Questionnaire concerning realization schedule of the **PANDA Computing**

The questionnaire has two parts.

We request a response time until April 30 for questions 1-7, compiled in part 1.
For the rest of the questions, part 2 of the questionnaire, we ask a response until May 20.

The scrutiny group, appointed to review the project status and make physics-driven suggestions for a possibly stretched installation schedule towards the full PANDA detector, has worked out this questionnaire. This includes an understanding of the current status and progress of all PANDA components. PANDA Computing comprises all hardware, middleware, and software after DAQ and Event Filter, that is necessary for detector commissioning, to run the experiment in the first year, to process beam and MC data, and to provide an effective infrastructure for physics analysis.

Please understand the following:
   - Depending on the progress you have achieved some of the questions may appear obsolete and some of the answers may appear evident. Anyhow, in order to get a complete overview, we ask your brief answers which may be amended with your special notes.
   - None of the following questions is intended to question your expertise. On the contrary we trust and rely on your qualified response. If any of the wordings is not to your liking, take our sincere apologies. The questions are meant and designed to scrutinize the progress of PANDA.
   - You may not feel like answering all questions because sometimes several questions may touch upon the same issue, as you understand it. In these cases, just indicate briefly where you put the information.
   - While some of the questions may be perceived as very demanding by your group, we feel that most information is not different from what you might provide with a TDR, a funding application or the like. If you think that some of our requests are not necessary, just let us know and please add a brief explanation of your views.

Thank you for the cooperation and your valued input to the process needed to consolidate PANDA.

Part 1

Computing system manager(s):

1. Status of the Computing TDR:
    When do you expect a draft for the Computing TDR?
    Are results of feasibility studies available for the TDR?
    Do you plan additional reports (e.g. technical readiness report) beyond the TDR?

2. List the research groups collaborating to realize the PANDA Computing system:
    cooperations within PANDA
    cooperations within or outside of FAIR

3. How have the research groups involved in Computing developments documented their progress and disseminated relevant information?
    computing relevant theses
    computing relevant papers
    contributions/year on specialized conferences (e.g. CHEP)
    availability (e.g. PANDA wiki) of internal (technical) reports (PANDA notes)

4. Have you exploited synergies to achieve the most efficient progress?
    On which level have you sought synergy with particle physics experiments outside FAIR?
    On which level have you sought synergy with other FAIR systems?
    Example: common infrastructure for distributed computing

5. Groups and manpower involved:
    How many persons (FTE) in which groups are engaged in computing developments for PANDA?
    How many of these persons (FTE) are involved in the development of the PANDA offline software?

6. Financing of manpower and investments:

        What is the total budgeted amount (% of needed) for the PANDA Computing:
- amount of money already spent by 1.1.2014
- amount of money available to be spent now
- amount of money secured by firm commitments (define "firm")
- amount of money applied for at which agency
- amount of money intended to be asked from which agency?
- amount of firm in kind contributions
- possible sources of additional funding needed

        Please attach a graph of the funding profile   (2014-2019).
        Please attach a graph of the manpower profile (2014-2019).

7. PANDA Computing design:

        Is the design of the PANDA Computing concerning hardware, software and the software development process clearly defined?
    Example: are you using agile techniques?
        How is the design of the PANDA Computing documented?
        Are the responsibilities concerning computing for all PANDA detector systems clearly assigned? (To whom in which group?)

Part 2

8. Timelines of work packages for PANDA Computing:

        Please provide the resource-loaded schedule (cf. attached example).
        What are the shortcomings on FTE or other non-invest resources?
        Which time-consuming part could be shortened by distributing work, e.g. to companies (added expenses?)?
        Which time-consuming workpackage could be accelerated with additional money?
    Explanation: Please provide the tables as an attachment. An example for a toy project is attached. If you feel that any of the suggested ways of compiling these tables are too fine or too coarse (e.g. the time bins), please use your project's native granularity!

9. Availability of key components:

        Have the hardware and software technologies of key components been developed to satisfy your needs?
- What is the schedule for additional developments?

    Example: hard- and software for parallelization on GPUs and on multicore CPUs

10. Technical feasibility of the Computing system:
    Are sufficient resources available for feasibility and prototype tests?
    What are the hardware resources and the manpower available to support system tests at FZJ in 2015/16?
    Will you be able to setup the complete computing system until 1.1.2018? (or until when?)
    o   Which companies are involved?

11. Do you see an option for only partly installing the computing system on day-1 and a later upgrade?
    Which are the parts that definitely have to be in place on day-1?
    Which components could be added or expanded later?
    Would this reduced setup lead to savings in finances?
    o   How much on day-1?
    o   How much on the long run?
    What would be the consequences for manpower resources?
    What would be the penalty in rate performance?
    What would be the penalty on the long run in terms of extra manpower or loss of time?
    What would be the penalty or advantage for your funding situation?
    Explanation: please quantify "penalty" in terms of % degradation w.r.t. optimum performance.

12. Risk assessment:
    When were possible risks signaled?
    Which of the risks may prevent a completion before 2018?
    Which measures were already taken to counteract possible risks?
    Which additional measures are envisaged?
    Example: alternatives for the distributed computing

    Explanation: We will make use of risk tables collected by the Technical Management. However, the input here may serve to judge the situation of the computing like other particular sub-system as a whole. We need to see the status of the risk evaluation and whether counter-measures have already been initiated.