

Action title:

FAIR NETwork of micrometeorological measurements

Action No.: **CA20108**

Acronym: **FAIRNESS**

Action chair: Branislava Lalić

WP No: **2**

WP leader: Mark Roantree

Deliverable writers: Branislava Lalić (Serbia)

Deliverable contributors: Bruna Oliveira (Portugal), Kosana Suvočarev (USA)

Deliverable: **D2.2 – Skill and knowledge enhancement action plan (M12)**

Date: **10.10.2022.**

Societal and cultural changes and science and innovation progress shift with the speed of light. Educational systems all over the World were structured at the time of the industrial revolution and further adopted, particularly after WWII at the time of intensive industrialization (following Sir K. Robinson, 2008). It is impossible to anticipate even one of the fundamental challenges nowadays (water, food and energy security, vector-borne diseases ...), which can't be solved without multidisciplinary teams with a holistic approach. Exceptional knowledge about a particular subject (hard knowledge and skill) is not enough for needed excellence in response to current societal challenges.

During the decades before the COVID-19 pandemic, the exchange of students and scholars had a steep increasing rate. Status of the university of origin (according to ranking lists), average grades, and letters of recommendation are common requests for engagement of further Ph.D./post-doc students, young researchers, or experts in any field. Depending on the institution/company, entrance policy varies from zero testing to entrance tests and CVs, which frequently include research publications. After all, diversity among Ph.D. students and new employees (young researchers) regarding functional **knowledge and skill** is often significant and includes some **gaps**.

The question is whether these gaps relate to soft, hard, or transferable¹ knowledge and skills.

Transferable skills can be used in many jobs and can be hard and soft. Soft skills are commonly considered to be time management, communication, teamwork skill, leadership, and interpersonal skills. Sometimes the difference between hard and transferable skills includes the level of proficiency. For example, for a professional translator, knowledge of many languages is a hard skill, while basic knowledge in social psychology is transferrable skill/knowledge which allows a person to be better in many jobs related to multilanguage translations. On the other hand, for a social psychologist is excellent to speak more languages to communicate more easily with different social groups. **Lack of transferrable skills** can be a significant weakness in further career development. For example, installation and maintenance of automated weather stations is hardly a hard skill for an agronomist. However, if they should be responsible for harmful organisms monitoring and forecasting, it is **very welcome** if a person has any knowledge about maintenance (rain gauge cleaning, sensor position checking) and data management (check if data transfer goes smoothly, data gaps checking, etc.).

Any **plan** that aims to enhance skill and knowledge should recognize two types of gaps: i) hard knowledge and skill gaps related to undergraduate and graduate education; and ii) gaps in transferrable

¹ Hard Skills refer to the knowledge and ability that an individual acquired through work (paid or unpaid) or education. These skills are measurable, are often displayed through technical knowledge to perform a task. For example, hard skills can be knowing how to code in C language, having the ability to conduct research in a field, or even speaking a language.

Soft Skills refer to personality traits and habits that are more or less innate and unique to each individual, representing the interpersonal skills that people need in order to do well in their jobs. Some examples of soft skills are the ability to work well in teams, manage time, or multitask.

Transferable skills refer to more inter-changeable and flexible skills that are applicable to a variety of jobs, such as negotiation skills, problem-solving skills, leadership skills, or resilience.

knowledge and skills. Filling these gaps are two separate but equally important **objectives** from the point of view of both employers and (future) employees.

FAIRNESS knowledge and skill enhancement plan includes the following **activities**: assessment (A1), knowledge and skill program selection and design (A2), implementation (A3), and evaluation (A4).

The knowledge and skill enhancement plan in micrometeorological measurements combines the best practices from education and technology training. Skill enhancement (or training) typically should use a combination of lectures in instrumentation principles of work (20-30%), demonstration (20-30%), and hands-on training (50%). Through skill training, trainees should improve their overall performance in micrometeorological instrumentation (T1), experiment design (T2), data assimilation (T3), critical control (T4), and gap filling (T5). Lack of T1-T5 skills should be overcome using prepared video material, SSs, STSMs, and WSs.

i) Gaps in hard knowledge and skill

If T1-T5 are someone's hard knowledge and skill, then gaps should be identified first. For that purpose, a self-assessment test will be designed for each topic for three levels (basic, medium, and high), and appropriate literature will be suggested to fill gaps in knowledge. According to individual preferences, SSs, STSMs, and WSs can be equally suitable for further knowledge and skill enhancement.

ii) Gaps in transferrable knowledge and skill

If T1-T5 are someone's transferrable knowledge and skill, trainees should start with introductory literature and online lectures for T1-T5 before STSMs, SSs, and WSs. SS should be the main instrument for further knowledge and skill enhancement in this case.