ECFA ECR

Summary on Social and Human factors across WGs

Slides written by Angi Bethani, <u>Elisa Manoni</u>, Erica Brondolin, Josh McFayden,
Julián García Pardiñas, Sarah Williams,
based on thoughts from ECRs

Aim of this slides

- This is a collection of social and human aspects raised and discussed within the different WG's.

- We report impressions/opinions of who have contributed, to make our message be the voice of "all of us", please join the discussion!

Social considerations for future collider scenarios

- **Timescales**: what data do we want to see throughout our careers? Need to keep talent in the field to achieve future projects.

- **Geographical**: challenges associated with travelling to experiments away from Europe?

- **Small experiments vs "straw-man" scenarios**: li the "figure-of-merit" to have a position is the number of papers, people from smaller experiment may be disadvantaged. (It depends anyway on the funding agencies and from country to country.)

Career possibility within HEP

- The proposed experiments, within and outside of Europe, if approved will open up many opportunities in the field for young researchers and Europe should therefore strive to be the **hub for high/low energy physics**.

- As for non-European experiments, for some young scientist, staying **long-term outside of Europe** is not considered as a problem or a disadvantage. Of course, the one of us with families may have a different opinion on this.

Career possibility outside HEP

- **Researcher characteristics that are positively perceived** from the outside: ability to collaborate in large software infrastructures, experience with big data, problem-solving skills.

- Importance of larger and more solid **Alumni networks**.

- **Return from people** that have left the field and gained extra experience outside can be very beneficial, particularly for training.

Can we make visibility more sustainable?

- Nowadays, having visibility within a collaboration is strictly connected with in-person attendance, e.g. to meetings. This means **travelling a lot**!

- To become more **sustainable**: improve remote participation in meetings/workshops, with a better use of technological supports

- **Frequent travels** may also be not possible for **personal reasons**.

Family/work balance (I)

- **Reconciliation of family** and a scientific career is aimed, not only after successful job application but also during application process

- Some ECR feels that **having kids** can slow down (or stop) a career in the research field, above all for women

- For **women**, the age at which you decide to have children is ~ the period in which you are still aiming for a permanent position

- Less **mobility with kids**, at the moment this often means less visibility
    - some countries provide fundings for kids+accompanying person travelling with parents, could this be encouraged?

Family/work balance (II)

- Lack of **women** in physics
  - We do not have statistics in hand, but should be a common issue all around Europe

- Is it due to conflict of career and family? Historical inheritance? Other reasons?

- In an ideal world, everybody should aim for a sane **"work-life" balance**, no matter if you decide to have children or not
  - in principle, you work a reasonable amount of hours and you do what you want/like the rest of the day
  - physics is not like that at the moment, researchers with family load (kids, other familiar to look after) feel/seem disadvantaged

- **"more work"** is not always **"best work"**

Inclusivity and diversity

- Of course diversity must not be the only reason to hire a certain person, but we are still in a world in which diversity is not fully supported
- How to **promote inclusivity** in an increasingly global community?

- A **representative/committee** in each collaboration/facility/institute to which diversity issues can be reported in order to bring improvements should be encouraged
  - concern about the representative in small scale experiments where it seems to be not feasible to have such a representative - due to the lack of neutrality.

Improving work recognition

- The computing/software activities should not be seen only as a means to get analyses but as a **proper research area**.
- An **increased number of devoted awards** inside the collaborations can highly reduce the invisibility of the contributions to software.
- **Encouraging more publications** on software/computing work helps to increase the recognition outside the collaborations.
- **Job descriptions** should explicitly include **software skills**, to increase the awareness on them.

- Same work recognition for software, **accelerator+detector, analysis**
    - **different feeling from different field/countries**
- Increasing the number of **specific career opportunities** would have a big effect.

Software training: keeping up with new innovations

- The rise of heterogeneous computing requires **adequate training of the researchers** (both early and later career).

- This is of **utmost importance for software developers**, that should be either **highly-trained physicists** or **computer scientists** (possibly even from outside HEP).

- In some collaboration, **starter kits** are held and they're very helpful for new-comers. The idea of this can be extended to other bigger or smaller collaborations.

Sharing our knowledge among physics community (I)

- Encourage communication and collaboration between **theorists** and **experimentalists**:
    - In some labs, they are next door; in some experiments, theorists are part of the collaboration.

- Encourage communication and collaboration between **different experiments**, also in form of workshops dedicated to brainstorming and forming of collaborations

- **Share resources** (e.g. computing, analysis techniques, R&D)
    - Happens a lot in small experiments as same people working on different experiments

Sharing our knowledge among physics community (II)

- In some neutrino and cosmic ray experiments, final level **data** are made **public**
  - Final data
  - Suitable idea for experiments in other context.

- Suggest to make the data opened once analysis is finalised and the results published by the collaboration.

- Raw data should not be used as open data, not understandable by people outside the collaboration.

Sharing our knowledge with society

- Sharing our knowledge in a comprehensive way **society** is important to us

- **Video** accompanying (main/some) scientific to explain the big picture.
- Improve experiment **public pages** (style and contents not very attractive)
- Encourage **Masterclasses**-like initiatives to reach students of all grades, use open data in a creative way
- Use of **technology** (Virtual reality), to spread scientific knowledge to the wide audience.
- Train physicists in outreach and get support from **experts**.
- **Technological transfer** to medical science, statistics, data science, machine learning should be encouraged

And now time for discussion

Backup: detailed WG inputs