

Minutes of the TIARA 6th Collaboration Council meeting

CERN, 2nd of March 2017

GC participants:

In person : Roy Aleksan (RA, CEA), Jean-Luc Biarrotte (JLB, CNRS), Phil Burrows (PB, STFC) , Frédéric Bordry (FB, CERN), Antoine Chance (AC, CEA) representing Pierre Védrine, Tord Ekelof (TE, UU), Terence Garvey (TG, PSI), Peter MacIntosh (PMI, STFC) representing Grahame Blair, Piotr Malecki (PM, IFJ-PAN) representing Marek Jezabek, Eugenio Nappi (EN, INFN), Jose-Manuel Perez-Morales (JMP, CIEMAT), Daniele Sertore (INFN), Maurizio Vretenar (MV, CERN).

By video: Susanna Guiducci (SG, INFN), Ralph Assmann (RaA, DESY) representing Reinhard Brinkmann (RB, DESY)

Invitees: Gijs De Rijk (GDR, CERN), Pablo Garcia Tello (PGT, CERN), Gerardo D'Auria (GdA, Sincrotrone Trieste ScpA), Marcos Dracos (MD, CNRS), Walter Wuensch (WW, CERN)

Excused: Oliver Kester (OK, GSI), Leonid Rivkin (LR, PSI)

Welcome (JMP)

The quorum is reached. All documents relevant for the meeting are available on the CERN indico website at the following link: <https://indico.cern.ch/event/615426/>

Approval of agenda (All)

The agenda is approved.

Approval of the minutes of the 5th meeting on October 18th, 2016 (All)

The minutes are approved.

General information (RA)

Status past and future calls

RA reminds the past and on-going activities. 4 EC projects are on-going presently: EuPRAXIA, EuroCirCol, EuCARD2, AMICI. The three first will report at the meeting. Since AMICI has just started, it will be presented at the next meeting.

RA presents the next call INFRAINNOV-01-07 (deadline 29 March 2017) at which the ATTRACT project will be presented (see P. Garcia Tello later). RA recalls that 2 proposal will be submitted at the INFRADEV-01-07 (deadline 29 March 2017): ESSnuSB and CompactLight. RA wonders whether TIARA can make a recommendation on CompactLight at the meeting because the available document is uncomplete.

RA explains there is no proposal for FETOPEN-01-2016-2017 (deadline 17 Jan 2017 and 27 Sep 2017). This fact is not surprising because of the too low success rate. RA informs about the call FETOPEN-03-2017 (deadline for application: 17 January 2017, result on May 2017, total budget: 1.5 M€), dedicated to coordination programs (no R&D). A proposal FuSuMaTech (0.5 M€), which aims at coordinating activities on SC magnets with industry. This project will be presented at the next meeting. The success rate is unknown for this call.

Status Fee collection

RA gives the TIARA financial status. There are still administrative issues with CIEMAT (more specifically with ministry). Also it is not urgent to get the due fee from CIEMAT, one needs to propose a plan B in case the issue cannot be solved.

RA highlights the needs of a discussion about what to do with the total budget and how to use it complementary with ARIES: e.g: workshops not included in ARIES, education and training, dissemination and outreach activities (this should be general interest)... The funding should be for the benefit of the whole community.

RA lists the personnel for TIARA. There are 2 modifications: G. Volpini, who unfortunately passed away, is replaced by D. Sertore (INFN) concerning the website. Our secretary, E. Delucinge, will be replaced by Julia Double (CERN) in July.

Visit to EC

RA reports on the 6 themes discussed with the EC on H2020-WP2018-2020 (Total 1.15 B€):

- Long term sustainability (former INFRADEV). There will be
 - **DS call in 2019** and a new ESFRI roadmap in 2018.
 - **A possible preparatory phase call will take place in 2020 for new ESFRI projects in RM2020.** (The ESFRI Roadmap will be updated in 2018 and 2020).
The TCC discusses concerning the appropriate timing for including FCC and EuPRAXIA on the ESFRI RM.
FCC: FB explains that there will be European Strategy update for high-energy physics in 2020. End 2018, a bottom-up approach will be organized to have a new strategy in June 2020. Studies should be finished before end 2019 for proposals like CLIC or FCC. FB thinks that pushing for a preparatory phase for FCC before 2020 is premature. TIARA agrees that one should wait for the European Strategy before developing a Preparatory Phase proposal for FCC.
EuPRAXIA: RaA underlines that there is very strong international competition (Japan, China, USA) in this field. TIARA's strategy for PWA should not be limited to HEP applications but also consider the needs of other fields. Indeed, although R&D for high gradient is important for HEP, it is also very important for compact light sources and societal applications. EuPRAXIA's first applications will not dedicated to HE physics. TIARA encourages the community to be prepared to make a proposal for the ESFRI RM2020 as the schedule for RM2018 seems very tight.
In contrast ESSnuSB is for HE physics. Therefore the outcome of the update of the European strategy for particle physics is essential before moving toward a preparatory phase. This will also strongly depends on the result of the DS.
- Interoperability and EOSC. Generic services, clusters. We are not directly concerned.
- Integrating/opening European Infrastructures. Integrating activities will continue with calls in 2018, 2019 & 2020. TIARA is not concerned since ARIES has been approved very recently. There will be in addition one category of INFRA Pilot Actions calls for advanced communities:
 - Access Pilots: dedicated to offering Transnational access to RIs.
Access for accelerator R&D infrastructures (TNA) has not a high priority so far, compared to R&D (JRA). We should however discuss further what would be our needs in this area.
- European Data Infrastructure. We are not concerned.
- Innovation (ex INFRAINNOV). There will be one new category of Pilot Actions calls for advanced communities:
 - Innovation Pilots: dedicated to JRA with industry
TIARA is directly concerned by this call since co-innovation with industry has been identified as a high priority to develop R&D. TIARA is very much in the front of this activity, which has been already integrated to ARIES.
- INFRASUPP (Policy and International actions).

Nothing has been decided yet. The preliminary documents will be drafted in March-April 2017. End March-April, RA will meet the French representative, Mr Froissard, to discuss about these calls.

Co-innovation with industry workshop

RA speaks about the co-innovation with industry. There is a dedicated WP in ARIES. RA focuses on the co-innovation workshop: its sole objective is how to enhance co-innovation with industry. The EC is very interested and wants to participate. RA lists the steps:

- Set-up a preparatory meeting with industry during the ARIES kickoff meeting
- If industry is positive, set up an organizing committee.
- Decide when (in Fall 2017 or early 2018) and where to do it

RA lists which are the expected outcomes of this workshop.

The TCC asks for details about collaboration with UK. PB explains that UK will guarantee at least UK will continue supporting EU projects for particle physics. There will certainly be discussions of the advantages for UK to continue collaborating and participating to EU activities.

In April, there will be an industry meeting organized by AMICI. The TCC reminds that AMICI is dedicated to technological infrastructures whereas ARIES treats co-innovation with industry, which is very different. AMICI has also a set-up of an industrial board. The coordination between AMICI and ARIES has to be improved and duplication should be avoided as much as possible. All the laboratories in AMICI are also in ARIES. The boundaries between AMICI and ARIES should be clearly defined. RA proposes to have a report on AMICI at the next TIARA meeting.

RA reminds that the next TIARA meeting will take place in June 19-20. RA lists the possible talks: AMICI, FuSuMatech, ARIES, HFM network, Accelerator R&D in Poland.

RA will send a doodle to decide the date of the following meeting in October-November at CERN.

RA reminds the dates of some other meetings: last EuCARD2 end March, ANAR2017 (end April) , ARIES kickoff meeting in CERN (early may), FCC week (end May).

Short updates on on-going projects

EuCARD2/ARIES (MV)

MV recalls that only 2 months remain before end of the project (April 30), with an overload of work with a reduced team. The communication support is leaving. MV gives the status of the deliverables: 2 of them are delayed and justified to EC. There is a winter tolerance of 2 months. 10 deliverables are due for end of February (only 2 received, 4 expected soon). MV lists open issues:

- Deposition test facility at CEA Saclay (delay explained between experimental and resignation of a PhD student). The design of the cavity must be done at least.
- NRF cavity for fs stabilization.
- HTS magnet test stand (delay because G. Volpini deceased).

MV reminds the next 4th last annual meeting will take place in Glasgow on 28-30 March 2017.

MV shows the completed program of the meeting. There will be a steering committee for ARIES to prepare the kickoff meeting (composition of the governing and industrial board will be discussed).

MV reports about the next project: ARIES. The logo (3 proposals) will be decided in Glasgow. MV gives the status of ARIES: Grant Agreement is signed. Consortium Agreement is ready for signature. The EC scientific officer is Patricia Postigo Mc Laughlin. The start date is 1 May 2017. There is a new coordinator for innovation: Marcello Losasso (CERN). The distribution of the roles in WP6 is under discussion with GSI. Indeed, GSI is very involved in FAIR and has less time for other European projects. The mailing list is under preparation. The governing board will be done in Glasgow.

MV reports about the ARIES kick-off meeting at CERN on 4-5 May. The main topics are presentation of all WPs, meeting of governing board, industrial meeting. MV gives the agenda of the kick-off meeting. For the industrial meeting, there will not be the same people as for AMICI (other scope). It is not possible to combine it with industrial meeting of AMICI because it takes place in April just before the start of ARIES.

The Kickoff meeting Indico site is ready. The agenda is not put yet: in attendance of the confirmation of the speakers. The title of the talks can be sent to the TCC privately. The link for the indico site and registration will be sent early March.

EuPRAXIA (RaA)

RaA shows the effort on dissemination. RaA lists the participating institutes. 6 institutes joined as associated partners in October. RaA shows the status of the manpower: 119 scientists in the list. Technical tables of the 1st study version were published in October 2016.

RaA lists the meetings (general and WPs). Steering meeting takes place every 3 months. RaA explains there will be 2 collaboration weeks at DESY in 2017. A symposium is scheduled in Liverpool 2018. The industry participation is strong in advisory board.

RaA lists the coming talks about EuPRAXIA: a plenary talk at HEDS conference in Japan in April 2017, a contributed talk at IPAC2017 by A. Walker and a special session at EAAC2017.

RaA speaks about applying to 2018 ESFRI roadmap. From one hand, INFN and industry (France, Germany) strongly support it. France would like to have a first national roadmap. German ministry is thinking: EuPRAXIA is amongst 7 top priorities on Helmholtz institute. From the other hand, it is probably tight to apply for the deadline of August 2017. Too fast can be bad. 3 countries are pushing to ESFRI roadmap: Italy, France and Germany. The TCC asks the positions of Portugal, Hungary, ELI, and CERN. RaA agrees the question should be addressed. RaA adds that is difficult to say when the German answer will be available. RaA is under discussion with the person in charge in DESY for the relation with government. RaA is confident in a positive answer from Germany.

The baseline plan is to apply to 2020 ESFRI roadmap.

RaA gives the status of the funding: 3 M€ for 4 years, 38 institutes, only a CDR must be delivered. The project is underfunded.

RaA explains that collecting more funding is necessary to go further than a CDR. There is a survey from 38 institutes (EU, Russia, Israel), which estimates that a budget of 15 M€/year over 4 years would be necessary to be ready to build the accelerator. RaA is investigating possible sources: EU DG research, TIARA, LEAPS (photon science) to do R&D and to make prototypes for beam testing, plasma testing. For instance, you need some nano-collimation systems and then to make R&D and prototypes in parallel with design studies.

RaA explains that this budget of 15 M€/year is to do complementary studies. The CDR will be done anyways. Additional money is needed to make industry, partners work on prototyping.

The TCC asks if a network is established for prototyping. RaA answers that the network is made of partners and associated of EuPRAXIA. The TCC asks about the R&D program. RaA explains that would be an independent project in parallel to EuPRAXIA. TCC asks whether there is an agreement. RaA cannot answer yet. The overlap of the R&D and prototyping with the DS is a real problem: the solution is not obvious.

EuroCirCol/FCC (Michael Benedikt)

The presentation has been canceled.

Status of LHC and HL-LHC (FB)

FB reminds the schedule of LHC in 2016. FB shows the production in 2016 with a peak luminosity of $1.4 \cdot 10^{34} \text{ cm}^{-2}\text{s}^{-1}$ and over 25 fb^{-1} in both ATLAS and CMS. FB shows the cryogenics availability (98.6%).

FB states that p-Pb collisions surpassed the goals. FB lists the LHC limitations (SPS beam dump, injection kickers, e- cloud, UFOs). FB shows the updated LHC schedule (approved on 31st August 2016).

FB shows the MB training campaign (in IR3: short deposition of debris, the diode insulation must be improved to protect the dipole). Different behavior to quenches were observed because of different manufacturers. FB informs that 10 days are necessary to go back to the magnetic energy and one month per sector, which implies 1-2 months to recover (the LHC cannot be then used for physics). Recovering from quench takes thus a lot of time.

FB shows the LHC EYETS. FB shows a solution to solve the issue of the beam dump in SPS (problem with porosity) with a crash program. New design of the beam dump will be tested in April 2017 after assembling in Jan 2017. Magnets (total of 40 magnets) are exchanged during eYETS: 7 interconnections must be opened. The cool down started February 15th. FB reminds that is a long process.

FB summarizes the conclusions of the LHC performance workshop. It was decided to start in 2017 with ATS optics **at $\beta^*=40$ cm and then at 33 cm**. The expected luminosity is **1.7 to 1.8 10^{34} cm⁻²s⁻¹**. The beam energy will **not change in 2017 and 2018**. The goal is to prepare LHC at 14 TeV during Run 3. To enforce insulation in the dipole bypass diode (metallic debris) is then needed.

FB shows the planning for 2017 with a challenging goal of an integrated luminosity of 45 fb⁻¹. FB shows the schedule of Run 2. MD time increases in 2018 to prepare HL-LHC. FB shows the schedule for Run2 and Run3 (2 years of stops in 2019 and 2020 with change of the triplet for example).

FB explains the HL-LHC project with a big civil engineering at LS2. FB mentions that Linac4 has reached its energy goal of 160 MeV last year (25 October 2016). FB shows progress on HL-LHC: 2-meter-long model of 11 T dipole reached a field of 12.5 T. The US results for the inner triplet quadrupole are good. The building of the first crab cavity has been completed at CERN. FB shows the main objectives of HL-LHC. The crab cavity will be tested in SPS.

FB informs about a cost workshop. FB shows the master schedule of LHC. FB speaks about the different calls for building HL-LHC like cryogenics: opportunity for EU industry.

Establishing a long-term network on HFM

Proposal (Gijs De Rijk)

GDR lists addressed questions about HFM network.

- Why a HFM network. Projects and their networks last 3-4 years and then stop. GDR explains that a very limited number of people are then concerned. The participation is under invitation: the institutes do not express their interest. These projects obey rules: some institutes cannot participate because of financial rule issues.
- GDR lists the objectives.
- GDR lists the foreseen activities.
- GDR explains what is new with possibilities of ground-floor proposals. FuSuMaTech in this network will bring more participants.
- Level of financing.
- The type of organization.
- GDR lists the potential partners. Some of them are very involved in most projects and other not connected to any projects but have shown their interest.

Discussion (All)

The TCC remarks that it is not necessary to have EC funding for establishing a Network. RA reminds that TIARA is not limited to EC projects (it is not mandatory). Collaboration of laboratories with big accelerator projects is a very long process. The development of HFM activities is not easy and the involvement of universities is an asset. The TCC stresses that AMICI is focusing on persistence of large technical infrastructures for building HFM components could be one of the components of this network.

The TCC notes that there are other components in accelerators like BPMs, cavities, RF sources... What is the reason of such a special topic on HFM inside TIARA and not about other components. GDR answers that magnets for accelerators are one part of this network but not the only one. There is also a need to transfer the technology of HTS or Nb₃Sn magnets to other fields.

This network, if successful could be a model for RF for example. TCC agrees that is a pilot action with such a network would be interesting. TIARA will then see how to generalize that to other activities.

Another concern is how to coordinate this activity. There are already similar initiatives in ARIES, in AMICI, and in FuSuMaTech: Appropriate overall coordination would be needed to avoid large overlapping and duplication. It is however note that FuSuMaTech will last only 2 years if approved. Therefore a HFM network should investigate how to make FuSuMaTech sustainable.

TIARA Collaboration Council Decision

The TCC sees the potential interest and usefulness of establishing a HFM network, however it needs a more detailed proposal for making a more definite recommendation. **The TCC welcomes a presentation at its next meeting.** The presentation should include details on : **1)** What specific activities will be carried out, **2)** How it will interface and complement already existing HFM activities (ARIES, IPAC, ASC, MT ...) or may be coming activities such as FuSuMaTech, **3)** how the network would be organized, managed, financed, **4)** what would be an initial list of partners.

Preparation of proposal for INNOV-1 call

ATTRACT proposal (PGT)

PGT explains what ATTRACT is and details the organizations of this initiative. PGT explains that ATTRACT is focused on detection and imaging technologies (DIT). DIT is the core of future industrial developments applications and business. DIT allows for the emergence of new technologies. PGT explains the market of DIT. PGT underlines that the DIT touches a market estimated at over 100 B€ per year.

PGT shows the high societal impact of DIT and lists the reasons of ATTRACT. PGT explains how ATTRACT works and that ATTRACT is aligned on EU Research Infrastructure policy. PGT shows the ecosystem of ATTRACT with the different actors.

PGT details both phases of "mini-ATTRACT". The first phase plants the flowers with a large selection of projects (~180) in a wide scope of technologies. The Phase 2 selects and funds 10% of the Phase 1 projects.

Mini-ATTRACT has been submitted to H2020 WP 16-17 call, to be launched late 2017 or early 2018. A Core Consortium has been created to administrate the ATTRACT call(s): 18 M€ for the call with 100 k€ per grant. Proposals are selected by independent scientific advisory committee. Funded projects have 12 months to develop their ideas/prototypes for the next funding stage. PGT explains by a different way (funding) what the phases 1 and 2 are.

- Phase 1 (2017-2018): 20M€ with breakthrough potential
- Phase 2 (2018-2019): Expected continuation with the objective of scaled funding.

PGT summarizes the path for ATTRACT.

The TCC asks how ATTRACT is connected to HE physics. PGT explains that the topics in ATTRACT are DIT in connection to EU infrastructures. HE physics is a good source but not the only one.

RA emphasizes that is the first time in the RI unit that the EC allows a consortium to make the selection: the user community decides the best way to use the money, which is a major breakthrough. The EC acknowledges more and more that the rules for funding programs should change.

FETOPEN suffers from a too low success rate due to the selection process. The aim is to demonstrate the research community can make the selection and to show the potential of this initiative.

The TCC asks whether the planed 180 proposals are realist. PGT answers that different symposiums have been organized to communicate to the different communities (HEP, astrophysics, health...). They

showed a large pool of interesting ideas and the will to collaborate: PGT is confident about the amount of proposals.

For accelerators, there is a network for diagnostics and instrumentation in ARIES: we could encourage these people to submit proposals. It is interesting to follow the implementation of such a model. Accelerators have neither the same market nor the same project scale (M€ instead of 100 k€) but we should consider the ATTRACT model to proposed a model specific to accelerators for FP9.

Preparation of proposals for next DS call

CompactLight proposal (GdA)

GdA explains that only a draft was sent because the second part is still under progress. The whole draft will be sent as soon as possible.

GdA reminds that XbFEL DS was submitted with 12 participants to validate the use of the X-band technology for the construction of future FEL based photon sources. They received a very positive feedback but the referees found there was too much emphasis on demonstration of technology instead of designing a fully-fledged user facility and how XbFEL fits into ESFRI landscape should be clarified. RA stresses the criticism made by the referees about the added value of using this technology. This item will be discussed after.

GdA lists the CompactLight objectives. FB asks for numbers about the gain on the cost and on the performance. It should be quantitative. TG suggests to give a table of parameters to give an idea and to compare with the C-band (SwissFEL). In terms of science, the proposal should show what can be done with this FEL and cannot be done with other FELs. GdA explains the interest is the photon structure: high repetition rate thanks to the pulse length. The TCC insists that examples would be appreciated like limitations from the detectors: you destroy the target, which make interesting to move to the kHz regime. It is very important to show the scientific interest.

GdA explains the goal is to make something affordable with a factor 2 on the cost. One of the improvements is the undulator with 2-color operation to reduce the cost. Nevertheless, TG argues this gain does not depend on the frequency choice and can be obtained on other FELs. TG reminds that for linear colliders, the cost was evaluated for X-band and C-band with no big difference. That should be quantified to show the advantages of the frequency choice (X-band and not C-band for example).

GdA lists the participants. GdA details the participation per institute. GdA shows the structure with 7 WPs, the 3 studied FELs and the deliverables. GdA shows the interaction between the different WPs. GdA enters in details of each WP:

- WP1: project management and coordination
- WP2: FEL science requirements and facility design.
- WP3: Gun and injector
- WP4: RF systems
- WP5: undulators and light production
- WP6: beam dynamics and start to end modelling
- WP7: Global integration with new Research Infrastructures.

GdA lists the deliverables and the main chapters of the CDR. GdA gives the timeline and the asked funding. The request is 3 M€ for 3-4 years.

Discussion and TIARA statement (All)

RA reminds that last time the TCC had asked for a draft proposal to be sent to our internal referees (TG and RB) 3 weeks before this meeting. The idea was to have a look at the proposal to have their opinion. With the delay, it is impossible for them to have a precise feedback. The TCC has only 2-3 weeks to make a feedback on the proposal before the deadline, which leaves no time to interact. The TCC comments will be probably the final ones.

TG thinks there is a breakthrough for injectors and undulators. Low emittance injector is a good topic. There are equivalent proposals with storage rings and undulators with C-band. TG is not surprised to see the same topic with C-band gun. TG enhances that X-band gun is different from S-band gun: you can improve the emittance and charge a lot.

TG states that cost and space go together. There is the problem of RF consumption too. SwissFEL studies have shown that there is not big difference between X-band and C-band. You do not save so much money in civil engineering because of the place taken by undulators. You gain rather on power consumption. CW operation should be evaluated. There is the problem of the X-band RF power: klystron efficiency is not so good because of a lack of users. If you increase RF frequency, klystron efficiency go down. This increase can be counterbalanced by the reduction of the number of klystrons. TG addresses the problem of radioprotection with big machines (3 GeV). There is a large community about the design: a FEL is still a complicated accelerator. Putting it in a university is still a problem. RA shows the former report for XbFEL. One of the main concerns is what science you can do you cannot do on another machine. If this question is not addressed, it may be rejected again. The advantage of X-band over C-band is not obvious and should be clarified.

RA asks for more precision about what GdA means by UK-FEL compatible. GdA explains that there is a FEL program in UK with a review to identify a new machine for the future: UK-FEL regroups the requirements from UK user community. The aim is not here to satisfy UK community but to have some requirements from user.

RB could not review the proposal because the draft was sent too late.

TIARA Collaboration Council Decision

The TCC asks for the draft of the proposal. If no report next week, it will be very difficult to make recommendations. **The TCC thinks that is interesting to have small emittance RF gun and undulators. Developing or capitalizing in X-band technology is a good thing.** The question is whether an X-band FEL with this technology can be attractive enough for the referee. **The TCC insists on the needs of a strong argument to show the new possibilities offered by X-band technology. More numbers must be given. Overall CompactLight is a nice proposal but the points in the previous evaluation report must be addressed.**

New ESSnuSB proposal (MD)

MD explains the reasons of ESSnuSB and why it is interesting to operate at the second oscillation maximum to study neutrino oscillations and more particularly the CP violation (thanks to quite large value of θ_{13}). MD explains it is possible to study at the second oscillation maximum with a large detector. MD shows the coverage of δ_{CP} : more than 50% with realistic assumptions on systematic errors.

MD introduces the linac and the target. MD shows how to add a neutrino facility with the needed modifications on the linac (double the rate from 14 Hz to 28 Hz). An accumulator ring must be added to compress the proton pulses. MD shows a general layout of the target station (developed in the framework of EUROnu). MD shows the muon distributions collected at the beam dump. MD shows a scenario to extend this factory to a muon collider, which however is out of the scope of the DS. It is there only to introduce the possibility of a muon factory.

MD focuses on specifications of the call DS for INFRADEV-01-2017. MD shows the 3 criteria: excellence, impact, quality and efficiency of the implementation. MD presents the previous application in 2014: 11 participants with a total cost of 3.6 M€ (1.8M€ requested). MD reminds the grades:

- 5/5 on excellence
- 4.5/5 for impact. The criticism was the question of IPR is not sufficiently addressed.
- 4/5 on the quality. The main concern was the SWOT analysis should be properly done for accumulator ring and more detailed for linac modification.

MD focuses on the current call. MD lists the participants: 16 participants now (University of Durham may leave).

MD describes the WPs: 6 WPs (management, linac, accumulator, target, detectors, physics). MD shows the gain of the experience from previous DS for the current DS. The main effort is on WP2, WP3 and WP4. The budget is mainly to pay all postdocs, travelling expenditures, 25% overheads. MD shows the structure of the DS. MD lists the deliverables. MD shows the preliminary Gantt chart. MD lists the milestones. MD goes to the critical risk analysis. MD explains the proposal is a DS and not the machine itself. The risk analysis is about the DS. MD lists the requested manpower. MD shows the total cost: 5.2 M€ for 3 M€ requested (57.3% of the total). MD shows the distribution of the budget per year, per WP or per man power. MD shows the preliminary request per institute. MD enlightens the support letter from ESS management has been signed. MD summarizes the main points of the proposal.

Discussion and TIARA statement (All)

JLB thinks that is a very good proposal. JLB finds the first section is a very clear proposal. Comparison with DUNE and EPACA is convincing. The DS is very well focused on the goal.

The part about impact is good. JLB finds it nice to show the ESS can take benefit as a neutron source of this upgrade. JLB is surprised not to have an Education, Dissemination and Training panel: it should be added because that is an important topic for EC. A proposal is the organization of a 1 week school with training of young students and the asset of mixing accelerator and neutrino scientists.

The implementation part shows a good balance between WPs. JLB notices the safety, radioprotection, and shielding aspects are not covered for the ESS upgrade. TE does not think that activation should be under control because the building has been oversized. It is difficult to irradiate more. However, JLB thinks that would be good to have a state-of-the-art study to show that is fine with the current shielding. The radiation and activation are a risk for operating and should be addressed. Shielding was addressed for the target but should be added for the linac. JLB suggests to detail more who is doing what. At the end, all the tasks are described but some information is missing about who is in charge in the tasks. An additional sentence would be appreciated. JLB appreciates the international panel.

JLB thinks the main risk for the DS is delay and that the proposal should explain how to mitigate this risk. In this sense, JLB suggests do mention additional indicators and automatic tools to check regularly if a task is late or not. This task can go into the management panel.

MV agrees with JLB's analysis. MV finds the proposal improved a lot. The scientific case is very strong. The support letter of ESS makes endorsement much stronger: ESS takes the lead of some WPs. The methodology is very clear. Strong points of the DS cover everything. MB will send specific comments by email.

MV thinks that 10 pages over 16 for physics may be too much. Most of referees are scientists but from other fields. Although it is difficult to make clearer without simplifying too much, the number of pages should be reduced.

MV remarks that most of the work is scheduled in the 3 first years, the chart should be changed a bit to justify the 4 years. The baseline is to start in 2018 to have the detector ready in 2020's. MD agrees to make the 4 years of the Gantt chart more consistent and to add the milestones.

MV stresses that additional activity in the machine may be incompatible with ESS. This operational issue should be addressed. MV explains ESSnuSB has to be aware of this risk and give some ways of mitigation.

TE adds the implementation of this upgrade onsite and boundaries with buildings have been studied by CERN. The conclusion is that very minor modifications are required: there is no showstopper.

The TCC appreciates the strong support of ESS, which is very important. The official involvement of the ESS staff is very nice. TE adds that one of the main topics of a workshop which took place in November 2016 was to upgrade the ESS linac. The TCC worries about the too large emphasis on detector (WP5) and physics (WP6). 18% of the effort on WP5 and 13% on WP6 seem to be a big thing because many studies have been done already with superbeams for instance. The proposal is really the machine and not the detector. This situation should be improved: the TCC suggests to remove some people to go to

the other WPs. MD explains the WP5 is attracting many different participants. Their individual contributions are often quite small but the total becomes large. An effort will be done however.

TIARA Collaboration Council Decision

The TCC congratulates the team for this excellent proposal and to have got the support of ESS. The TCC underlines excellence for the physics and also for the accelerator community with very interesting work. The remaining concern was the support of ESS and is now removed. The TCC strongly supports the initiative of ESSnuSB in the field of CP violation, and the improvement of the ESS infrastructure and the long-term perspectives for the ESS.

The TCC will write a few sentences to support this proposal.

Co-innovation with industry workshop (RA)

How to proceed and schedule

This topic was previously addressed in General Information. The next action is to discuss at the next meeting with ARIES, AMICI and FuSuMaTech

Communication, dissemination and outreach

Website (DS)

The new website: www.eu-tiara.org is hosted in INFN Frascati. We can log in but the website is still empty. DS states there is now a public page. Some bars have been added on the page template. By logging in, we get access to official documents. Links and contacts have been added on the below bar. DS shows the status of the main page. DS shows an example of a highlight. DS adds the idea is to enable the same page with latest news to be divided in categories. DS shows the status of the agenda page. DS explains the access restrictions. DS prefers individual password to enable tracking and restrictions for modification. DS shows the status of the TIARA member page. DS asks about the color palette. RA answers we have the logo colors: there is no need for reverse engineering to get colors. DS gives a proposal for the main menu. RA answers DS can copy most of the contents from the former TIARA website and start from that. If things are obsolete, they will be updated later.

The website is developed by Sara in INFN Frascati.

RA explains that he wishes to keep the former website because the framework has changed.

AOB

Next meetings' agenda and venues

The next meeting is scheduled from Monday June 19 1 or 2 pm to Tuesday June 20 according to the agenda. The preliminary plan is a status of AMICI, of FuSuMaTech, of ARIES, and of HFM network. Even if FuSuMaTech is not successful, it is still interesting to know what is proposed in detail. A topic on accelerator R&D in Poland is scheduled.

RA will send a doodle for the next TIARA meeting in October-November 2017 at CERN.