ECFA SURVEY
‘RECOGNITION OF INDIVIDUALS IN LARGE COLLABORATIONS’

Presented by Stan Bentvelsen
Recognition of individuals in large collaborations - started in April 2018

- Working group initiated - with the idea to organise a community wide survey
  - Calin Alexa (ECFA scientific secretary until summer 2018)
  - Stan Bentvelsen
  - Jorgen D’Hondt (*ECFA chair*)
  - Roger Forty
  - Carlos Lacasta (ECFA scientific secretary since summer 2018)
  - David Milstead
  - Peter Schleper
  - Antonio Zoccoli

Discussion in Alba on July 19, 2018

- Decided to proceed with the survey

“Map the landscape of what is currently being deployed in large collaborations to address the issue of recognizing the achievements of individuals”
SURVEY GENERAL

Web-based survey (survio.com)
- Start date: September 24, 2018
- End date: October 28, 2018

Announcements
- CERN courier
- CERN bulletin
- CERN EP Department email
  - October 3, 2018
  - Follow-up campagnes

Total number of visits: 3194
Total number of completions: 1347
SURVEY QUESTIONS

In total 24 questions, many with sub-questions

- 7 questions on personal information
- Followed by 71 scoring fields in total
  - Rating, ranking, coins

Time to completion:

- Majority took more than 10 minutes

- <1 min. (0.1 %)
- 2-5 min. (0.5 %)
- 5-10 min. (21.6 %)
- 10-30 min. (60.0 %)
- 30-60 min. (8.8 %)
- >60 min. (9.0 %)
ROOT analysis of the raw CSV file

- We have produced many plots, all of them available on indigo together with detailed description of their content

Few postprocessing issues:
- Merging countries with very small number of participants
  - Based on geographic proximity
    - Asia, Latin America, Eastern Europe, Oceania, Africa, …
  - Regions of Europe
    - North, Central (West), South (incl Israel), East, outsideEU
  - Continents of the world
    - Europe, Americas, Asia, Other (Turkey, Middle East, Africa, Oceania)

Invaluable help from Wouter Verkerke (Nikhef) to analyse the data
RESPONSES (FREQUENCY) BY COUNTRY

- European region and continents:

Europe is well represented by many countries
Some people do not want to answer - remain anonymous?
PROCESSING DATA - EXPERIMENTS

Few postprocessing issues

- Similar grouping of experiments
- For cases with few respondents (~1-10) new group names have been introduced - see table

- Added higher-level grouping of experiments
  - Collaboration size:
    - Small: <100, Medium: 100-300, Large: 300-1000, XL: 1000-3000, XXL: 3000+

- The group CMS includes TOTEM
- NuclearHeavyIonOther = PANDA, AGATA, CBM, CLAS, GlueX, COMPASS, ISOLDE, STAR, nTOF, ...
- OtherCosmicRay = HESS, MAGIC, VERITAS, GRAND, ...
- The group KM3NeT includes ANTARES
- NeutrinoOther = SNO, SNO+, T2K, MicroBooNE, DoubleChooz, Borexino, Katrin, JUNO, MINERvA, NOvA, SoLid, ...
- DarkMatter = XENON, CUORE, CRESST, DES, DarkSide-20k, ...
- AstroSpace = EUCLID, FERMI, AMS, NASA, ...
- LowEPrecision = EDM, eEDM, nEDM, Muon g-2, AEGIS, COMET, Mu3e, VES IHEP, ...
- FutureCollandRandD includes as well R&D towards medical applications
- BeamDumpTarget = SHIP, Magix, NA61/SHINE, ...
- Other = GERDA, LEGEND, H1, ZEUS, ... (due to few entries)
Large LHC collaborations well represented
In addition large number of Astroparticle Physics experiments feel somehow connected to the ECFA community
RESPONSES (FREQUENCY) - GENDER AND DISCIPLINE

Discipline
- Particle physics
- Nuclear Physics
- Astroparticle Physics
- Engineering
- Technician
- Gravitational Waves
- Other
RESPONSES (FREQUENCY) BY CAREER STEP

- Student
- PostDoc
- JuniorStaff
- PermanentStaff
- Retirement

Observed difference in response rates w.r.t. general population, e.g. 44% of respondents is PermanentStaff in survey, true fraction HEP-wide is substantially lower.
The group of respondents is not necessarily representative for the full community.
The collaboration guidelines for speakers at conferences allow me to be creative and demonstrate my talents.

General plots:
- Box size corresponds to the number of responses
- Shown is calculated mean with its stat error
- Note that variation of mean lies in range ~ -1, +1
- Lot of information in the spread

Score is assigned to numbers -2 to +2

Question posed in survey as title of histo
CONFERENCE TALKS - 1

The collaboration guidelines for speakers at conferences allow me to be creative and demonstrate my talents

Significant variations observed:
- Large collaborations agree less well to statement
  - E.g. clear difference ATLAS and LHCb
  - people tend to disagree to the statement if the collaboration gets larger
- Quite a few negative scores
- More an issue in Particle Physics than in other fields
CONFERENCE TALKS - 1

The collaboration guidelines for speakers at conferences allow me to be creative and demonstrate my talents.

Disagreement largest for postdocs and junior staff.

Large differences observed between the LHC experiments - for all stages in career.
Overall, I am allocated a fair number of conference talks on behalf my collaboration

Wide spread in these distributions for LHC experiments
Note that the box ‘strongly agree’ is rather empty

Overall, I am allocated a fair number of talks at major conferences on behalf of my collaboration

Large collaborations perceive less fair conference talks at major conferences with large spread
Financial issues show a fairly wide distribution - a fraction of people really worry. However, overall the community seem to be rich enough. Differences between countries are clearly visible.
CONFERENCE PROCEEDINGS

Conference proceedings are important for my academic career

Importance of proceedings is fairly neutral, but spread is large. Students find it most important. In Particle Physics the importance is less than other fields.
VERIFY SUCCES: CONFERENCE TALKS

According to me the following aspects are important to verify the success of a scientist:

Being selected for conference talks

Conference talks are considered to be very important to verify success as a scientist.
Somewhat less for Particle Physics wrt other communities.
Which authorship system does your collaboration deploy?

<table>
<thead>
<tr>
<th>Authorship System</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alphabetic list of authors</td>
<td>1110</td>
</tr>
<tr>
<td>Alphabetic list of authors, but with a sign-up system for each</td>
<td>72</td>
</tr>
<tr>
<td>First author or first author group system</td>
<td>74</td>
</tr>
<tr>
<td>Other</td>
<td>82</td>
</tr>
</tbody>
</table>

For me it is important to be included as author of all collaboration-wide papers

Current situation:
1. Most publications by alphabetic author list
2. It is important to be included as author (somewhat less in large collaborations)
Perhaps the most important result and one of the surprises of this survey:
Alphabetic ordering of the publications seems widely supported -
- among all career stages (especially permanent staff agrees)
- independent of the collaboration size
Want to be recognized as member of collaboration
COLLABORATION PAPERS - 2

2. Additional to the simple alphabetic listing, a sign-up system is to be added where each member of the collaboration can take the responsibility to sign a publication.

3. Compared to the alphabetic listing, a better alternative would be a system using a first-author group.

4. Compared to the alphabetic listing, a better alternative would be to have pre-defined publications that initially motivated the experiment to be signed by all members of the collaboration, and other publications with a shorter list of authors.

The community seems very divided.
No good alternative for alphabetic ordering of authors.
I perceive the assignment of positions with responsibility in my collaboration (e.g. conveners) as fair.

Most cases positive. However, score of +2 is not populated, especially in large collaborations. Postdocs and juniors score less positive.
ASSIGNED RESPONSIBILITY IN SCIENTIFIC COLLAB -2

I perceive that the profiles of positions with responsibility are well known outside my collaboration

I perceive that the profiles of positions with responsibility are well known outside the particle physics community

The further ‘outside’ the inner circle, the less well known our activities are perceived to be known to others
VERIFY SUCCESS: CONVENORS

According to me the following aspects are important to verify the success of a scientist:
Selection as a convenor or equivalent

Convenorship is an important issue, more so for Particle Physics than other disciplines
Females score slightly more positive
I perceive the process of nominations for awards as sufficiently transparent and accessible in my collaboration.

Process of awards fairly neutral. Not many scores are maximal. Large mismatch between ‘receivers’ (e.g. postdocs) and ‘givers’ (retired people).
AWARDS AND PRIZES - 2

I perceive that the profiles of these awards are sufficiently clear and advertised to be appreciated adequately outside the collaboration

I perceive that the profile of these awards are sufficiently clear and advertised to be appreciated adequately outside the particle physics community

Awards perceived not to be well known outside our PP community
I perceive that my technical contributions get adequate recognition in my collaboration.

Similar trends among collaborations
Intermediate career people score lower than permanent staff
I perceive that my technical contributions get adequate recognition in the particle physics community

I perceive that my technical contributions get adequate recognition outside the particle physics community

Again, the perception is that technical work is valued less to the outside world
Scientific notes on analysis methods, detector and physics simulations, novel algorithms, software developments, etc. would be valuable for me as a new class of open publications to recognise individual contributions.

This shows a strong signal:
Community scores very high, in favor of these open publications on novel and creative ideas.
INTERNAL NOTES - 2

**Internal notes (supporting a publication) should be made public**

On this issue the community is very divided.
Is it a good idea to make internal notes public?
One of the largest differences in the mean value between ATLAS and CMS
VERIFY SUCCESS OF A SCIENTIST

Success as scientist via an award is important, no matter what award it is. Innovative work is the most satisfying.
Being contact author for a publication is perceived to be very important as well as excellent letters of reference.
GENDER BIAS

I perceive no gender bias in the recognition of individual achievements

There is a perceived gender bias
The score shows a broad distribution
Is there a cultural aspect?
INDIVIDUAL ASSESSMENTS

Your individual contributions are recognized well among the members of your collaboration.

The high-energy physics scientific community outside my collaboration is provided with sufficient information to assess me.

The non-HEP scientific community is provided with sufficient information to assess me.

Very difficult to be assessed correctly outside the community.
RECOGNITION OUTSIDE THE COLLABORATION?

There are sufficient opportunities for me such that my individual creativity, innovation and efforts are recognisable outside my collaboration.

Recognition outside the collaboration does not score high. Only a few highest scores.
OPEN QUESTIONS

- So far no time to digest the suggestions offered by the open questions

Which aspects or actions do you observe to be effective in your or other collaborations? Please give best-practice examples.

- Comments: 267 in total
  - Student: 37
  - Postdoc: 60
  - JuniorStaff 28
  - PermanentStaff: 137

Do you have additional suggestions on the topic of recognition of individual achievements?

- Comments: 291 in total
  - Retired: 5
  - Student 39
  - Postdoc 75
  - JuniorStaff 35
  - Permanent 131
  - Retired 6
Category of **perceived issues** to address:

- If you are part of a group that has large influence within the collaboration, then you are more supported.
- The better-connected people get easier access to recognition.
- There are two groups of physicists. One group does the hard work and often gets no recognition. The other group is good in talking and socializing, while obtaining credit for work they did not do.
- Too many mediocre people with strong unjustified egos are around.
- There is a notable bias toward people resident at CERN. Talking with many people, presenting in different meetings and being in meetings are more important than actually doing (good) work.
- People can be author on a long list of collaborative publications without doing anything in the collaboration.
- Need more recognition (incl. awards) of “technical” work: detector, reconstruction, trigger software, general software, computing, etc.
Category of potential options to address issues:

- Conference talks are key opportunities to demonstrate excellence. A fair distribution is essential as well as the liberty to indeed demonstrate scientific excellence.
- Support is needed by the management of the collaboration for people doing the work, including innovations and creative solutions to problems.
- Give young people real responsibilities: convenerships, plenary talks at conferences, project leader, etc. These roles tend to be well understood by external evaluators.
- For each collaboration-wide publication, a list of major authors and their achievements is important to be made available on relevant and public web pages. Non-public notes supporting physics papers and including a list of direct authors with a short description of their individual contributions are important.
- Internal notes are valuable to get informed about the contributions of individuals, if and only if they come with a clear description who did what.
- Thesis and other achievement awards within the collaboration are important, but the selection should be based on clear facts, i.e. avoid promotion campaigns to get one person an award through popular vote.
- Requiring people who become conveners to have made qualitatively important technical contributions to the experiment.
- Make sure that new people can become conveners rather than to reinstall previous conveners.
- Public lists of management positions over the years are essential.
Category of points of attention:

- Finding the balance between collective recognition and individual recognition is challenging, yet typically individuals seek career opportunities.
- The system might be reasonable if you stay with your career in the same large collaboration, or a similar one, but much more difficult if you would move to another science field.
- Most 'recognition' centers on giving additional work to the person doing good work (e.g. a conference talk or making that person a convener). It is silly to award a convenership to someone doing good work; they may not have any management skills.
- The quality of research of an individual can only be assessed by a human panel.
- Whatever recommendation you will draw from this survey: Evaluate carefully before introducing new metrics to assess people. Any such system will be misused. A collaboration 'knows' internally who the outstanding people are. These need to be pushed.
Survey was generally well received

- Not many complaints about the survey itself

Encouraging to see that people found time to fill in the survey

- The topic is relevant and deserves attention
- Still, a large fraction of HEP physicists did not respond to survey

The raw data will not become publicly available

- No tracing to individuals possible
- Only generated plots will become publicly available
- Collaboration or organization can ask for additional specific plots
- Contact person: ECFA chair Jorgen d’Hondt
FINAL REMARKS

It is time to reflect on the outcome
  • Excellent start for debate with the panel and with collaborations
This data is valuable and illuminating
  • Continue this process and collect more data

We have to make sure that the messages are picked up
  • Create awareness in our communities
  • Initiate discussions in collaborations - potentially amend their policy
  • Exchange methods and best practice example among the community

Stay tuned for more elaborate analysis and recommendations