

Proposal Evaluation Form



Research Executive Agency

7th Framework Programme for Research

EVALUATION SUMMARY REPORT

Call : FP7-PEOPLE-2011-IOF
Funding Scheme : MC-IOF International Outgoing Fellowships (IOF)
Proposal number : 299180
Proposal acronym : POTERE
Duration (month) : 36
Proposal title : Precise Online Tracking in European Research Experiments

N.	Proposer name	Country	Type	Total cost (€)	%	Grant requested (€)	%
1	UNIVERSITA DI PISA	IT					
2	PRESIDENT AND FELLOWS OF HARVARD COLLEGE	US					
Total :							

Abstract :

An unprecedented set of events will dominate the experimental exploration of the fundamental constituents of the Universe in the next years; at the top of the list is the Physics programme at CERN's Large Hadron Collider (LHC), followed by its upgrade called the Super LHC (SLHC). LHC is in an excellent position to give conclusive answers to many open questions: observation of the Higgs boson and verification of the symmetry breaking at the electroweak scale. Over the next years an impressive harvest of data will be collected and analyzed at LHC.

At the same time R&D at the technological frontier will be pursued for SLHC. The observation of interesting events will be more complicated than in the past. Not only they are rare and hidden in an extremely large background, but the single event will be confused by many overlapping soft events (pile-up).

Tracking devices play an essential role fighting against so high densities of particles, in particular the Silicon devices, the preponderant tracking technology today. A drastic real-time data reduction must be obtained. This makes on-line event reconstruction a critical component of any hadron collider experiment. The trigger must be extremely intelligent and powerful. This project directly addresses the main technological challenges of hardware, software and data surrounding tracking issues at trigger level.

The tracking trigger processor FTK for the ATLAS experiment at LHC is a system made of FPGAs, ASICs and software components, using cutting-edge technologies and techniques. FTK enables ATLAS to fully use tracking information in trigger decision. I will work on (A) design optimization, FTK tests on real data (B) development of software for management, monitoring, diagnostics and control of FTK (C) development of trigger selections based on FTK tracks and new analysis on collected data to confirm the advantages predicted by the FTK use.

Marie Curie International Outgoing Fellowships (IOF)

SCORING

Scores must be in the range 0-5. Decimal marks may be given.

Interpretation of the score:

0- The proposal fails to address the criterion under examination or cannot be judged due to missing or incomplete information.

1- Poor. The criterion is addressed in an inadequate manner, or there are serious inherent weaknesses.

2- Fair. While the proposal broadly addresses the criterion, there are significant weaknesses.

3- Good. The proposal addresses the criterion well, although improvements would be necessary.

4- Very good. The proposal addresses the criterion very well, although certain improvements are still possible.

5- Excellent. The proposal successfully addresses all relevant aspects of the criterion in question. Any shortcomings are minor.

Criterion 1. S&T QUALITY (award)

(Threshold 3.00/5.00)

Mark: 4.60

Strengths of the proposal:
The proposal clearly states its goals and gives an excellent review of the current status and issues pertaining to online triggering.
This is a strong proposal designing a powerful parallel processor based on FPGA and cell ASICs. Clearly this is a relevant area of R&D today.
The research methodology is appropriate with detailed information given on the various stages of the project.
The research project is a development with many possible applications outside the field of high energy physics, e.g. medical research.
The outgoing host has excellent expertise and facilities.
The host for the incoming phase has excellent capabilities in HEP tracking detector construction and commissioning.

Weight: 0.25

Weaknesses of the proposal:
The FTK project is large and it is not clear how the project will advance when the candidate is at Harvard (even though it is clear that the candidate will benefit from working at Harvard).

Issues to be addressed when assigning an overall mark for this criterion:

- Research/technological quality, including any interdisciplinary and multidisciplinary aspects of the proposal.
- Appropriateness of Research methodology and approach
- Originality and innovative nature of the project, and relationship to the 'state of the art' of research in the field
- Timeliness and relevance of the project
- Host research expertise in the field (outgoing and return host)
- Quality of the group/ supervisors (outgoing and return host)

Please use the following structure in your comments to this criterion:

- Strengths of the proposal (in bullet point structure):
 - Weaknesses of the proposal (in bullet point structure):
 - Overall comments:
- (reflecting the relative importance of the strengths and weaknesses above mentioned)
 (copy the text above in the comment box)

Criterion 2. TRAINING (award) (Threshold 3.00/5.00)

Strengths of the proposal:
The training objectives are well thought out and written with impressive detail.
The fellow will increase his knowledge of electronics and system design in general by making use of the Harvard electronics group.
The additional training potential of the host institute is excellent, with many classes and seminars of extremely high interest and quality.
Host has demonstrated excellency in training visiting fellows and in this particular case the Head of Harvard Physics department will supervise the fellow.

Mark: 4.10

Weaknesses of the proposal:
The proposed training is rather technically oriented and the data to be analyzed will be taken at CERN. It is therefore not obvious that the choice of the outgoing host lab is the best choice.
The proposal states that some Harvard personnel left the project while waiting for the approval. This raises questions concerning the group's commitment to the FTK project.

Weight: 0.15

Issues to be addressed when assigning an overall mark for this criterion:

- Clarity and quality of the research training objectives for the researcher
- Relevance and quality of additional research training as well as transferable skills offered*
- Host expertise in training experienced researchers in the field and capacity to provide mentoring/tutoring (outgoing and return host)*

Please use the following structure in your comments to this criterion:

- Strengths of the proposal (in bullet point structure):
 - Weaknesses of the proposal (in bullet point structure):
 - Overall comments:
- (reflecting the relative importance of the strengths and weaknesses above mentioned)
 (copy the text above in the comment box)

Criterion 3. RESEARCHER (award) (Threshold 4.00/5.00)

Mark: 4.00

Strengths of the proposal:

The fellow's research experience is well documented with numerous papers and contributions to conferences. The researcher gained his Ph.D after working on the SVT and other associated electronic projects for the CDF experiment. Although LHC and especially sLHC are much more complex, his work on the SVT gives him an excellent basis for the FTK project.

The match between the fellow's profile and the project is excellent.

The interdisciplinary setting at the outgoing host will be very stimulating for the fellow.

The project has excellent potential for increasing the fellow's knowledge in hardware design.

Weaknesses of the proposal:

The fellow's CV provides no clear evidence of relevant project management roles.

The objectives related to physics analysis are overly optimistic.

The fellow's responsibility for the vertical slice at ATLAS conflicts with his training objectives while at Harvard.

Weight:

0.25

Issues to be addressed when assigning an overall mark for this criterion:

- Research experience
- Research results including patents, publications, teaching etc., taking into account the level of experience
- Independent thinking and leadership qualities
- Match between the fellow's profile and project
- Potential for reaching a position of professional maturity*
- Potential to acquire new knowledge

Please use the following structure in your comments to this criterion:

- Strengths of the proposal (in bullet point structure):
- Weaknesses of the proposal (in bullet point structure):
- Overall comments:
(reflecting the relative importance of the strengths and weaknesses above mentioned)
(copy the text above in the comment box)

Criterion 4. IMPLEMENTATION (selection)

(Threshold 0.00/5.00)

Mark: 4.10

Weight: 0.15

Strengths of the proposal:

The quality of the infrastructure of both the outgoing and return hosts is very high. Both hosts participate in international collaborations and have close links with external labs (CERN).

The work plan is well documented and has a good degree of parallelism, making it resilient to possible delays in the schedule.

The researcher will benefit of the use of excellent facilities at both sites.

The practicalities of the return host for the fellow are out of the question.

The outgoing host (Harvard) provides excellent support for visiting scientists.

Also the fellow has already spent some years at FermiLab and is used to an English speaking environment.

Weaknesses of the proposal:

No explicit reference is made to the current development of the new AMchip04.

The FTK project is a large collaboration that will naturally gravitate in the close proximity of the ATLAS detector, while the applicant will be based at Harvard.

It is not clear from the proposal that the physics case studies will be performed by the candidate, who will also have to manage many pressing hardware issues.

Issues to be addressed when assigning an overall mark for this criterion:

- Quality of infrastructure / facilities and International collaborations of host (outgoing and return host)
- Practical arrangements for the implementation and management of the research project (outgoing and return host)*
- Feasibility and credibility of the project, including work plan
- Practical and administrative arrangements, and support for the hosting of the fellow (outgoing and return host)*

Please use the following structure in your comments to this criterion:

- Strengths of the proposal (in bullet point structure):
- Weaknesses of the proposal (in bullet point structure):
- Overall comments:
(reflecting the relative importance of the strengths and weaknesses above mentioned)
(copy the text above in the comment box)

Note : No threshold, Weighting: 15% split where appropriate between the 3rd country institution and the European host

Criterion 5. IMPACT (award)	(Threshold 3.50/5.00)
-----------------------------	-----------------------

Mark:	4.00
-------	------

Weight:	0.20
---------	------

Strengths of the proposal:

The idea is to import US knowledge - especially of FPGA programing and ASIC design into Europe. The circuitry needed for the FTK will be advanced and innovative and therefore enhance European excellence and competitiveness.

The fellow will acquire further competence in electronic design and project management.

The outgoing institute's credentials will benefit the curriculum of the fellow.

The proposal reinforces existing links between the two host institutes.

Weaknesses of the proposal:

Learning about the USA research style (which the applicant anyway already knows having worked in CDF) can not be considered as a transfer of scientific knowledge.

The contribution to career development is not evident since the applicant will not gain, in a professionally significant way, complementary skills during the outgoing fellowship.

Proposed outreach only outlines contacts with the medical profession and the HEP community in a generic fashion.

Issues to be addressed when assigning an overall mark for this criterion:

- Potential of acquiring competencies during the fellowship to improve the prospects of reaching and/or reinforcing a position of professional maturity, diversity and independence, in particular through exposure to transferable skills training*
- Contribution to career development or re-establishment where relevant*
- Potential for creating long term collaborations and mutually beneficial co-operation between Europe and the other third country
- Contribution to European excellence and European competitiveness
- Benefit of the mobility to the European Research Area
- Impact of the proposed outreach activities*

Please use the following structure in your comments to this criterion:

- Strengths of the proposal (in bullet point structure):

- Weaknesses of the proposal (in bullet point structure):

- Overall comments:

(reflecting the relative importance of the strengths and weaknesses above mentioned)

(copy the text above in the comment box)

***Sub-criteria to be evaluated in the light of the principles of the 'European Charter for Researchers' and the 'Code of Conduct for the Recruitment of Researchers'.**

RECOMMENDATIONS FOR NEGOTIATION AND/OR INDICATORS TO MONITOR PROGRESS OF PROJECT:

TOTAL SCORE	(Threshold 70.00/100.00)
-------------	--------------------------

Total:	83.60
--------	-------

Ethical Issues

Does this proposal raise ethical issues?

No