- **ERC & funding**
    - Groups encouraged to submit different/smaller grant proposals to the ERC and also in other funding framework.

This would require a conceptual design paper. At the moment the community has no reference for that and this is a general problem. I think we should aim at two papers, one (Chris and others are working on that ) on the tracking within the magnets to prove we are controlling the phase space and the geometry and another on the critical aspects of the R&D and how they can impact the concept.

While the first paper could be sent out at mid 2020 the other could be a sort of summary of the review we are going to have with INFN. This would also be a way to motivate us to keep track of the comments we are receiving.

- No ERC synergy in 2020, next call in early 2021
- It's important to prove the technical feasibility of each functional block of the experiment

Each group should propose an R&D plan that has a reasonable gradation of milestones starting with first tests and progressing to what would be needed for the ERC. Estimates for the budget for achieving the various levels of feasibility tests should be included. Please implement this information in the GoogleDrive document(https://docs.google.com/document/d/1o_UvKAGkeUMPCRrZZGnwu2VSjO53eVCKciL4RpIE9g0/edit#heading=h.gjdgxs).

- Everybody should update the GoogleDrive document
- **Weak points:**
    - Too many groups involved? Should we push to have less partners? Maybe we need to better motivate the role of the partner groups.
    - It is urgent to define the size of the project i.e., how much tritium? Quantitative statements are missing
    - Large budget for subcontracting appears to be a weak point. We should moderate this needs.
- Do not focus on just ERC funds. There are other possibilities for small grant applications: COST, …
- A small group of people is needed to look for funding opportunities (We should set up a Financial board with national representatives and those working with specific funding agencies within those countries)

- **MOU**
    - Is it possible to have a MOU version for this early phases of the project? It will be a little more flexible and it will make life easier
    - Alfredo, AP and Pablo will work on possible amendments on MOU and future elections of the chairs mentioned in it.
    - It is need to define asap the publication (for papers and talks) policy. Probably the MoU is the right place where to describe it. We need to elect soon a Speaker Bureau.
- **WIKI**
    - We have a wiki and we should use it, mainly for management.
    - We should use a docuwiki (easier to use).
    - Andrea Giachero takes cares of starting a docuwiki
    - An ELOG branch has been already started. Soon accounts for the PTOLEMY users will be activated and sub-branches will be created based on suggestion of users.
- **Outreach**

- **Logo**:
  - We need a simple logo, perhaps including a neutrino symbol
  - Call for ideas is open. We will collect different proposal and made a choice.
- **Social media**:
  - hold back with Facebook, maybe start with instagram (pictures only)
  - Responsible person needed

- **Graphene, underground CH4, sticking probability etc.**
  - Electron scattering on graphene, why?

    We might need to have a geometry of the tritium target where several graphene layers are stacked. The stacking step will be much larger that the 0.335 nm in graphite. So we need to know the transmittivity and reflectivity of 18.6 keV electrons through graphene layers. We made some studies with the Bologna CNR group but unfortunately are not conclusive (lower energy and uncertainty on the contaminant layer on top of the graphene). This was done with a modified SEM where the transmitted current was also being measured. We might report this to the collaboration even if this is very preliminary.

  - Measurement of $^{14}C$ with ICP-MS

    In the meanwhile Marcello checked ICP-MS is not suitable for $^{14}C$.

    He also contacted the second University of Naples, they have large expertise on AMS (Accelerator Mass Spectroscopy) asking to measure $^{14}C$ out of underground C and they claim that $10^{-18}$ is two order of magnitude far from what is achievable with this technique. It seems that there is no lab in the world capable to achieve the sensitivity of $10^{-18}$ $^{14}C/C$. Is this the right number? The underground C is expected already so pure or it might make sense to do a measurement?

    Rome Sapienza group can send a CNT sample prepared with commercial acetylene, is it enough few mg ? Marcello can talk to the second University of Naples.

  - Study the H stick probability dependence on angle
  - Gold surface is better?
    - On gold, first layer is always atomic, but above the first layer diatomic molecules can form.
    - But tritium is so weakly bound that the Gold must be cryogenic.
    - It's dangerous due to the need to guarantee cryogenic operation, though perhaps similar to cryogenic requirements for liquid noble experiments with the added complication of radioactivity.
  - There is a non-zero probability that electrons emitted 180 degree will be scattered back in 0 degree but with less energy. It should not be a problem with the Ptolemy setup.
  - It's important to study graphene by reflection He on it.
    - is there a problem if the electron is emitted along z? (Recoil energy makes graphene vibrate and it create excited states).
    - Is a reason not to use graphite (if electro reinteraction is acceptable), because it will reduce that vibration?
  - The non-uniformity of the working function must be measured.
  - Can we measure the work function using UV photons (?)

- Tritium: Are there islands of T or is it evenly distributed?
- More in general the scattering of electron on TES surface at low energy must be studied (10-500 eV). Depending on results this can become a serious problem to the PTOLEMY concept.

- **TO DO LIST:**
  - Have a clear idea of the scale of the experiment (micro, nanogram…)
  - Publish a paper with the first schematics of Ptolemy and end-to-end transport simulations
  - Next meeting: in Naples in May-June

Gianluca proposed a list of R&D activities, all discussed during the meeting:

1) Detection of electron with TES in the range < 100 eV
2) Construction of e-gun facility with 50 meV resolution for calibration purpose.
3) Detection of RF emission with planar WG antenna
4) Study of the transverse filter
5) Graphene loading (H- D- T-)
6) Radiopurity of the graphene (producing also CNT with pure methane from Colorado).
7) CNT and nanoribbons for DM
8) Highly stable HV

After this we should assign this “milestones” to the WG’s and ask people to join the WG.
Then the active WG should give report at the bi-weekly general meeting.
Of course the WG should meet separately and use the ELOG to share the discussion going on (even if very preliminary, incomplete etc.)
We should stick with the biweekly- schedule of the general meeting though.
A schematic Gaant Chart would be desirable (each WG should have its own). Having deadlines for intermediate steps is obviously crucial to get to the milestone.