(Re-)rebooting

CERN meeting, 30/09/2019
Caterina Doglioni, Lund University
Preliminary discussions with: Antonio Boveia, Vladimir Gligorov, Brian Petersen, Maurizio Pierini
Rating and ranking

- 89.6 / 100 – Funding threshold: 92.8%
- Not sure what the ranking was this year (last year: 16th of ~95)

- Breakdown: 4.5/5 in Excellence (50% weight), 4.5 in Impact (30% weight), 4.4 in Quality of implementation (20% weight)
  - last year: Excellence 4.6, Impact 4.7, Quality of implementation 4.7

- Lund research services: “We are sorry to hear that your excellent proposal did not get funded”

- Post-mortem reflection:
  - we now have more statistics that this funding instrument has a component of luck and randomness
  - but this means we need to even better convince the reviewers that our project is interesting and worth doing
    - as well as: maybe not spending excessive amounts of time refining what’s there
  - it also means we’re probably in “random fluctuations” territory, if by making the proposal better we got worse rating!
Changes: expected/desired

We unfortunately lost Olya, one of the driving forces of SMARTHEP and ATLAS trigger throughout the years. I (+ others) really miss her!

- ATLAS
  - Fast TracKer not a focus of this application anymore → two choices:
    - Change focus to hardware tracking for HL-LHC (Hardware Track Trigger, HTT)
    - Change focus to software tracking for Run-3 and HL-LHC
      - Advantage: possibility of synergies with LHCb through Allen project and CMS Patatrack, but needs discussion first
- LHCb
  - [to be completed during discussion with Johannes/Martino/Vava/Gerhard]
- CMS
  - [postpone the discussion to when Maurizio/Mikko/Henning are available]
- ALICE
  - [probably project unchanged, but postpone discussion to when Caterina is back in Lund]
Rating and ranking: Excellence

Strength(s):
- The project is interesting and timely, in view of the challenges arising from the LHC future high-luminosity program. Research on Machine Learning (ML) and Artificial Intelligence (AI) are also timely and relevant for many other sectors.
- The project includes a good inter-sectoral component, with problems in high energy physics or in the industrial sector to be credibly studied with the proposed tools. Special efforts have been made to fit the project into industrial applications.
- The proposed methodology, based on the latest analysis tools in data science, mostly developed by the LHC collaborations joining forces in this network, is very good.
- Several types of training events, conferences, and special courses will be provided to the ESRs. The training concept meets the inter-sectoral and multi-interdisciplinary requirements of the project.
- Training in soft and transferable skills, to be mostly provided locally, is extensive and well organized. The ESRs could acquire teaching skills as well, and they can get credits for activities like pedagogical courses and supervision of students.
- All the academic supervisors have high and broad scientific qualifications and most of them extensive experience in supervising PhD and master students. There is a good balance between very experienced supervisors and early to mid-career academics.
- Supervision in the non-academic institutions is well coordinated with the PhD granting institutions.
- Synergies between participant organisations are comprehensively introduced. Based on the already existing successful co-operations and connections both between the academic and non-academic partners, the proposed collaboration will result in a fruitful project implementation.

Weakness(es):
- The innovation content of the proposal is limited to incremental advances brought in by joining forces between all the LHC collaborations.
- Tools to unravel presently challenging fundamental research issues, like dark matter properties, are only generically described. There is no clear discussion of the claimed discovery potential for not yet theorized phenomena.
- The rationale for not having all the ESRs undergo non-academic training is not clearly explained.

Dear reviewer, this is not an ERC Starting Grant, this is PhD students needing a thesis!
- Could possibly think that sharing Allen project as the non-incremental improvement for LHCb, but we can’t demonstrate advantages within ATLAS/CMS right away...

We were suggested to reduce the details due to lack of space...this year we can try and add some “sensitivity” plots (mostly published)

This was not a negative comment last year (where even fewer ESRs had no industrial secondment). Are the industrial partners willing to host more secondments? Hard to see how we’d enlarge the network...opinions?
Rating and ranking: Impact

Strength(s):
- The proposed training in up-to-date ML and other data science developments will strongly enhance the researchers’ employability in both high energy research and in the non-academic field.
- Soft and transferable skills acquired by the ESRs will be valuable assets towards employability.
- The experience in the academic and non-academic sectors (data science and real-time big-data analytics) offered to the majority of ESRs is a very good example of how to structure a future Europe-wide doctoral program inclusive of research and non-academic training.
- The beneficiaries and partners are recognised internationally and are in a good position to contribute to the structuring of doctoral training. The non-academic sector gives a very valuable contribution through the high-level beneficiaries and partners.
- There are good plans for international high impact dissemination in place, in line with the very high standard established by CERN, and all the experimental collaborations participating in this project.
- The project will provide valuable research results in terms of software and peer-reviewed papers in high-impact journals and white-papers.
- There are clear applications outside of the core R&D programme.
- The network will exploit the many and excellent channels for communication to the public developed by CERN and in the HEP community.

Weakness(es):
- Given existing publication rules in the experimental collaborations, it is not clear to what extent joint results from cooperative work from different collaborations will be published as joint peer-reviewed articles.
- Plans for exploitation of IP are vague and good market awareness is not demonstrated.

This can be clarified following updates on publication policies within ATLAS and CMS. Also, much work & discussion from HEP Software Foundation since last year!

at odds with this...

This needs help from the industrial partners, although we make it clear that those ideas are not marketable straight away
Rating and ranking: Implementation

Strengths:
- The work is clearly described, tasks identified and structured in logical order.
- Individual objectives are presented in detail.
- Management structures are clearly described and are both very appropriate and complete.
- Various monitoring boards and management boards will be effectively checking the progress of the ESRs and their research progress.
- Gender and minority issues are appropriately and thoughtfully examined, and taken in adequate consideration during the recruitment phase and through the network life.
- A clear risk management strategy is introduced.
- There are advisory panels with identified world-class experts.
- The CERN laboratory offers all the necessary, and its unique infrastructures needed to perform the project.
- Beneficiary institutes and the secondment hosts help with accommodation, visas and practical issues.
- There is good access to high quality data.
- Good commitment to the program is present from all the participants, including both industrial and research organisations.

Weaknesses:
- The need for extension of the network to third country partners who will provide training and secondment expertise in their offices at CERN is not well justified.
- Continency measures for a major risk (labelled R7) are only generically described.

Maybe we have been too honest? in 2018, this risk wasn’t there and no one complained...

US partners: would you be ok with being shifted to “advisory committee”? Same level of involvement in network, but no official secondments

R7 Poor performance of planned algorithm/infrastructure 3,4
(medium)

Since some of the techniques used are of a high-risk high-gain nature, this is the most relevant risk for the ESR progress. We will review and downgrade specifications as necessary, with focus on retaining most used and exploitable characteristics, document work done and reevaluate ESR PCDP by reassigning tasks within the network objectives.
How to proceed

• [everyone] think if Caterina should be coordinator...happy to continue, but maybe someone wants to step up?
• [coordinator] contacts those who did not respond to the doodle to see if they’re still interested in staying in
  ○ Note: it’s the third resubmission, so the main risk is losing momentum - we all need to be on board & enthusiastic for a
    successful ITN, otherwise we could turn to other funding tools :)
• [coordinator] keep discussing with individual PIs for changes in main text/project content
• [volunteer #1] go through the guide for applicant new template (see here) to check for changes
• [volunteer #2] take responsibility for collecting letters of commitment, since template this year has changed
• [coordinator] prepare google doc templates for changes to the projects & send around, by early October
  ○ [everyone] go through the google doc by October 20th so that writing can happen
• [coordinator, others] write and provide a first draft to CERN / Lund Research Services by November 30th (note: this may
  change slightly depending on when CERN wants it)
• [coordinator, others] CERN (or elsewhere) in-person writing time can be scheduled for early December
• [coordinator, others] have nearly all material ready by Christmas break
• [if coordinator == Caterina] this year, we need to have everything done by January 1st (teaching + exams overlap)
• EU deadline: January 14th