

- highly visible research and innovation 'missions' under Pillar 2

- providing direction to the other pillars

- enhancement of European ecosystems of innovation

- support European Institute of Innovation and Technology (EIT).

Mission-oriented research & innovation

"Innovation is a key driver of long-term growth. It can fuel productivity growth, and transformation of production, distribution and consumption across entire economies. But where does innovation come from and what is it for?"

A problem-solving approach to fuel innovation-led growth

'**Governing Missions in the European Union**' by Professor Mariana Mazzucato

Five Mission areas

each with Board and Assembly to help specify, design and implement missions

- Adaptation to climate change including societal transformation

- Cancer

- Climate neutral and smart cities

- Healthy oceans, seas, coastal and inland waters

- Soil, health and food

Open Science

- modus operandi - immediate open access for publications and data (opt-out possibilities for the latter) and research data management plans

- encourage **FAIR** data (findable, accessible, interoperable, and re-usable)

- support a sustainable and innovative scholarly communications ecosystem

- **'impact pathways'** - scientific, societal, and economic to track progress towards objectives

Marie Skłodowska-Curie Actions

- broadly unchanged
- reduction in number of months to 360 i.e. 10 Doctoral Candidates for ITNs (more months for Joint Programmes and Industrial Doctorates)
- strengthen **transferable** skills : **creative** mind, **entrepreneurial** outlook,
- diversity of skills, including teaching
- face current and future global challenges
- match the future needs of the labour market
- enable transmission and take-up of research results by, society and economy
- inter-sectoral and **international mobility**
- good working conditions for researchers

Training central stage in Doctoral Programmes

- detailed
- rigorous
- accredited
- *annual* 'training needs analysis'
- **progressive** training programme
- clear statement of subject and generic competences
- requires high level **staff development**

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The competence challenge?

- General research skills and awareness
- Bibliographic and computing skills
- Teaching
- Work experience - all Doctoral candidates
- Foreign Language skills
- Ethical and legal
- Social understanding
- Skills for engaging with users and maximising the impact of research
- Exploitation of research and Intellectual Property Rights (IPR)
- Communication and networking skills
- Leadership, research management and relationship management
- Personal and career development
- Personal communications
- Business operation – entrepreneurism and innovation
- Marketing, sector awareness and market communications
- Personal networking and social networks – Personal effectiveness/Development
- Strategy development and strategic thinking
- Leadership and team building

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The competence challenge?
- **Academic writing skills**
- **Creative academic writing**
- **Using Social Media for professional purposes**
- **Writing for Publication and Publication strategies**
- **Academic English**
- **Career management - CV and job application writing**
- **Presentation skills**
- **Time management**
- **Grant applications**
- **Project management**
- **Mock interviews**
- **Self-motivation and discipline**
- **Generalist knowledge in the given field**
- **Critical thinking, analytical and writing skills**
- **Developing initiative**
- **Problem-solving, flexibility in the face of change and creative thinking**
- **Learning how to learn**

Applying for projects

Application time lead

- **At least 6-12 months to deadline**

Green light

- **Draft budgeting and budget approval**
- **That is the green light**

Financial support

- **EUopStart grants**

Consortium

- **Old buddies or new pals**
- **Experienced or novices**
- **Draft budget needs to be agreed before starting writing**

Writing the application

- **You are alone in this process**
- **Minimum inputs from partners**

Institutional support

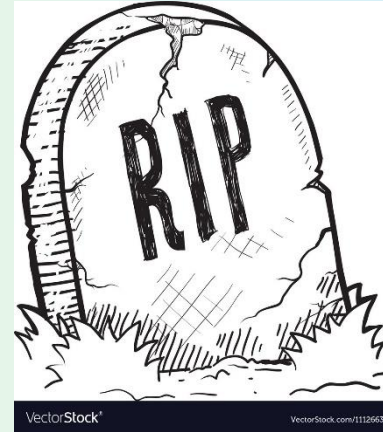- **In writing process**

Opportunity cost

- **1 MSC application: 100 pages, TNR12, double space, 25mm margins + 3 R&Rs (3 years)**
- **3 journal papers: 33 pages each + 3 R&Rs**

Incentives

- **Attractive incentive model is paramount**
- **Avoid double taxation**

Applying for projects

Inter-disciplinarity

"Inter-disciplinary research is a 'kiss of death' for academic career"
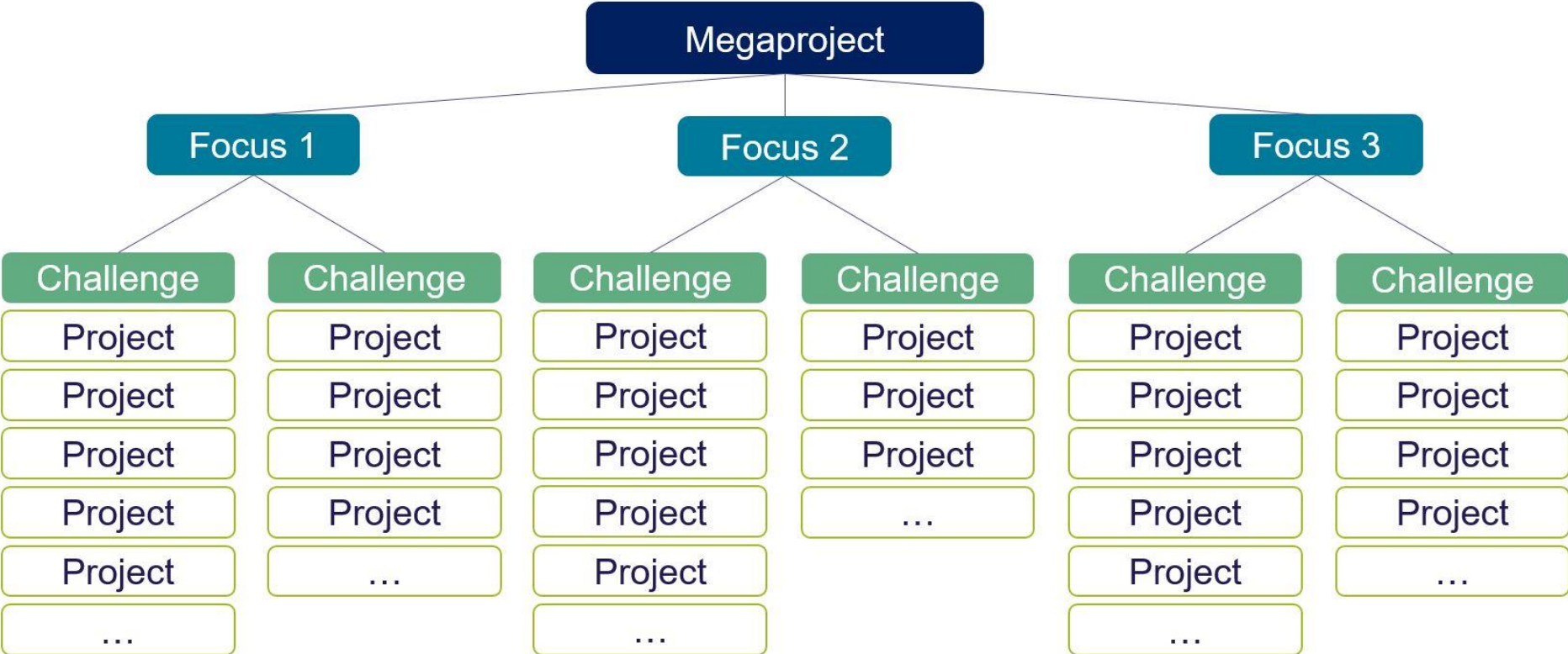
Jones (2019)

Sustainability

Figure 3: Mapping the strings of relations concerning responsible consumption and production
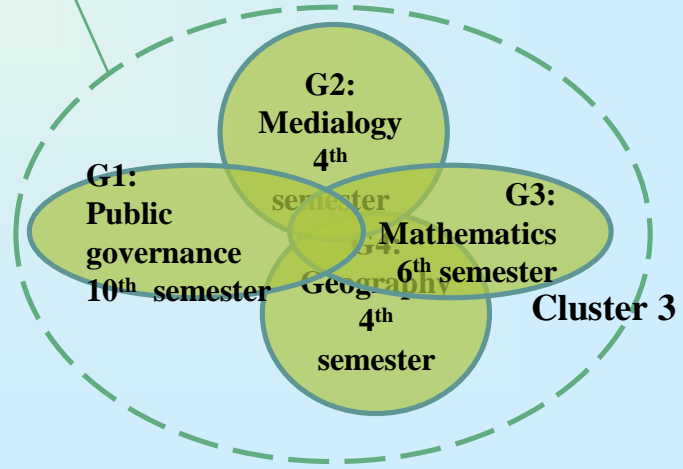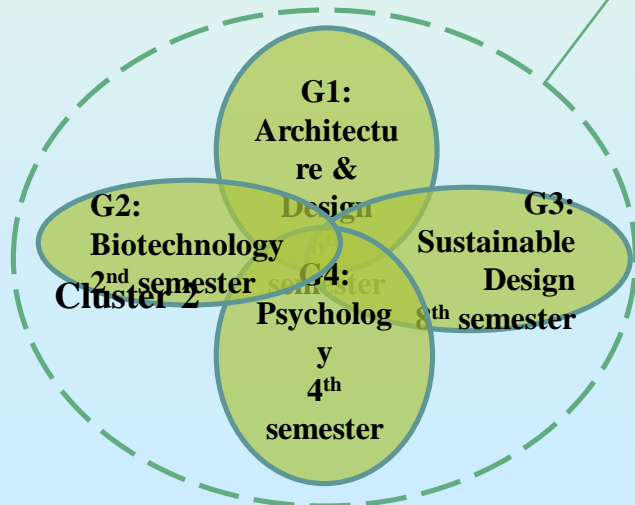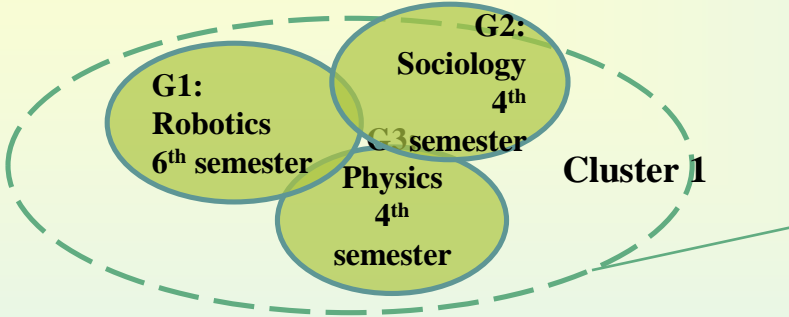
Sustainability

Sustainability

Megaprojects

Cluster 1
- G1: Robotics 6th semester
- G2: Sociology 4th semester
- G3: Physics 4th semester

Cluster 2
- G1: Architecture & Design 6th semester
- G2: Biotechnology 2nd semester
- G3: Sustainable Design 8th semester
- G4: Psychology 4th semester

Cluster 3
- G1: Public governance 10th semester
- G2: Medialogy 4th semester
- G3: Mathematics 6th semester
- G4: Geography 4th semester

Challenge

Focus 1

Sustainability

Figure 2: Sustainability and PBL progression

- **Sem6: Thesis (conceptual or empirical)**
  - 25 ECTS group thesis writing (+Sems1-5)

- **Sem5: Internship**
  - 20 ECTS group project work (+Sems1-4)

- **Sem4: Qualitative research design**
  - 15 ECTS group project work (+Sems1-3)

- **Sem3: Quantitative research design**
  - 15 ECTS group project work (+Sems1-2)

- **Sem2: Theory of science and knowledge creation**
  - 10 ECTS group project work (+Sem1)

- **Sem1: Problem identification and formulation**
  - 5 ECTS group project work

Turcan, 2020